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Implicit Attitudes of Health Care Providers and their Effect on Racial and Socioeconomic Equality

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Abstract

Our study uses two survey instruments to measure the explicit and implicit attitudes of medical and pharmacy students regarding issues of culture and race. The surveys are designed to assess which aspects of cultural competency are the most challenging for health professional students, as well as to measure their subconscious attitudes towards people of different races. The data from this project is valuable in two ways. It replicates the work of White-Means et al. (2009) in a different region of the U.S., thereby advancing our understanding of how the diverse social context of Southern California impacts cultural competency and provider attitudes as compared to other regions of the country. Additionally, it provides a baseline assessment to aid in the implementation and evaluation of cultural competency curriculum that is tailored to our population of students. Our research shows a high prevalence of implicit racial bias among health professional students. This project is relevant to every provider of health care because it addresses some of the unconscious cognitive processes that all providers bring to their interactions with patients.

Background

Disparities in health outcomes among people of different race, socioeconomic status, and insurance status are well documented in the literature and have been acknowledged as a problem by U.S. health policy makers (Smedley et. al. 2003). Despite this, there is not much awareness in the medical community that we, as providers of health care, may contribute to disparities despite our best intentions (Burgess 2011). In fact, the problem is multifaceted and there are multiple patient factors, societal factors, and provider factors that all impact the quality of care that each individual receives. In this study, we hope to shed light on the provider factors that contribute to unequal treatment of patients in order to raise awareness of the possibility of provider bias, and to advance efforts to improve cultural competency training in health care education. As health care providers, we have a responsibility to advance equality in our field and improve cross-cultural communication. To make this possible, we must assess our own comfort level in interacting with patients from different cultural and racial backgrounds and become aware of the more subtle biases that we hold. Self-awareness is an important first step towards improving how we are educated and how we serve our patients as health professionals (Teal et. al. 2012).

Multiple studies show that health care provider bias has a measurable effect on patient experience as well as therapeutic and referral options offered to patients across various fields of medicine. For example, a landmark study in the *New England Journal of Medicine* showed that Black women were less likely to be referred for cardiac

catheterization than other patients, despite identical clinical presentations (Schulman et. al. 1999). According to cognitive scientists, when providers are faced with clinical uncertainty, they have a greater tendency to rely on stereotypes to facilitate medical decision-making. Under conditions of stress, distraction, and sleep deprivation there is an even greater tendency for the subconscious mind to fill in blanks about a patient with stereotypes that the provider may not even be aware he or she holds (Burgess et. al. 2004). Our subconscious thought patterns (implicit attitudes) may be quite different from the conscious beliefs we hold on equality (explicit attitudes).

Despite the fact that many providers aspire to an ideal of equality, their subconscious attitudes can have a measurable effect on outcomes disparities in terms of the treatment options they present to a given patient. Green et. al. showed that while providers explicit attitudes did not affect their clinical decision making, implicit bias was a strong predictor of whether or not they prescribed thrombolysis to Black patients (2007). Additionally, Penner et. al. have shown that patients are sensitive to providers' bias, even when it is subconscious and *especially* when it is contrary to the provider's explicitly held egalitarian beliefs (2010). Therefore provider bias, whether conscious or not, has the potential to compromise provider-patient rapport, impacting the therapeutic relationship that is so important for patient compliance.

In order to elucidate potential discrepancies between conscious (explicit) and subconscious (implicit) attitudes on race, we assess each of these cognitive domains with a different survey instrument. By assessing medical professional students, our hope is to stimulate self-reflection in these budding practitioners and to spread awareness that our beliefs and thought processes affect the quality of care we provide. Additionally, medical education is embracing the need for more effective cultural competency training. Our study provides an opportunity to collect valuable data on the cultural competency of our student population. We hope that this data will inform future endeavors to improve curriculum at the University of California, San Diego (UCSD) and to provide a baseline to show the effectiveness of an evolving curriculum.

Methods

Population:

Our study replicates the work of White-Means et al. (2009) in which health professional students' explicit attitudes on cultural competency and implicit racial bias are assessed with two survey instruments. The data for this study was collected in a cross-sectional fashion during the 2011 - 2012 academic year after obtaining institutional review board (IRB) approval. Paper surveys were administered to students in the Schools of Medicine and Pharmacy at UCSD in various classroom settings. Before administering the surveys we read the students a verbal consent which included a brief description of our project, and collected non-identifying demographic information.

After excluding surveys that were incompletely or incorrectly filled out, respondents included 4 first-year medical students, 4 second-year medical students, 43 fourth-year medical students, and 55 second-year pharmacy students. Response rates varied due to the accessibility of the students as dictated by their curricula. In particular, medical students in their preclinical years were difficult to access in large groups

because they primarily work within a small-group based curriculum at UCSD. Given the sample sizes and the differences in response rate among medical students by graduate year, care must be taken when attempting to compare the groups' level of cultural competency or bias.

Measures of Cultural Competency and Bias:

To assess subjects' explicit or conscious attitudes we used a survey instrument developed by Assemi and Cullander that touches on multiple aspects of interacting with diverse patients. This survey instrument was developed as a before and after assessment of students undergoing cultural competency training as part of pharmacy education at the University of California, San Francisco (2004). This cultural competency self-assessment asks a participant to rank their level of confidence on a 1-5 scale in each of twelve items dealing with different aspects of provider-patient interaction or definitions related to the foundations of cultural competency.

To capture our subjects' implicit attitudes, ie. bias that may not be reflected in the cultural competency self-assessment, we use an Implicit Association Test (IAT). The IAT was developed in 1998 by a team of psychology researchers called Project Implicit who collaborate to study thoughts and feelings that are outside of conscious control. The IAT measures the relative ease of associating concepts from different categories by measuring a subject's latency time in pairing these concepts. For example, our minds more quickly pair insects with unpleasant words than flowers with unpleasant words. The IAT was developed as a computer-based survey that uses pictures; for example a Racial IAT would contain pictures of Black and White faces, along with positive and negative words. If a participant can more quickly associate positive words with White faces than Black faces, then this person has an implicit preference for Whites.

For ease and cost effectiveness we used an all-verbal paper-format IAT administered and scored as described by Lemm et. al. (2008). To construct our IAT, we selected from lists of positive words, negative words, and common White American and Black American names that have been validated for use in paper-based IATs (Greenwald et. al. 1998). We created a sheet with a central column of these words flanked by columns with category headings. Each participant completed two sheets; sheet A was headed with the two categories Black-Unpleasant and White-Pleasant, and sheet B with the two categories White-Unpleasant and Black-Pleasant.

Our subjects were primed with two practice sheets requiring them to categorize insects, flowers, and positive and negative words so that they could get accustomed to the task and the changing category headings. Then the order that sheets A and B were presented was randomized to negate the effect that order of presentation has on IAT effect. Participants were given twenty seconds per sheet to categorize as many of the names and positive and negative words into the above categories. When the two items in each category are bias-congruent, it is easier to categorize and a participant should get farther in the allotted time. The number of items categorized on each sheet is compared to ascertain whether the participant more easily associates Blacks or Whites with unpleasant concepts, and thus what type of bias the subject holds.

Before analyzing our data, surveys that were incompletely or incorrectly filled out were excluded. If a subject omitted answers to any demographic or survey questions, or

left a sheet blank their entire survey set was omitted from analysis. If the subject completed the IAT incorrectly their entire survey set was omitted, with incorrect completion defined as follows: categorizing both sheets the same way rather than taking note of changing category headings, or categorizing only positive and negative words, with names either skipped or all placed into the same category. We also discarded IAT data from pharmacy students who completed all twenty items on both sheets of the IAT, as described below.

After the first administration of our paper IAT to the group of pharmacy students, we modified the column of validated names and words to include 30 rather than twenty items. This change was made because many subjects were able to categorize all twenty items on one or both sheets in the twenty seconds, thus weakening our observed IAT effect score for the pharmacy student group. Additionally, there was an artifactual increase in the number of bias neutral pharmacy students because some subjects were able to categorize all twenty items on both sheets. In order to rectify this, we lengthened the IAT to include thirty items and discarded IAT data from the pharmacy student database if a subject had completed twenty out of twenty items on both sheets.

Statistical Analysis:

We provide descriptive data on the mean and standard deviation of the cultural competency self-assessment scores as a total score, as well as by individual survey item for the medical student and pharmacy student groups as a whole. We also sort the mean of total cultural competency score by graduate major, graduate year, race, and gender. We used T-tests to identify statistically significant differences in self-perceived cultural competency according to these categories.

In order to quantify the magnitude of bias detected by our IAT instrument, we used Lemm et. al's *product: square root of difference* method for calculating an IAT effect score (2008). This mathematical transformation accounts for both the difference between the number of items completed on each sheet, as well as the ratio of the number of items completed on each sheet to remove artifact created by differences in individual speed of completion. The formula takes the total number of items categorized from each sheet, calling X the greater of these two numbers and Y the smaller. The IAT effect score is calculated as $(X/Y) * \text{Square Root of } (X - Y)$. In order to capture the directionality of the IAT effect, ie whether the subject prefers Whites or prefers Blacks, the resulting score is multiplied by -1 if the subject scored higher on the sheet that paired Black-Pleasant. Thus, subjects with a positive IAT effect score prefer Whites and those with a negative IAT effect score prefer Blacks. Those who categorize the same number of items on each sheet will have a score of zero and are said to be unbiased.

We report the overall percentage of subjects exhibiting preference for Whites versus Blacks, and those who are race neutral. Racial preference data from our IAT is also sorted by the race of the subject and compared to national data as reported by Project Implicit for the computerized race IAT. Mean IAT effect scores are calculated according to subjects' graduate major, graduate year, race, and gender. T-tests are used to identify statistically significant differences in IAT effect scores according to these categories.

Of note, our IAT effect scores are calculated using a different formula than those reported by White-Means et. al. as they used a computer-based IAT with a different scoring algorithm than our paper-based IAT. For this reason our IAT effect scores are scaled differently than White-Means', which must be considered when comparing the two data sets.

Results

Cultural Competency:

A total of 105 respondents completed the cultural competency self-assessment. Table 1 reports mean scores by item and graduate major. Scores for each survey item range from 1 to 5, therefore total cultural competency scores could range from twelve to sixty. The mean total score for our respondents was 44.30, with means of 45.52 for medical students and 43.20 for pharmacy students. Our overall mean is higher than those reported by White-Means (42.05) or the originators of the instrument, Assemi et. al. (33.35).

As in both of these previous data sets, we found that the highest scored individual item for all groups is question two, which relates to comfort level in dealing with diverse patients. As in White-Means' population, our two lowest mean scores were for questions eleven and six across all groups. Question eleven relates to confidence in using an unskilled interpreter, and question six relates to the ability to identify the elements of culturally competent health care. Using unskilled interpreters is generally not endorsed as a legitimate way of communicating with patients because of its obvious pitfalls, and identifying the elements of culturally competent care, while important, is somewhat removed from the actual provider-patient interaction.

Delving a bit deeper into the lower scored items reveals that our students also had relatively low means on questions seven and eight. These questions relate to eliciting a patient's perspective of illness and healing and may be more relevant as areas that could be emphasized in cultural competency training.

Table 1: Mean Values of Cultural Competency scores by Question and Graduate Major

	Overall		Medicine		Pharmacy	
	Mean	SD	Mean	SD	Mean	SD
Q1	3.66	0.93	3.66	0.98	3.65	0.89
Q2	4.28	0.67	4.30	0.68	4.25	0.67
Q3	3.77	0.96	3.78	1.04	3.76	0.90
Q4	4.02	0.69	4.04	0.64	4.00	0.75
Q5	3.83	0.78	3.90	0.76	3.76	0.79
Q6	3.30	0.92	3.50	0.86	3.13	0.94
Q7	3.59	0.85	3.84	0.79	3.36	0.85
Q8	3.55	0.81	3.76	0.69	3.36	0.87
Q9	3.66	0.90	3.68	0.79	3.64	0.99
Q10	3.61	0.78	3.58	0.73	3.64	0.82
Q11	3.18	1.03	3.38	0.97	3.00	1.05
Q12	3.86	0.89	4.10	0.74	3.64	0.97
Total Score	44.30	10.21	45.52	9.66	43.20	10.49

Table 2 shows means for total cultural competency score parsed by the characteristics of our survey subjects. Contrary to White-Means' data, we observed an increase in the cultural competency score over the course of medical education. However, these differences were not shown to be statistically significant based on T-tests. Multivariate analysis of cultural competency scores also indicated that none of the characteristics of our subjects independently predicted cultural competency score.

Table 2: Mean Values of Cultural Competency Scores by Subject Characteristic

	Mean
Overall	44.30
Asian	43.75
Black	-
Hispanic	41.60
White	46.20
Black & White	43.00
Other	43.00
Male	44.53
Female	44.17
Medicine	45.52
-Years 1&2	43.25
-Year 4	45.95
Pharmacy	43.20

The Implicit Association Test:

A total of 92 respondents completed our paper-based IAT. Table 3 summarizes our subjects' racial preferences revealed by their IAT effect scores, sorted by subject characteristics. The distribution of racial preference was skewed towards an increased number of students who preferred Blacks or were race neutral when compared to White-Means' data. When compared to Project Implicit's national data collected via the computerized Race IAT, however, our population shows increased racial bias, both in terms of White preference and Black preference. Their numbers indicate a 70% prevalence of White preference, a 12% prevalence of Black preference and a 17% prevalence of race neutrality.

Table 3: Distribution of Racial Bias Revealed by IAT

	Preferred Blacks	Neutral	Preferred Whites
Overall (92)	22.83% (21)	4.35% (4)	72.83% (67)
Asian (53)	20.75% (11)	3.77% (2)	75.47% (40)
Black (0)	-	-	-
Hispanic (5)	20.00% (1)	0% (0)	80.00% (4)
White (28)	25.00% (7)	7.14% (2)	67.86% (19)
Black and White (1)	100.00% (1)	0% (0)	0% (0)
Other (5)	20.00% (1)	0% (0)	80.00% (4)
Medicine (50)	24.00% (12)	8.00% (4)	68.00% (34)
-Years 1&2 (8)	37.50% (3)	0% (0)	62.50% (5)
-Year 4 (42)	21.43% (9)	9.52% (4)	69.05% (29)
Pharmacy (42)	21.43% (9)	0% (0)	78.57% (33)
Male (37)	24.32% (9)	8.11% (3)	67.57% (25)
Female (55)	21.82% (12)	1.82% (1)	76.36% (42)

Table 4 shows the distribution of our subjects' IAT scores. Positive scores indicate a preference for Whites and negative scores indicate a preference for Blacks. The magnitudes of the score reflect the strength of racial bias as gauged by the IAT. Interestingly, the positive IAT effect scores, reflecting preference for Whites, are much more extreme than the negative scores. This would imply that not only is White preference very prevalent in our population at almost 73% of our subjects but, when present, it is much more extreme in nature than the Black preference exhibited by almost 23% of our subjects.

Table 4: Distribution of IAT Effect Score

Percentile	IAT Effect Score
1%	-4.498
5%	-3.143
10%	-2.500
25%	0.000
50%	2.428
75%	4.714
90%	7.348
95%	11.888
99%	38.243

Table 5: Mean Values of IAT Scores by Subject Characteristic

	Mean
Overall	2.982
Asian	3.874
Black	-
Hispanic	2.321
White	1.999
Black & White	-2.132
Other	0.723
Male	3.226
Female	2.818
Medicine	2.999
-Years 1&2	0.417
-Year 4	3.491
Pharmacy	2.962

Table 5 displays the mean IAT effect scores by subject characteristic. The negative scores, indicating subjects with a preference for Blacks, have largely averaged out, indicating that these individuals are not clustered in any particular category according to the subject characteristics we collected. In fact, as Table 6 shows, we did not find any significant correlations between our subjects' characteristics and their racial preference. The two characteristics that approached significance are race and graduate major, with Asians being more likely than Whites to exhibit White preference and pharmacy students being more likely than medical students to exhibit White preference. With a larger sample size we may have had the power to find that these are significant associations.

Table 6: Correlation of Subject Characteristics with IAT Effect Score

Characteristic	Coefficient	P value
Cultural Competency score	0.075	0.475
Medicine	1.000	
Pharmacy	5.203	0.085
Asian	1.000	
Hispanic	-0.682	0.8
White	-2.464	0.074
Black & White	-6.015	0.286
Other	-3.638	0.181
Male	1.000	
Female	-0.130	

Correlation of Explicit and Implicit Measures:

Unlike White-Means, we did not find a correlation between our cultural competency scores and our IAT effect scores.

Discussion and Conclusion

This project represents an important shift in focus towards considering the provider side of health outcome disparities in the United States. Much of clinical outcomes research is focused on painstaking collection and examination of patient characteristics and their association with outcomes, to the detriment of considering how providers contribute to outcomes. In order to address all of the root causes of health outcomes disparities, it will be essential to quantify and remediate the bias of health care providers, both conscious and subconscious. Additionally, studies have shown that many providers of health care are unaware of the literature that clearly implicates providers as contributors to health outcomes disparities.

The prevalence of racial bias that our study documents in health professions students is alarming when taken in the context of a large body of research showing how such bias negatively impacts patient care. Cognitive scientists have shown that under conditions of uncertainty, stress, and sleep deprivation, health care providers rely on stereotypes to make important medical decisions. Given that many health care providers are unaware of their own bias, we feel that this project is an important step towards increasing the evidence that bias is prevalent in our population. Once awareness of the problem is brought into mainstream consciousness, there will be increased motivation to address this significant problem in American healthcare through improved education and training.

Our study echoes White-Means' finding that there is a higher prevalence of racial bias among health professional students than in the national pool of subjects who have completed the online Race IAT. One of the more notable findings in our data was the extreme skew of our IAT effect scores in the direction of strong preference for Whites. In this sense, our categorization of biased versus neutral subjects does not adequately capture the magnitude of our subjects' White preference when compared to the magnitude of their Black preference. Also notable was the trend towards significance of increased bias in the pharmacy student population compared to the medical student population, especially when considered in the context of the racial composition of the subjects themselves. It is possible to hypothesize that a diverse cohort creates an environment that decreases racial bias. This warrants further study, but it is reasonable to advocate for increased diversity among health professional students as a means to decrease the racial bias that plagues our health care system.

Our cultural competency data shows the same trends as in previous studies, supporting the validity of the cultural competency instrument. Many factors may contribute to our subjects' higher total scores than those seen in previous cohorts. These include increased cultural awareness in the general population as time goes by, geographical differences, or differences in the way health professions students are selected or trained over time and at different institutions. The relatively lower scores on items seven and eight may prove a valuable target for efforts to refine cultural

competency curricula at UCSD. These items relate to eliciting a patient's perspective of illness and healing, which are challenging aspects of the patient-provider interaction especially when there is a cultural gap to be bridged. Despite this, the skill set involved in listening to a patient and validating their experience is something that can be practiced and improved upon and may make cultural competency training more interactive and rewarding as a result.

Strengths of our study include the two-pronged approach for assessing both conscious and subconscious attitudes on race. This approach more robustly quantifies the components of a culturally competent health care provider than a single instrument could. Weaknesses include the small sample size which likely diminished our ability to elucidate significant trends. Additionally, the IAT was expanded after surveying the pharmacy student group in order to make it more robust. Our original survey may have weakened the IAT effect we saw in this subset of our population. Interestingly, we did not find a correlation between the subject characteristics we collected and subjects' racial preferences. This indicates that there are many unmeasured characteristics of our subjects that are major contributors to their racial preferences and deserve to be explored in future work.

Our hope is that the cultural competency data from this study will inform curriculum development that is appropriate to our population of students. There is a growing body of cognitive science literature devoted to the most effective ways to work with students to improve cultural competency and to address subconscious bias (Teal 2012). Additionally, we hope to contribute to an expanding awareness and body of research recognizing the provider contribution to disparities. In light of the prevalence of bias in our population, it is not surprising that health care providers are strong contributors to racial differences in health outcomes.

Appendix

Cultural Competency Self-Assessment

Using the following scale, please circle your answer choice for each question:

- 1 = *not at all confident*
- 2 = *not very confident*
- 3 = *moderately confident*
- 4 = *very confident*
- 5 = *extremely confident.*

How confident are you in your ability to:

Q1: Accurately define and describe the difference between ethnicity, culture, and race.

1 (not at all) 2 3 4 5 (extremely)

Q2: Feel comfortable interacting with people of diverse backgrounds.

1 (not at all) 2 3 4 5 (extremely)

Q3: Accurately explain the difference between a stereotype and an assumption.

1 (not at all) 2 3 4 5 (extremely)

Q4: Recognize assumptions you have or make about different groups of people.

1 (not at all) 2 3 4 5 (extremely)

Q5: Identify the influence of stereotypes on your thoughts, feelings, and behaviors towards different groups of people while providing patient care or education.

1 (not at all) 2 3 4 5 (extremely)

Q6: Accurately list and describe elements of culturally competent health care.

1 (not at all) 2 3 4 5 (extremely)

Q7: Elicit a patient’s perspective of illness during a patient encounter or consultation.

1 (not at all) 2 3 4 5 (extremely)

Q8: Elicit a patient’s perspective of healing and medication therapy during a patient encounter or consultation.

1 (not at all) 2 3 4 5 (extremely)

Q9: Effectively monitor the therapy of a patient from a background different than your own.

1 (not at all) 2 3 4 5 (extremely)

Q10: Effectively counsel a patient from a background different from your own on their medications or supplements.

1 (not at all) 2 3 4 5 (extremely)

Q11: Effectively utilize an unskilled interpreter to interview or counsel a patient.

1 (not at all) 2 3 4 5 (extremely)

Q12: Effectively utilize a skilled interpreter to interview or counsel a patient.

1 (not at all) 2 3 4 5 (extremely)

Example Implicit Association Test

White Unpleasant		Black Pleasant
<input type="radio"/>	happy	<input type="radio"/>
<input type="radio"/>	Tanisha	<input type="radio"/>
<input type="radio"/>	evil	<input type="radio"/>
<input type="radio"/>	Matthew	<input type="radio"/>
<input type="radio"/>	love	<input type="radio"/>
<input type="radio"/>	Malik	<input type="radio"/>
<input type="radio"/>	paradise	<input type="radio"/>
<input type="radio"/>	Rachel	<input type="radio"/>
<input type="radio"/>	poison	<input type="radio"/>
<input type="radio"/>	Sharise	<input type="radio"/>
<input type="radio"/>	vomit	<input type="radio"/>
<input type="radio"/>	Lionel	<input type="radio"/>
<input type="radio"/>	miracle	<input type="radio"/>
<input type="radio"/>	Lashelle	<input type="radio"/>
<input type="radio"/>	hatred	<input type="radio"/>
<input type="radio"/>	Nancy	<input type="radio"/>

<input type="radio"/>	abuse	<input type="radio"/>
<input type="radio"/>	Justin	<input type="radio"/>
<input type="radio"/>	honest	<input type="radio"/>
<input type="radio"/>	Katie	<input type="radio"/>
<input type="radio"/>	filth	<input type="radio"/>
<input type="radio"/>	Tyrone	<input type="radio"/>
<input type="radio"/>	peace	<input type="radio"/>
<input type="radio"/>	Brad	<input type="radio"/>
<input type="radio"/>	friend	<input type="radio"/>
<input type="radio"/>	Lakisha	<input type="radio"/>
<input type="radio"/>	crash	<input type="radio"/>
<input type="radio"/>	Darnell	<input type="radio"/>
<input type="radio"/>	loyal	<input type="radio"/>
<input type="radio"/>	Betsy	<input type="radio"/>

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