Dental Students' expression of Cultural Competence

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Researchers explored patterns of significance in students' reflective writings before and after interviews with individuals unlike themselves. To determine changes in cultural attitudes or beliefs, the Linguistic Inquiry Word Count (LIWC) program and QUAN →qual sequential mixed methods model was used. Seven factors explained 66.49% of the variance. This is a successful replication of a previous study, so the authors describe specific contextual differences. An analysis of participants' reflective writings offer insight about how participants integrate new and existing knowledge. Thematic content of the qualitative data revealed that increased opportunities for contact resulted in students' expressions of change. The findings demonstrate that experiencing instructional activities which challenge dental students' personal biases, while simultaneously exposing them first hand to the lived realities of others is important to catalyzing a shift in attitudes. Based on these findings, experiential learning experiences versus didactic coursework are recommended for students to relate the concepts of cultural competency and health disparities. Mixed methods inquiry can inform faculty about the outcomes that may emerge from these efforts.

Gaining cultural competence requires an individual to balance their understanding of the sociopolitical forces that dilute the importance of race and acknowledge other group identities including those related to culture, ethnicity, social class, gender, and sexual orientation (Sue, 2001). Because many dental students come from families of privilege, their point of reference for assessing the impact of lifelong need and poor access to health care on quality of life is often inadequate. They may recognize the disadvantages others experience; however, often they do not recognize the privileges afforded their own social group (Beagan, 2003). Typically, they possess invalid assumptions and beliefs about groups different from themselves. Countering dental students' preexisting attitudes, beliefs, and misinformation can be quite challenging in initiatives aimed at effecting change. Previous instructional experience with dental students demonstrates that students are quick to defend

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their prevailing assumptions and beliefs, even in light of evidence-based information countering their beliefs and presented through "traditional" coursework (Isaac & Behar-Horenstein, 2016; Isaac, Behar-Horenstein, Lee, & Catalanotto, 2015).

The importance of cultural competency in the equitable delivery of dental health care services makes the identification of effective teaching methods both urgent and critical. There is a renewed emphasis on improving oral health care access for vulnerable populations (Committee on Oral Health Access to Services, Institute of Medicine and National Research Council of the National Academies, 2011; Committee on an Oral Health Initiative & Institute of Medicine of the National Academies, 2011; Rivara, Erwin, & Evans, 2011) with ensuing changes in accreditation standards (Berwick, Nolan, & Whittington, 2008; Commission on Dental Accreditation, 2013; Commission on Dental Accreditation & American Dental Association [ADA], 2013). This observation, plus the perception that current teaching methodology in the areas of cultural competency and health disparities may be met with resistance, supports the need for teaching that is focused on transformation rather than disseminating information (Chun, 2010).

Increasing dental student knowledge of diversity and their ability to demonstrate cultural competence requires fostering an awareness of unconscious bias (Teal, Gill, Green, & Crandall, 2012). Developing cultural competence initially requires acquiring behaviors, attitudes, and beliefs that later will result in one's ability to demonstrate competency within the context of racial or cultural understandings (Reed, Bustamante, Parker, Robles-Pina, & Harris, 2007). Although students often reject biased behavior in others, they resist recognizing bias in themselves (Carnes et al., 2012; Uhlmann, 2006). One strategy for reducing persistent and unintentional forms of bias is for students to increase opportunities for contact with those different than themselves (Burgess, van Ryn, Dovidio, & Saha, 2007; Devine, Forscher, Austin, & Cox, 2012). Implicit bias can be mitigated by reflective practice to prevent its activation (Behar-Horenstein, Mitchell, & Graff, 2009) by increasing students' skills to interact confidently and contextually with patients who are culturally different (Burgess et al., 2007; Teal et al. 2012).

Individual biases, whether implicit or explicit, impact one's behaviors, attitudes, and feelings about others whose culture is different. A systematic review of the literature showed that, as a strategy, cultural competence training can improve health care professionals' knowledge, attitudes, and skills and patients' ratings of care (Beach et al., 2005). Traditional notions of "cultural competency" are not without its critics. Critical pedagogists, for example, recommend that educators help students understand the healthcare provider's position of power and privilege in society and implement a transformative curriculum rather than an informative one (Kumagai & Lypson, 2009).

As defined by Commission on Dental Accreditation (CODA), cultural competency refers to the acquisition of skills that promote effective communication and treatment of patients from diverse backgrounds. Thus, from an educational perspective, developing cultural competency should follow the cycle of learning (Zull, 2002). As described, this cycle consists of (a) Concrete Experiences, (b) Reflective Observation and Connections, (c) Abstract Hypothesis, and (d) Active Testing of Hypotheses, which results in a new concrete experience, and gives rise to a new learning cycle. In the context of cultural competency, initially this process begins by offering information to ensure that students have a common understanding of fundamental concepts such as diversity, culture, ethnicity, and disparities. Next, using self-evaluation processes, such as reflective writing, helps them explore their own beliefs and attitudes. Providing experiences to interact with others unlike themselves provides opportunities to test their hypotheses, apply new knowledge, and develop skills aimed at improving health outcomes. For this study, cultural competence is defined as an ability to interact effectively with people of different cultural, economic, and linguistic backgrounds.

This article focuses on pre-doctoral dental student education. This study replicates previous work (Isaac et al., 2015). However, in this particular study, the researchers sought to determine if the same pattern of significance would emerge in students' reflective writings before and after conducting interviews with individuals unlike themselves. As a process, reflective writing encourages students to (a) describe

events and the feelings they experience while evaluating those events, (b) analyze their reactions, (c) consider alternative responses, and (d) contemplate actions they might demonstrate in future instances that are similar (Berwick et al., 2008; CODA, 2013; CODA & ADA, 2013; Logan, Guo, Dodd, Seleski, & Catalanotto, 2014). Theoretically, this curriculum implementation project was grounded in Prochaska and DiClementes' Transtheoretical Approach to Change, which suggests that planned interventions matched to participant resistance are more likely to enhance their engagement, lessen resistance, and enhance greater progress toward desired outcomes (Prochaska, 2008; Prochaska, & DiClemente, 1983).

Method

Course Design: Introduction to Cultural Competency

The university's Institutional Review Board (IRB, #U-1071-2010) approved this study. During a team-taught course focused on the interpersonal, cultural, and social forces, and the social, emotional, and psychological factors that influence individual dental experiences, the first author, one of two instructors, provided two 20 minute presentations on the importance of becoming culturally proficient. First year dental students take this required course during the second semester of their dental curriculum. The section on cultural proficiency accounted for 25% of their final course grade. The first author used lecture and small groups, experiential activities, and role-play to help students achieve the following student objectives: (a) Define cultural competency, (b) Recognize the assumptions, beliefs and values about your own and others' cultures, (c) Identify the role of cultural competence in providing patient-centered care, (d) Discuss how inequity perpetuates valuing one culture over another, and (e) Describe how your communication style will ensure patient understanding and enhance patient efforts toward self-care.

The content of the presentations included an overview of characteristics related to explicit cultural competence, barriers to its development, the impact of inequity, as well as the social-historical and socio-political forces and how they collectively impact cultural competence. Students were presented with a continuum depicting the stages of cultural proficiency. Also, they were asked to silently identify where they would place themselves. This exercise, designed to create cognitive disequilibrium, encouraged students to reflect on their own bias, privilege, and assumptions, and seek effective solutions during small group discussions and while preparing reflective writing assignments (Mezirow, 1990).

Data Collection

Students were assigned a two-part comparative assignment. The first assignment was completed during the first few weeks of the semester. For this assignment, students were required to write a paper while reflecting on their personal cultural values along eight categories: race, gender, ethnicity, social class, sexual orientation, personal able-ness, faith, and cultural groups, as well as to consider how, why, and where their values developed. For the second assignment, each student was required to interview an individual who was "unlike himself or herself" along the eight aforementioned categories. The written post-interview paper allowed students to reflect on both the information obtained during the interview and the experience of interacting with someone with whom they likely did not share personal and/or cultural values and beliefs, or life experiences. Students were required to write a minimum of 500 words on each assignment. The length of the assignment was based on previous research using reflection papers where it was observed that short papers revealed considerably less insight. We also determined that an assignment of two double-spaced pages was a reasonable expectation for the professional student. Interviews were conducted outside of class time. Each student interviewed a different individual. The interview length was dependent on the interviewer and interviewee. Students were given a schedule of questions to complete during the interview. Interviewees were not compensated.

Upon completion of both assignments, researchers comparatively analyzed the two papers to determine the degree of changes in cultural attitudes and or beliefs, and any insights students gained through the assignment. Student reflection papers were analyzed using the Linguistic Inquiry and Word Count (LIWC)

program (2007). This program enables frequency counts of predetermined dictionaries appearing in the reflective writing text. Following the LIWC analysis, exploratory factor analysis (EFA) was used to identify factor structure and changes in the student's pre-post reflections. MANOVA was used to determine the statistical significance of demonstrated change. Following the identification and weights of statistically significant factors contributing to the changes, qualitative analysis using NVivo assisted in identifying the most frequently occurring words within the text of the reflection papers. Those words were cross-referenced with the LIWC word categories. Thus, we quantitatively compared the qualitative changes detected in students' first and second reflection papers to determine if the changes were statistically significant. This method has been used successfully in similar studies (Isaac et al., 2015; Isaac, Lee, & Carnes, 2011; Kaatz, Magua, Zimmerman, & Carnes, 2015). The partnering of qualitative and quantitative data allows for richer interpretation of findings and fosters making inferences about meanings to quantitative findings. As a result, the findings have both breadth and depth.

Sample Description

The sample was a cohort group of students. The high level of participation among the entire class of 2014 with 92 pre-doctoral students adds credibility to the findings. The study was conducted in a Southeastern dental school, 43 (47%) male and 49 (53%) female, of whom 51 (55%) were from underrepresented minority groups (URM) and 41 (45%) identified as white "non-minority."

Document Preparation

Student demographics such as gender, URM status, and category of interviewee assignment were removed and documents were reformatted according to the Linguistic Inquiry and Word Count (LIWC) software manual (Linguistic Inquiry and Word Count, 2007). This text analysis program compares words in a text document to internal and user-defined dictionaries (Kahn, Tobin, Massey, & Anderson, 2007; Mehl, 2006), counts the number of dictionary-specific words and divides that sum by the total number of words. LIWC calculates the degree to which people use different categories of words across a variety of texts formats. The application of LIWC has been documented in medicine psychology and language (Bantum, & Owen, 2009; Kahn et al., 2007; Madera, Hebl, & Martin, 2009; Tausczik & Pennebaker, 2010). LIWC has both internal and external validity for its 80 dictionaries of words that measure phenomena such as emotion and cognition (Isaac et al., 2011).

Table 1

Participant Demographics by Interview Category

Category	White (n_1=41, 45%)		URM (n_2=51, 55%)		Total
	Male	Female	Male	Female	
1 Sexual Orientation	3	2	4	3	12
2 Religion	1	4	4	6	15
3 Disabled	0	2	1	4	7
4 Language	4	1	4	3	12
5 SES	2	0	2	5	9
6 Race	5	4	3	2	14
7 Gender	6	1	1	3	11
8 National Orientation	3	3	0	6	12
Total	24	17	19	32	92

Total Male: n_3=43, 47%; Total Female: n_4=49 (53%)

Using NVivo (Richards, 2005) the authors identified the 1000 most frequent 3- or more-letter words using enumerative content analysis (Grbich, 2013). When adding up the percentage of the totals within the text of these words, 252 represented 50% of the text. This process aided in qualitatively describing the underlying dimensions from the quantitative analysis (Hair, Black, Babin, & Anderson, 2010).

Data Analysis

Statistical Analysis. SPSS (Version 21) and LIWC 2007 software programs were used conforming to the principles of statistical analysis, which are appropriate for data collected in naturalistic settings without a-priori predictions (Kraemer, 2013; Lee, 1985; 2004;). Principle components factor analysis with Varimax rotation and eigenvalues greater than one identified 7 factors from 17 word categories. The factor analysis was exploratory in nature, not based on prior theory or dimensions. The seven factor scores were used as dependent variables in the general linear model (GLM) multivariate analysis, to test differences by assignment (pre and post interview), gender (M, F), URM status (Yes, No), and category of assigned interview. Because there were insufficient numbers in some cells, the original interview categories were reduced to five (sexual orientation, religion, personal able-ness and socio-economic-status, race/language/national-origin, gender). Similarity of scores among the specific factors on both on the pre-interview and post-interview writing were compared. Scores, not grouping types (i.e., race), defined groups. The scores grouped the dental students, which allowed detecting similarities in stereotype responses to differences for those groupings. Two multivariate models (2x2x5 model), one for URM without

gender for analysis and one for gender without URM, were used. A multivariate MANOVA was run with all seven factors (derived from total writing for each individual student) as dependent variables. Independent variables were URM, gender, interview category, and assignment (1 or 2). Word Count was entered as a covariate.

Qualitative Analysis. A QUAN→qual sequential mixed method design was used whereby quantitative analysis guided the qualitative analysis. Textual data was coded line by line guided by NVivo for data organization (Richards, 2005). A deductive thematic analysis was used to link codes with factor dimensions and interpret the data (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Hesse-Biber & Leavy; 2011). From the underlying dimensions, categorical patterns within the data were found (Attride-Stirling, 2001; Boyatzis, 1998; Braun & Clarke, 2006). Conceptually linked categories were integrated and synthesized together into broad themes.

Efforts to establish trustworthiness were aided through attention to credibility, transferability, and confirmability. Credibility, or confidence in truth of the findings, was established through triangulation and peer debriefing. Triangulation was accomplished through the use of (a) four analysts, (b) several data sources including two sets of 92 reflective writings, (c) several quantitative analytical techniques such as principal component factor analysis, general linear model (GLM) multivariate analysis, MANOVA, and LIWC, and (d) qualitative analytical tools including line by line coding, NVivo, and peer debriefing to ensure the accuracy of interpretations. Transferability, or the degree to which results of qualitative research can be generalized or transferred to other contexts or

Table 2

Word Count Comparison by Assignment and Race/Ethnicity

Assignment	N	Mean	SD	*p*-value	URM/White	N	Mean	SD	*p*-value
Assignment 1	92	125.36	78.880		URM	51	110.51	72.354	.043
					White	41	143.83	83.550	
				.000					
Assignment 2	92	260.85	141.964		URM	51	217.04	95.652	.002
					White	41	315.34	170.067	

Table 3
MANOVA Results

Source	Dependent Variable	Df	Mean Square	F	*p*-value
Corrected Model	Factor 1	40	3.077	7.347	.000
Word Count	Factor 3	1	9.412	9.646	.002
	Factor 7	1	4.194	4.288	.040
URM status	Factor 3	1	5.159	5.287	.023
	Factor 5	1	5.457	5.838	.017
Gender	Factor 1	1	2.897	6.915	.009
	Factor 5	1	4.876	5.217	.024
All Interview Categories	Factor 1	4	1.302	3.109	.017
Assignment	Factor 1	1	49.350	117.810	.000
	Factor 4	1	4.551	4.685	.032
	Factor 6	1	4.756	4.665	.032
URM*Assignment	Factor 1	1	2.051	4.897	.028
	Factor 3	1	5.637	5.777	.018
Gender*Category	Factor 1	4	1.254	2.993	.021
URM*Gender*Category	Factor 7	4	2.565	2.623	.037

setting, was addressed by using the same cohort group in the analysis of two reflective writing assignments per each student (Lincoln & Guba, 1995). Confirmability was achieved by the use of more than one person engaged in analyzing the data. Validation of the analysis was enhanced by the presence of two experienced qualitative researchers with extensive knowledge in the area of cultural competency in higher education.

Results

Quantitative Findings

Seven factors explained 66.49% of the total variance. Cronbach alphas ranged from .588 to .870. Word count ($n \leq 600$) was significantly different between assignments, $p < .001$. Students wrote significantly more text in assignment two where the mean was 260.85 compared to the mean of 125.36 in assignment one (see Table 2). However, there were no significant differences in word count in assignment two among the five categories. Word count was significantly different between White and URM students in both assignments. White students ($n = 41$) wrote significantly more text compared to URMs ($n = 51$) in assignment 1. They wrote 143.83 words compared to URM who wrote 110.51 words, $p = .043$. In assignment two, they wrote 315.34 words on average compared to URM (mean = 217.04), $p = .002$ (see Table 2). No significant differences in word count were observed between males and females in both assignments. In the full model, there were significant effects for several factors including: Factor 1 (she or he, past, social, percept) and the combination of all the independent variables ($p < .001$); URM * Assign ($p = .028$); Gender ($p = .009$); Category 5 ($p = .017$); Gender * Category (.021); Factor 3 (tenta, insight): URM ($p = .023$); URM * Assignment ($p = .018$); word count ($p = .002$); Factor 4 (Inclu, we): Assignment ($p = .032$); Factor 5 (negative emotion, certain): Gender ($p =$

Table 4
Factor Structure Representing Underlying Dimensions

Factors	#1 Past Experiences	#2 Negate	#3 Insight	#4 Inclusive	#5 Certain	#6 Social	#7 Because
Variance	13.3	11.8	7.5	8.8	7.9	8.7	8.6
Shehe	.779						
Past	.812						
Social	.557					.611	
Adverb						-.498	
Exclusive		.787					
Negate		.811					
Discrepancy		.675					
Tentative			.817				
Insight			.653				
Ipron							.686
Inclusive				.678			
We				.854			
Cause							.700
Neg emotion					.721		
Humans						.870	
Percept	.588						
Certain					.807		

.024); URM (*p* = .017); Factor 6 (humans, social, adverb): Assignment (*p* = .032); and Factor 7 (Ipron, cause): word count (*p* = .040); URM * Gender * Category (*p* = .037) (see Tables 3 and 4). In this paper, we describe significant differences that are similar by word category. Because of the similarity of the results to the previous study (Isaac et al., 2015) this study focuses on an expansion of the contextual differences that the quantitative findings did not reveal in the categories of Personal-ableness and SES, Sexual orientation, Race/national origin/language, and Gender and Religion.

Qualitative Findings

Personal-ableness and SES. Ten students described how the interview impacted their previously held assumptions about individuals whose lives were affected by disability. Their descriptions coincided with the factor 1 dimensions of "past experience," "she or he" "past," and "social." The disabilities described ranged from deafness to mental illness and to a life of physical affliction following an accident (see Table 5). Participants shared how the interviews with those who suffered with disability and mental illness influenced their attitudes. Amber, a female URM, explained that listening to

Table 5
Pseudonyms for Cite Interviewers

Pseudonym	Gender	Racial Background	Category of Interview	Pseudonyms	Gender	Racial Background	Category of Interview
Amber	Female	URM	Disability	Maria	Female	White	Race
Lee	Female	White	Disability	Holly	Female	URM	Race
Rachel	Female	URM	Disability	Tom	Male	White	Race
Lisa	Female	URM	Disability	Adam	Male	URM	Race
Amy	Female	White	Disability	Katherine	Female	White	Race
Cindy	Female	URM	SES	Christine	Female	White	National Origin
Charisse	Female	URM	SES	Devona	Female	URM	Race
Michael	Male	White	SES	Norman	Male	White	Race
Josh	Male	URM	Language	Leonard	Male	White	National Origin
Max	Male	URM	SES	Sam	Male	White	Race
Jan	Female	URM	Sexual Orientation	Trisha	Female	URM	National Origin
Kelly	Female	White	Sexual Orientation	Bob	Male	White	Language
Melissa	Female	URM	Gender	Jacob	Male	White	Gender
Steve	Male	White	Sexual Orientation	Carol	Female	URM	Gender
Bobbi	Female	URM	Sexual Orientation	Saulo	Male	URM	Religion
Alyssa	Female	URM	Language	Joe	Male	URM	Religion
Deborah	Female	URM	National Origin	David	Male	White	Religion
Henry	Male	White	Gender	Janice	Female	White	Religion
George	Male	URM	Sexual Orientation	Judy	Female	White	Religion
Mimi	Female	White	Sexual Orientation	Lynn	Female	White-URM	Religion
Sasha	Female	URM	Sexual Orientation				
Steven	Male	White	Gender				
Herman	Male	URM	Sexual Orientation				

her interviewee made her realize that in spite of deafness, with the right type of education and family support, her interviewee's younger years could have been easier. Amber's past served as the reference point for making comparisons and in drawing conclusions about her interviewee. Lee, a White female, expressed

her "surprise" upon learning that an individual with deafness, who struggled in public school, preferred to attend there, rather than the St. Augustine School for the Blind and the Deaf. She opined that this experience taught her never to make assumption about an individual with a disability. This new knowledge highlighted her

"past experience" and "certain" factor dimensions. While describing his bipolar disorder, the interviewee stated that he did not like the way the medication made him feel. Lee made connections between what she learned from the interviewee and a family member. That relative, who suffered from the same disorder, complained that taking medication led him to feel numb to the world.

From her interview, Rachel, a URM female, learned that poor decision-making and an accident altered her interviewee's life. However, the interviewee had forgiven the individual who caused the accident, let go of her anger, and moved forward with her own life. This singular experience helped Rachel realize the importance of feeling what it was like to think like someone else.

After interviewing an individual with mental challenges, Lisa, a female URM, realized the impact of family values. From this interview, Lisa learned that the interviewee's feelings were often based on what his mother or father told him instead of his own thoughts. Lisa was surprised to discover that she was much less influenced by her family. Amy, a White female, interviewed a woman suffering from disability who did not feel limited in what she could accomplish in life. Amy found herself wondering how living with disability resulted in this woman feeling unconstrained by insurmountable challenges.

Others described how previously held assumptions related to social class, beliefs, and values were nullified. Cindy, a URM female, learned that social class was not a determinant in beliefs or values. Another URM female, Charisse, questioned her suppositions about individuals who were raised in single parent households. After learning that her interviewee grew up with one parent diagnosed with HIV, she recognized that perhaps a single parent could fulfill the role of two. Despite a lack of financial resources during childhood, the interviewee followed her dreams. The participant was surprised by this. Following an interview with someone of a different socioeconomic status, one White male, Michael, discovered how people with less income also valued hard work, faith, and family. Although raised in families of different social classes with two working parents, Cindy found many similarities between the

interviewee and herself, such as being raised in Catholic school and home environments. Each of the aforementioned examples illustrated why socio-economic status was not a sole determinant of dedication to parenting, beliefs, or aspirations. Moreover, after acquiring these insights, participants found themselves letting go of previously held assumptions.

For a URM male, Josh, the interview allowed him to ponder why he should not judge individuals with different income levels. This experience fostered an awareness regarding why household income was not influential in individuals' beliefs and behaviors. Another URM male, Max, explained that his interviewee made him cognizant of how the environment and people around us shape beliefs and perspectives.

Sexual Orientation. The category of sexual orientation resulted in the greatest amount of astonishment, recognition of similarities, personal disappointment, and rejection of others' sexual preference. Some participants were stunned that sexual orientation had no bearing on shared experiences. Despite different sexual orientations, a URM female, Jan, discovered that both had divorced parents, shared Christian faith, and believed that education was empowering. In her view, shared histories promoted mutual values.

After interviewing someone of a homosexual orientation, another White female, Kelly, also discerned that there were few differences. She suggested that changes in societal attitudes, which emphasized greater acceptance, might have influenced her perspective. One URM female, Melissa, reported that in spite of strong religious beliefs, she supported same-sex marriage. Melissa surmised that her openness resulted from being raised in the presence of others who were less religious than her family. One White male, Steve, was "impressed" that his gay interviewee had taken education seriously despite difficulties after his family learned about his sexual orientation. A URM female, Bobbi, reported realizing that an individual's background did not determine sexual preference.

Several participants expressed their intolerance towards relationships that were not solely comprised of a male and a female. One URM female, Alyssa, justified her opposition to same

sex marriage based on religious beliefs. Another URM female, Deborah concurred. She rejected homosexuality and characterized it as a sin based on a conviction that it belied the word of God. In spite of her disagreement, she maintained friendships with gay people. One White male, Henry, raised with the belief that same-sex marriage is wrong in the sight of God, urged that individuals with these particular cravings resist temptation. Like Deborah, he characterized homosexuality as a sin.

Others expressed empathy towards alternative sexual lifestyles. A URM male, George, unopposed to gay marriage, reported that every individual should have the right to decide who they spend their lives with. One White female, Mimi, shared analogous views on same-sex marriage. Commiserating with the struggles of sharing, Kelly had difficulty imagining her interviewee's fear before telling his military family. Jan likened his struggles to her own as an Afro-Caribbean and minority.

Some participants urged the importance of maintaining the same standard of care for all patients. Steve described the significance of valuing differences among individuals. He counseled that healthcare providers treat all patients equally irrespective of beliefs, ethnicity, religion, or skin color. Moreover, he looked forward to using his new knowledge to ensure better patient interactions. Looking at the role of sexual preferences from a dissimilar point of view, a URM female, Sasha, declared that sexual orientation was not necessarily influential in differentiating values. She discovered that her interviewee's values were similar to her own despite the observation that they contrasted with other homosexuals she has known.

One male URM, Herman, suggested that as human beings, we are bound to make judgments. However, he admitted that talking with an individual whose sexual orientation differed from his own caused him to make assumptions. Instead, he suggested that embracing individual differences, while using the same standard of care for all patients, was crucial to oral healthcare practice. This remark aptly captured the inherent value of this instructional approach. In essence, many participants advocated universal kindness and acceptance of all while treating all patients with dignity.

Race, National Origin, and Language. Nearly one fifth of the participants expressed varied viewpoints about others of a race, national origin, or first language that differed from their own. Their perspectives ranged from intolerance and rejection to surprise and curiosity. Some participants portrayed their prejudice. One White female, Maria, shared her bias and confessed that she tended to think particularly of African-Americans as underachieving. She admitted deriving such attitudes from family members and by witnessing personal behaviors among some African-Americans she encountered. She characterized their behaviors as obnoxious and ignorant.

One URM female, Holly, was surprised to discover that her interviewee recognized White people as advantaged compared to minority individuals. Although she agreed, she had never heard anyone state this observation so clearly. Others explicated the significance of communicating effectively with others unlike themselves. For example, one White male, Tom, conceded that approaching individuals without bias or prejudice was imperative. Each time he talked with someone who he assumed was nothing like himself, he had been simply wrong. Based on these experiences, Tom reasoned that outward appearance should not be the basis for making suppositions. One URM male, Adam, revealed that in spite of different nationalities and cultures, individuals could value similar things and ascribe to similar practices. A White female, Katherine, agreed. She emphasized that interactions with future patients would not be restricted to treating those who looked like themselves. Moreover, Katherine asserted that as professionals, they would be expected to be competent in their communications with others across racial groups.

Conducting the interview caused participants to question previously held assumptions. Prior to this interview, one White female, Christine, assumed that Indian men supported the family, ruled the house, showed more authority in terms of rule-making and discipline. Concurring, Devona, a URM female, had imagined that middle eastern cultures were chauvinist. She was taken aback when she learned that both parents of her interviewee worked just like her own parents. Maria, a White female, found a previously held assumption refuted by her

well-spoken and educated African American interviewee. As a result of doing this assignment, Norman, a White male, became aware of his tendency to make generalizations. He conceded that this practice was unwise.

Judging others on the basis of their race and ethnicity also affected participants' attitudes. One White male, Leonard, lamented that sometimes others judged Hispanics negatively for having multiple children. Sam, a White male, was disappointed when he heard that his multi-ethnic interviewee was referred to as a "mixed girl." One URM female, Trisha, admitted that her mother called Vietnamese "backstabbers" and advised her not to trust them. To the contrary, her interactions with Vietnamese classmates and friends were unlike her mother's characterizations. Those experiences confirmed that her mom was wrong. Tom shared that he and his interviewee held very strong cultural identities, his Jewish and hers Jamaican. From this experience, he discovered that despite outward differences there were considerable similarities. With respect to language differences, most students found similar and dissimilar beliefs in comparison to those they interviewed. Bob, a White male, reported that even though they had a different first language, they shared personal beliefs and similar experiences during their upbringing.

Gender. White males were particularly flabbergasted to learn that gender was not the basis for differences among females and males. After completing this assignment, Steven discovered that gender did not change the formation of beliefs and practices. Jacob, another White male, concluded that he developed fewer "boyish" tendencies than those boys in his neighborhood. He reasoned that he was more greatly influenced by his mother than his father. Several participants recognized both the correspondences and distinctions between themselves and their interviewees. One URM female, Carol, was not surprised that she and her male interviewee had similarities and differences. This experience confirmed her insight that outward appearance did not necessarily correspond with a lack of similarities.

Religion. Overall, students wrote less about religion except when discussing how faith impacted their views about sexual orientation. Overall most wrote about the ways in which the

interview (a) enhanced their awareness, (b) resulted in greater acceptance of different faiths and cultural backgrounds, and (c) sensitized them to the limitations associated with making assumptions. One male URM, Saulo, was unaware of the social pressures that people experienced when their religion differed from the majority faith. To illustrate this point, he described how his interviewee felt like an outsider when he performed religious rituals while other children played.

Another URM male, Joe found the interview "eye opening." He gained a better understanding of a person from a different faith, culture, family life, and school environment compared to his own. Through the assignment, he discovered why and how cross-cultural relationships could promote greater acceptance. He asserted that it was ill-advised to make premature postulations about people from different cultural backgrounds. Instead, he urged taking the time to ask questions about a person's background rather than only focusing on the treatment plan. After interviewing someone of the Jewish faith, a White male, David reported having a better understanding of cross-cultural relationships. He felt positioned to better serve patients from varied backgrounds. Following an interview with an individual from India, Janice, another White female, was surprised that her interviewee described herself as a collectivist unlike most Hindis or Muslims from India.

Prior to the interview, one White female, Judy, admitted that her religion was so intertwined with her family that she simply associated them. She realized that this was not the case for the woman that she interviewed. Similarly, Janice considered a view totally outside her own belief system. She suggested that completing the interview had helped expand her horizons. After learning that she and her interviewee were raised quite differently, Lynn, also a URM female, stated that she strove to be respectful of others' views and opinions.

The reflection of Deborah, a URM female, perhaps best summarized the communal sentiments expressed by this pre-doctoral dental cohort. She pointed out as humans, we share diversities and similarities. She stressed that the variety of opinions, backgrounds, and circumstances that define people, influences how each of us perceives the world. The participants'

reflective writings supported her opinion. Participants provided ample evidence their beliefs were molded by society, culture, family, faith, economic status, and education.

Discussion

Quantitative findings showed significant differences in word count between the two assignments, and between URM and majority participants. Findings from the multivariate analysis showed significant effects on factor scores in the multivariate model and among the univariate dependent variables including word count, URM status, gender, assignment, and interview categories. Significant factor dimensions of "past experiences," "inclusive," and "social" echoed throughout the qualitative data in each interview category of personal ableness and SES, sexual orientation, race, national origin and language, gender, and religion. Participants continuously reflected on their "past experiences" with family and friends ("social") as they discussed their interview, often with a new attitude of inclusiveness ("inclusive") "because" of doing this assignment. Reflecting upon past experiences while integrating them with current learning is pivotal to creating awareness and in catalyzing momentum towards enacting change. Without new learning, change is unlikely.

Furthermore, students experienced new insight that sometimes created discomfort ("certain" and "negative emotion"). URM and gender status also contributed nuanced differences in participants' expressions of cultural competency. Findings from this study supported the premise that tailoring educational program to stages and processes of change provided opportunities to bridge factual and conceptual knowledge with practical implementation. However, the application of new knowledge does not always occur readily. If participants have not fully internalized what they have learned, they may be unable to apply new concepts and ideas. The findings in this study corroborated previous research, which showed the effectiveness of a practical learning approach used in medical education (Barrows, 1994). Often, there are considerable similarities between medical and dental education. The National Center for Cultural Competence (NCCC, 2011) suggested integrating cultural competence in health science professional education curriculum to promote awareness and practice. The NCCC also recommended that students receive practical and experiential learning opportunities to foster their recognition of the relationship between conceptual knowledge and practice. This study showed how the linkage between practical and experiential approaches benefitted dental students' understanding, awareness, and recognition of cultural competence.

Recent studies demonstrated that dental practitioners hold somewhat negative attitudes towards the poor and underserved (Catalanotto, Logan, Dodd, Porter, & Davis, 2011; Logan et al., 2014). These attitudes were seen in other healthcare providers whereby unconscious or implicit biases impeded life-saving medical treatment (Green et al., 2007). Placing an emphasis on cultural competence illustrates its crucial role in reducing the trajectory of oral health disparities. Thus, educators are urged to help students develop an awareness of unconscious bias (Teal et al., 2012). Increasing opportunities for students to have contact with those different than themselves is one strategy to reduce persistent and unintentional forms of bias (Burgess et al., 2007; Devine et al., 2012). As this study further suggested, implicit bias can be mitigated by reflective practice to prevent its activation (Devine et al., 2012) and by increasing students' skills to interact confidently and contextually with patients who are culturally different (Burgess et al., 2007; Teal et al., 2012).

As seen in the reflective writings, the study findings demonstrated how instructional activities challenged dental students' personal biases. These activities also exposed them, first hand, to the lived realities of others in ways that catalyzed a shift in attitudes. Sitting together with and listening to individuals unlike themselves created an intimate space that reduced the potential for participants to ignore the impact of group identities including those related to culture, race, ethnicity, social class, gender, and sexual orientation (Sue, 2001). The experience of interviewing caused most participants to confront invalid assumptions and beliefs about groups different from themselves. Rather than defend prevailing assumptions and beliefs, participants seemed to embrace new knowledge and understandings (Behar-Horenstein, & Feng, 2017). The instructional activities described in this article were deliberate. They focused

on the potential for transforming participant knowledge and skills rather than the dissemination of information (Chun, 2010).

Notably, this approach to teaching required considerable investment by the instructor. The notion of reading and evaluating 92 reflective papers is labor intensive and requires subjective evaluation. Reading intimate and personal student descriptions compels a contemplative response, time, and a willingness to offer authentic feedback. Instruction in dental education, historically, has been grounded in the teacher-centric use of lectures and assessments, such as multiple choice tests or quizzes, that can be evaluated efficiently, without much forethought. Therefore, instructor resistance to teaching in the ways described in this article would not be surprising. However, it is just this kind of approach that is likely to foster an awareness of unconscious bias (Teal et al., 2012). Such an approach is desparately needed if the field of dentistry hopes to reduce the trajectory of underserved and unserved patient oral healthcare needs.

Through the application of QUAN→qual sequential mixed methods, the authors explored the thematic content of the qualitative data to better understand how the strategy of "increasing opportunities for contact" impacted a process of change (Devine et al., 2012). As shown with the in-depth qualitative findings, a progression through stages of change led to improvements in dental student's cultural competency. This progression began by experiencing instructional activities that challenged dental students' personal biases while simultaneously exposing them, first hand, to the "lived realities" of others. As shown in other studies, students tend to resist recognizing bias in themselves (Carnes et al., 2012; Uhlmann, 2006). This study did not support those findings. Perhaps the combined use of interviews, opportunities for contact with those different than themselves, and reflective writings successfully reduced persistent and unintentional forms of bias (Burgess et al., 2007; Devine et al., 2012). As demonstrated, experiential learning such as described in this study holds the potential to instill an awareness of others, foment curiosity, and catalyze self-reflection that may lead to fostering empathy and human compassion. The findings showed that remarkable outcomes are possible when educators provide pre-doctoral dental students with authentic culturally competent training.

Implicit bias was seemingly mitigated by reflective practice and increased students' willingness to interact confidently and contextually with interviewees who were culturally different (Burgess et al., 2007; Teal et al., 2012). Whether this type of instructional approach will impact these prospective health care professionals' knowledge, attitudes, and skills across the long term is unknown (Beach et al., 2005). However the findings provided ample support that the instructional activities improved participant knowledge and attitudes towards individuals unlike themselves.

The instructional approaches mirrored at least three of Zull's (2002) proposed four learning cycles. The concrete experiences included the interviews. Reflective writing provided a platform for participants to explore their own beliefs and attitudes and to consider ways to improve health outcomes. The latter provided a mechanism to engage in abstract hypothesizing. Active testing of hypotheses is an activity, which might be observed during clinical rotations, was beyond the scope of this study.

This study replicated previous work (Isaac et al., 2015) and showed similar patterns of significance in students' reflective writings before and after conducting interviews with individuals unlike themselves. Ultimately, until each of us creates opportunities to sit down and have conversations, we cannot begin to know something about one another. Author findings that were replicated in this study included (a) realizing the limitations of making assumptions about others based solely on appearance, (b) discovering that persons with mental disabilities and impaired social interactions had the capacity to understand social issues, (c) believing that poor people were lazy and do not want to work, (d) making assumptions based on stereotypes, and (e) recognizing the similarities between childhood and family lives, and values among individuals with different sexual orientations.

The reflective writings provided rich descriptions of students' responses as they evaluated interviewees' experiences and relayed own reactions. Often participants spoke about how they would approach similar circumstances in future instances or as practitioners, thus

stressing the value of this instructional approach (Berwick et al., 2008; Logan et al., 2014) and illustrating Zull's abstract hypothesizing. Perhaps the combined use of interviews and reflective writings inherently lessened participants' resistance. Certainly, it enhanced engagement as they engaged in self-assessment of their cultural competency (Prochaska, 2008; Prochaska & DiClemente, 1983).

Previous studies have advocated for increasing the application of the mixed-method approach in health science research (Östlund, Kidd, Wengström, & Rowa-Dewar, 2011). However, mixed method studies in health sciences often collect and analyze quantitative and qualitative data separately (Onwuegbuzie & Teddlie, 2003). This study provided a successful example of how the QUAN→qual sequential mixed methods can be employed in health science research. The application of the QUAN→qual sequential mixed methods design helped researchers analyze participant information comprehensively, as they considered the interaction between quantitative and qualitative findings. Utilization of a mixed methods approach offered deep and substantial findings beyond that which would have been realized by the sole employment of qualitative or quantitative data collection and analysis.

At the most global level, this study addressed, in part, the ever-present challenge for the oral health profession to reduce the extent of oral disease among racial and ethnic minority populations (Spencer & Trigilidas, 2016). In the context of oral health disparities, what is most needed is an evidence-based methodology to teach, develop, implement, and evaluate cultural competency, especially since future dentists will likely treat patients who differ from them in many ways that include racial, ethnic, culture, preferred first language, and care-seeking behaviors and ideas about dental treatment. Cultural competence training in dental school is designed to aid in this area since students who receive training in cultural competence are more likely to report intentions to treat culturally-different patients. Understanding access to care barriers such as perceived or actual patient or provider differences in culture and language against non-concordant patients is likely to increase patient satisfaction and enable remedies for problematic patient experiences

(Spencer & Trigilidas, 2016). The literature provides little guidance to dentistry regarding curriculum modifications and teaching methodologies needed to graduate culturally competent dentists (Alrqiq, Scott, & Mascarenhas, 2015; Pilcher, Charles, & Lancaster, 2008). This article represents one attempt to address that need.

Limitations and Future Research

Limitations of the study may have occurred from assigning reflective writing. The use of an instructor generated reflective writing prompts may have influenced participants' willingness, ability, and capacity to share their thoughts and experiences as well as what they learned from interviewees. Perhaps the use of a less structured protocol may have produced other findings. However, the learning experiences and instructional activities implemented in this study replicated the findings of previous research (Isaac et al., 2015). We believe that it provides a basis for future studies, which might focus on increasing the frequency of interaction and level of collaboration between dental students and the community. By increasing the frequency of interactions and providing them earlier in the curriculum, we theorize that students will experience constructive change. In turn, these activities might propel them beyond the consciousness-raising stage toward an individual commitment and desire to engage in fostering relationships with those who lack sufficient access to dental care. Implementing experiential learning experiences demonstrates in real time a recognition and sense of relatedness to concepts of cultural competency and health disparities, which typically have been delivered solely through didactic coursework. Studies have suggested that learning experiences, which provide opportunities for students to witness health care access and disparities-related issues, as well as observe the impact of patient culture, lifestyles, and behaviors, can inform patient and provider interactions and services (Behar-Horenstein et al., 2015). Placing students in experiential activities fostered (a) a simultaneous determination of needs, (b) exploration of behavioral health determinants, and (c) consideration of effective ways to advocate for health (Worley, Prideaux, Strasser, Magarey, & March, 2006). Because it is difficult to deny a problem one has seen firsthand, the authors contend

that this approach lowered students' resistance while responding to such information.

A service immersion experiential learning approach, such as the one described in this article, signals trust in the student's ability to respond appropriately to the expressed needs of others unlike themselves. This methodology allowed students to use, demonstrate, and further develop their creative skills and technological prowess, while reducing the dreaded burden of classroom "seat time." More than didactic work, authentic experiences are more likely to foster skills development and encourage students to use those skills for effective problem-solving, improved communication, negotiation, and collaboration with peers and community partners. Using active learning approaches alleviates course instructors' sole reliance on didactic teaching methods and the potential power struggles with challenging students. As healthcare continues to embrace team science and interprofessional educational models, it is time to capitalize on potentially rich data sources. In this regard, mixed methods inquiry has the capacity to inform faculty and educational researchers about emergent outcomes that result from these efforts.

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