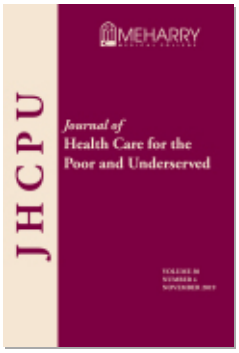
Altered Emotional Intelligence through a Health Disparity Curriculum: Early Results



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ORIGINAL PAPER

Altered Emotional Intelligence through a Health Disparity Curriculum: Early Results

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Abstract: **Introduction**. Emotional intelligence (EI) interests medical schools as a predictive factor in their graduates' clinical success. Historically black college and university (HBCU) academic health centers produce professionals to address health disparities. This preliminary study evaluated a health disparity reduction curriculum's effect on EI. **Methods**. Thirty-one undergraduates participating in a Meharry Medical College health disparity reduction program voluntarily self-reported demographic and EI data before and after service-learning training. **Results**. Paired sample t-test results demonstrated significant improvement in EI subscales of total score (p = .004), self-awareness (p=.001), self-confidence (p=.007), self-control (p=.041), motivation (p=.020), and social competence (p=.036). Multiple linear analyses confirmed African American race significantly predicted EI-Motivation (F [1,29] = 5.858, p =.022). **Conclusions**. These preliminary data support a beneficial effect in African Americans of a health disparity curriculum to improve EI, particularly the relevance of race to motivation. Future research should examine EI in HBCU medical school students.

Key words: Health disparities, curriculum, African American, emotional intelligence.

Theorists have long recognized a psychological distinction in individuals demonstrating the abilities to discern and manage emotions in themselves and others. Emotional intelligence (EI) generally describes the non-cognitive skills that effectively manage the feelings and behaviors that serve personal and professional relationships. In the context of professional education, EI research[1] elaborates those skills as adaptive abilities students develop that allow the integration of emotion management with the knowledge gained from formal learning experiences. For example, EI development is viewed as an essential medical education outcome because it allows students to hone

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critical assessment skills of personal strengths and weaknesses as educational expectations during patient-interactive training experiences,[2] in their clinical clerkships,[3] and, possibly, along into their clinical careers.[4] Emotional intelligence becomes even more significant with collegiate and professional education when curricula adapt to millennial student social and emotional abilities. Psychological testing indicates significant differences in personality style compared with previous generations that might affect how information is learned.[5] Notably, little EI research assessing EI in healthy millennial cohorts has occurred in general undergraduate populations with no known physical or mental illness.[6,7] Innovative educational approaches should incorporate this manner of drawing empirical distinctions to devise the best curricula to educate undergraduate and professional students.

Understanding and evaluating EI is important in primary care because important components of successful clinical practice are not necessarily directly related to core medical knowledge or hands-on clinical skills. For example, the use of emotional behavior and facial expression has been described in meta-analyses as a key component of clinical competence.[8] Correlations have been found in leadership traits associated with building successful doctor-patient relationships and emotional intelligence in family practice physicians.[9] Serial evaluation of annual EI training demonstrated self-identified improvements in conflict resolution and professional teamwork in chief resident physicians.[10] Finally, patient surveys suggest that physician providers with higher EI measures demonstrate greater patient satisfaction in the care they received.[11]

Historically Black college and university (HBCU) undergraduate and academic health centers (AHC) are uniquely positioned to address EI questions because of their mission focus on developing their graduates into civic-minded assets for their communities. The AHCs at HBCUs develop their curricula to prepare their students to address health disparities. Racial/ethnic heath disparities are different in a host of areas of health, health services, and health policy that present along racial/ethnic lines but are not strictly due to access-related factors or clinical needs, preferences, or appropriateness of intervention.[12] For example, when one subpopulation (e.g., African Americans) suffers more often from a health condition (such as cardiovascular disease [CVD]) than another (e.g., non-Hispanic Whites), this describes a health disparity in the incidence of CVD between African Americans and non-Hispanic Whites. This definition has been expanded to include social, economic, political, and identity experiences of affected stakeholders beyond racial and ethnic differences. For the past decade, the Meharry Medical College (MMC) Historically Black College & University (HBCU) Wellness Project has trained hundreds of HBCU undergraduates across Tennessee using a service-learning, community-based research curriculum to implement community-based health disparity reduction interventions. Broadly defined, service-learning combines purposeful community service with formal instruction and structured reflection, civic responsibility, and personal growth;[13,14] this approach reflects the primary care focus of the MMC mission (http://www.mmc.edu/about/mission-vision.html). Developing EI can be an essential component of maximizing outcomes from service-learning training because EI allows students to hone critical assessment skills of personal strengths and weaknesses as the challenges of educational expectations increase in their academic careers.[15] This preliminary study seeks to examine how a

convenience sample of HBCU collegiate trainees rate their EI both before and after a health disparity focused service-learning program. The hope is that the work reported as a pilot study here will give rise to future work in a HBCU medical student cohort to determine the effect of a broader academic health center (AHC) health disparity reduction curriculum on EI.

Methods

Participants and setting. Meharry Medical College (MMC [www.mmc.edu]) is a HBCU AHC that has a century-old history of training minority and underrepresented students in the health professions (including physicians, dentists, and public health practitioners), with a particular focus on primary care.[16] The MMC HBCU Wellness Project is a service-learning based undergraduate training program primarily funded by the State of Tennessee designed to address health disparities through the development and implementation of community-based interventions by Tennessee HBCU undergraduates. Regardless of their initial academic majors, the majority of undergraduates trained through the MMC HBCU Wellness Project (as well as their home undergraduate institution) pursue health care careers after graduation. The MMC HBCU Wellness Project curriculum[17] and its summer training on the MMC campus engages undergraduates in service learning; community collaboration; ethical human-subject research techniques; and civic engagement. During this team-building-based training, volunteer trainees receive project and professional mentoring from MMC faculty and senior staff. The program mentors are accessible throughout collegiate trainee project development and implementation. Beginning with the summer training, this mentoring focuses on interpersonal skills needed for project development, community implementation, data presentation, and peer-to-peer relationships among themselves and students from other HBCU institutions.

Potential study participants are HBCU students from three Tennessee college campuses (Fisk University in Nashville, Lane College in Jackson, and Lemoyne-Owen College in Memphis). For acceptance into the summer training program, students complete an application and interview process. Collegiate participant inclusion criteria[17] across the three HBCU campuses are: 1) American citizenship, 2) full-time academic enrollment in a Tennessee HBCU, 3) completion of at least one English composition class, 4) reasonable unscheduled time to devote to training, and 5) a two-year service commitment to the program. The exclusion criteria are: 1) inability to maintain a 2.0 grade point average and 2) any present MMC employment. Approved students are not required to already be health or science majors. The trainees receive a $500 stipend if they participated in the entirety of all training activities, regardless of the voluntary project evaluation components.

Procedure. The MMC HBCU Wellness Project employs a survey on emotional intelligence as one means to evaluate its curriculum.[18] The other evaluation component is a 500-word self-reflection essay of the training experience that is not part of this study. Trainee participation in all evaluation components is voluntary. Project staff administer the one-page EI survey to the trainee group in August 2016 before the first training activity and again to the group after the final training exercise. No student is

compensated for completing either the pre-training or the post-training survey. After the completion of training and evaluation, program staff collect and collate the material and received formal MMC Institutional Review Board (IRB) approval to analyze the EI data retrospectively.

Measures. The structured survey (Figure 1) developed from an EI questionnaire metric[18] is used in educational settings with millennial professional students.[19] This self-reported survey contains two components. The first asks for demographic information that includes previous health disparity program experience, science, technology, engineering, and mathematics (STEM) major or other major, gender, race/ethnicity, and years of education. The second component consists of 30 Likert-type, self-rating questions that assess frequency of conscious cognitive EI, from a score of one denoting "virtually never" through a score of five meaning "virtually always." This instrument has six domains ("self-awareness," "self-confidence," "self-control," "empathy," "motivation," and "social competency") that yield the total EI score. If subjects respond to every question in the affirmative, the highest total score tabulated from all six domains is 150; the lowest is 30. (Each of the six domains has a maximum score of 25.)

Statistical analysis. The Statistical Package for the Social Sciences ([SPSS] IBM New York) is used to perform student's t-tests to determine differences in pre-training and post-training EI total and domain measures. With the same software, multiple linear regression analyses are performed to determine which demographic variables significantly contributed to the pre- and post-training differences on EI subscales and the overall EI score. Due to the small sample size, nonparametric Wilcoxon signed–rank tests are performed as benchmarking tools to determine significant difference of EI results for consistency.

Results

Ninety-four percent (94%) of all participants (31 of the 33 MMC HBCU Wellness Project trainees) completed the EI surveys before and after service-learning training. Eighty-seven percent (87%) identified themselves as African American, with the remainder identifying themselves as either African or non-Hispanic White. Seventy-seven percent (77%) were female. Their mean age (and standard deviation) was 21.6±3.6 years with a mean of 13.2±.76 years of educational attainment. Approximately 42% of the 31 participants had completed an earlier formal training experience with this program. The participants demonstrated a significant difference between pre- and post-training measures (Table 1). Specifically, significance differences were demonstrated with total EI scores for pre-test (M=117.1, SD=14.0) and post-test (M=122.9, SD=13.4) conditions: $t(30) = 3.134$, $p = .004$. The significant difference for EI subscales of self-awareness scores for pre-test (M=19.1, SD=3.4) and post-test (M=20.6, SD=2.9) conditions: $t(30) = 3.774$, $p = .001$ and self-confidence scores for pre-test (M=18.2, SD=3.1) and post-test (M=19.7, SD=2.6) conditions: $t(30) = 2.895$, $p = .007$, were the most relevant.

To predict the pre- and post-training differences of EI-self-awareness, EI-empathy, and overall EI scores, multiple linear regression analyses were performed (Table 2). Previous health disparity training experience was consistently found as a significant predictor of self-awareness [($F(1, 29) = 4.69$, $p = .039$, with an R-squared value of .14],

Please rate each question below on a scale of 1 to 5, according to how true it is to you.

Virtually Never Virtually Always
1 2 3 4 5

____1) I am aware of the physical reactions (twinges, aches, sudden changes) that signal a "gut reaction".
____2) I readily admit mistakes and apologize.
____3) I let go of problems, anger or hurts form the past and I can move beyond these.
____4) I generally have an accurate idea of how another person perceives me during a particular interaction.
____5) I have several important things in my life that I am enthusiastic about, and I let it show.
____6) I can easily meet and initiate conversation with new people when I have to.
____7) I take a break or use another active method of increasing energy when I sense that my energy level is getting low.
____8) I have little trouble taking prudent risks.
____9) I "open up" with people appropriately—not too much but enough so that I don't come across as cold and distant.
___10) I can engage in an interaction with another and pretty well size-up that person's mood based on non-verbal signals.
___11) Others can feel inspired and encouraged talking to me.
___12) I have no trouble making presentations in front of groups or conducting meetings.
___13) I take time every day for quiet reflection.
___14) I take initiative and move ahead on tasks that need to be done.
___15) I refrain from making up my mind on issues and expressing my opinion until I have all the facts.
___16) I have a number of people I can turn to, and I ask their help when I need it.
___17) I try to find the positive in any situation.
___18) I can deal calmly, sensitively, and proactively with the emotional displays of others.
___19) I can usually identify the emotion I am feeling at any given moment.
___20) I am generally comfortable in new situations.
___21) I neither bury my anger nor let it explode on others.
___22) I can show empathy and match my feelings with those of another person in an interaction.
___23) I can keep going on a big project, despite objectives.
___24) I am respected and liked by others, even when they don't agree with me.
___25) I am clear about my own goals and values.
___26) I express my views honestly and thoughtfully, without being pushy.
___27) I am good at managing my moods, and I seldom bring negative emotions to work.
___28) I focus my full attention on another person when I listen to them.
___29) I believe the work I do day-to-day has meaning and value to society.
___30) I can effectively persuade others to adopt my point of view without coercing them.

Figure 1. EQ checklist (Sterrett 2000).

Table 1.

PROGRAM PARTICIPANTS MEAN EMOTIONAL INTELLIGENCE (EI) BEFORE AND AFTER FORMAL TRAINING[a]

	Baseline		Follow Up		
Ei Sub-Scales[b]	Mean	Standard Deviation	Mean	Standard Deviation	p-Value[c]
Overall Score	117.1	14.0	122.9	13.4	.002
Self-Awareness[d]	19.1	3.4	20.6	2.9	.001
Self-Confidence	18.2	3.1	19.7	2.6	.007
Self-Control	18.7	3.1	19.8	3.1	.041
Empathy	20.1	2.6	20.9	2.8	.068
Motivation	20.9	3.0	21.8	2.7	.020
Social Competence	19.2	3.5	20.2	2.8	.036

Notes:
[a]The questions pertaining to each subscale topic were randomized in the overall metric.
[b]The metric is a peer-reviewed, 30-Likert question self-evaluation. The maximum affirmative score for each question is 5, so the maximum overall score is 150.
[c]Statistical analysis was performed with a paired, two-tailed standard student t-test.
[d]These subscale topics are defined by the metric, and each has a maximum affirmative score of 25.

Table 2.

STUDY VARIABLES THAT CONTRIBUTE MOST TO ENHANCED EMOTIONAL INTELLIGENCE PERCEPTION[ab]

Variable	Emotional Intelligence (EI) Sub-Scale	R[b]	p-Value
African American Race	Motivation	0.17	.022
Previous Program Experience	Self-Awareness	0.14	.039
	Empathy	0.28	.002
	Overall EI Score	0.23	.006
STEM College Major	Self-Confidence	0.24	.005

Notes:
[a]Study variables are education (in years), ethnicity, gender, previous program experience, and STEM college major.
[b]Statistically assumes a (F1,29) fit for all multiple linear regression analyses.

empathy [(F (1, 29) =11.114, p =.002, with an r^2 of .28], and overall EI score [(F (1, 29) =8.649, p =.006, with an R-squared value of .23], respectively. Similarly, a significant predictor of the pre- and post-measure difference of EI-self-confidence was found in respondents pursuing STEM majors [(F (1, 29) =9.168, p =.005, with an R-squared value of .24]. Additionally, the respondent's African American race significantly predicted the pre- and post-training difference of EI-motivation [(F (1, 29) =5.858, p =.022 with an R-squared value of .17].

Discussion

Currently, EI evaluation occurs across many educational levels to determine graduation and matriculation efficacy. Undergraduate programs are increasingly examining EI in their students as a possible marker of future professional skills such as decision-making, stress management, and critical thinking.[20,21] With medical schools, for example, the Liaison Committee for Medical Education, their American governing body, requires emotional competency as a medical school admission requirement,[22] indirectly affecting the EI component(s) of their member institutions' curricula. Further, medical schools are also challenged with admitting and training individuals with demographic characteristics of underrepresented groups (including underrepresented ethnic, racial, and income groups) to reflect societal needs and address community health challenges.[23] Notably, professional schools are currently transitioning from passive-learning, lecture-intensive curricula to innovations that reflect team-building, active-learning formats more amenable to millennial students.[24] Undergraduate service-learning approaches have demonstrated utility in millennial students, especially those with public health interest.[25,26] Unfortunately, the clinical literature reflects uncertainty as to whether or how EI is developed in professional and undergraduate cohorts. A barrier to research of EI in African American millennial students has been insufficient sample sizes.[27]

The EI subscales studied in this cohort are meaningful in clinical practice because they correlate in clinical studies with improved primary care patient outcomes. For example, the results concerning empathy (understanding emotions in others) and self-control (managing one's emotions) most closely align with those of studies demonstrating statistical significance with medical student EI scores and the ability to communicate effectively with patients.[2] Emotional intelligence self-awareness described as a sensitivity to body movements and posture cues related to emotion has demonstrated high patient ratings evaluating patient satisfaction in internal medicine resident physicians.[28] Measured EI subscales of empathy, impulse control (i.e., self-control), self-awareness, and self-regard (i.e., self-awareness) all improved in EI-trained British pediatricians, and those improvements correlated with significant increases in patient satisfaction.[29] Another European study[30] demonstrated a statistically positive correlation between the measured EI self-esteem (i.e., self-confidence) subscale and outpatient satisfaction.

Though not designed for medical students, the MMC HBCU Wellness Project may provide a reasonable surrogate for EI study for African American collegians interested in addressing critical community health issues, including health disparities. This study cohort's demographic characteristics generally mirror those of a typical incoming first-year class at MMC.[31] Their cultural and racial characteristics might inform the

ability to recognize and regulate emotion that are cornerstones of EI. Nominally, EI self-rating scores in our mostly African American cohort changed significantly with training completion. As the goal of service-learning is enhancing civic responsibility and personal growth, these results validate the belief that a service-learning curriculum could also increase ethnic or racial awareness, peer empathy, and personal competence for its students, especially those in HBCU campus environments that represent fewer developmental resources.[32] The multiple linear regression analysis (of which demographic variables provided the greatest statistical difference in pre- and post-training EI scales) revealed that previous training experience conferred the strongest impact. This variable also is a marker for those students who have had the most exposure to the HBCU AHC environment, as prior experience occurred on the MMC AHC campus. This exposure reflects the self-affirming aspects of the service learning by providing the built environment and personnel of health disparity reduction that reflect those ideals. In fact, the context of evaluation on a medical campus setting with a teaching staff of medical professionals may influence respondents to provide more affirmative responses than they would in a value-neutral setting.[33] This pilot study with a HBCU training program is a first step to creating capacity to assess EI in a HBCU medical school student cohort. The strong influence of African American race on EI motivation in our study has potential implications in curriculum development and implementation in medical schools like MMC with a primary care focus. Motivation in HBCU AHC professional students to provide health care for the underserved patients could be the non-cognitive engine that drives the successful primary care outcomes in HBCU AHC graduates. Pilot work at MMC evaluating the links between subject areas in didactic learning experiences, stated learning objectives, and examination content may validate the effect of curriculum on EI-motivation.[34]

This study has limitations. Self-rating EI measures may be limited by respondents' lack of real-world experiences informing their evaluation responses;[35] these surveys document EI perception more than respondents' EI ability to navigate problems.[36] Next, the context of evaluation on a medical campus setting with a teaching staff of medical professionals may influence respondents to provide more affirmative responses than they would in a value-neutral setting.[33] Though approximately 94% of our training class participated in the curriculum evaluation, our sample size is smaller than many comparable medical school study samples in the literature,[2,27] though some have similarly modest sample sizes.[35,37] Additionally, this study does not address the significant discussion concerning whether EI is an innate ability[38,39] or a trainable skill[2] or possibly both.[40] The choice of the EI measure in this study was a pragmatic one based on its use in a professional medical education setting with similar participant demographic characteristics.[19] Future iterations of this study in a HBCU setting would benefit from EI metrics that examine both state and trait,[35,41] to eliminate any bias toward how EI is defined or perceived academically.

The prominent role of race in the medical school education that this study's results highlight cannot be overemphasized. Across the country, medical and residency curriculum revisions have highlighted cultural competency[42] and health disparity reduction[43] as necessary components of clinical success with increasingly diverse ethnic and racial patient populations. As minority physicians treat the most minority patients,[44] HBCU

medical schools (including MMC) have traditionally addressed primary care cultural competence and health disparity reduction in minorities and underserved groups,[16] and their academic missions and curricula have always reflected these goals. This study's data demonstrate the significance of self-described African American ethnicity on the possibility of developing or enhancing EI if their medical curricula reflect the clinical focus that the students endorse (e.g., health disparity reduction). Therefore, HBCU institutions provide fertile research opportunities to validate race as an augmenting factor for successful health disparity reduction medical curricula.

Though professional schools may profess educational approaches that develop EI in their graduate trainees anecdotally, it appears few programs across the country measure outcomes objectively. Data from this pilot study may indicate that a curriculum designed to address concerns specific to a trainee racial demographic may have a synergic benefit in addressing EI outcomes like awareness and consciousness needed for current academic and future professional aptitude. Community-based success in multicultural environments with diverse ethnicities is increasingly linked to self-aware and socially conscious professionals.[45] The overarching utility of EI, especially as it relates to medical education of minority students, will continue to interest medical education leadership as more medical schools adopt community-based curricula focused on the underserved and health disparity environments. Future EI research in community-serving HBCU academic and medical institutions will add value to those curricula.

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