Supplemental Materials

Workshop I: Lecture and discussion.

After the pre-workshop data were collected, students gained online access to the lecture notes for the first workshop. The notes provided information about cultural competence, equitable patient care, the six competencies and measurable Educational Program Objectives for the MD degree, and a brief description of racial and ethnic health disparities. They also received a paper to read about the psychology of intergroup bias in medicine (Dovidio & Fiske, 2012). They were directed to read all of the material before attending the first workshop.

In Study 1, Workshop I consisted of a 50-minute face-to-face lecture that was delivered by the first author. It was divided into two sections: Section One covered the psychology of intergroup bias, and Section Two focused on implicit forms of bias. The learning goals and content for Section One on intergroup bias consisted of the following:

(1) Definitions and processes underlying intergroup bias. The instructor defined and distinguished between the concepts of prejudice, stereotyping, discrimination, racism/sexism/ageism, and stigma and stereotype threat. Then, using Figure 1 in Dovidio and Fiske (2012), students learned about how the categorization of people into groups activates stereotypes (beliefs) and prejudices (affect) that can lead to discrimination in patient care. They then viewed the stereotype content model as applied to healthcare (see Dovidio & Fiske, 2012) and discussed the patient groups that fall into each quadrant of the model and the forms of healthcare discrimination they face.

(2) Functional vs. dysfunctional stereotyping in medicine. After viewing an example of how medical students learn to "stereotype" patients during their training in patient care, the instructor explained how there are two ways in which "stereotyping" is "functional" in the

practice of medicine. The first was said to be through the use of group-based information in epidemiology and the second was said to be through the use of group-based information in being culturally competent. The instructor noted that both represent "schema-based reasoning" when caring for patients, but cautioned that the same processes that contribute to the accurate uses of group-based information can also lead to mistakes when caring for patients. The instructor then provided examples of how "stereotyping" a patient can cause errors in medical judgment and behavior. The instructor finished Section One by noting that stereotyping is most likely to occur when people have little information about a person, and when they are physically and mentally fatigued, working quickly, and under cognitive load.

The learning goals and content for Section Two were as follows:

(1) Explicit vs. Implicit processing. The instructor described Kahneman's (2011) distinction between system 1 and 2 processing and explained how the categorization and stereotyping processes that contribute to errors in diagnosis and treatment can occur automatically and outside of conscious awareness.

(2) The Implicit Association Test (IAT). The instructor next explained the IAT and how it measures implicit associations between concepts. He led the class through an exercise where they performed a hand-clapping simulation of the IAT. After the exercise, the instructor explained how the exercise illustrates implicit bias and discussed the debate over the reliability and validity of the measure.

(3) Implicit bias in patient care. The instructor showed a list of previously published studies with medical and nursing students and their implicit bias results. The instructor next summarized the results of studies in which implicit bias was related to medical diagnosis and treatment decisions (e.g., Green et al., 2006; Sabin et al., 2012). The instructor then explained

how implicit bias could be communicated nonverbally during interactions with patients (Cooper et al., 2012; Dovidio et al., 2002). The instructor tied the material on nonverbal forms of bias to the procedures that students were learning regarding how to collect a social history and the history of present illness from their patients. After the instructor answered questions, he summarized the main points of the session, and adjourned the meeting.

Changes in Study 2: The lecture in Study 2 was 90 minutes long with a five-minute break after the first 60 minutes. In addition to the above content, the instructor presented information about microaggressions and examples of microassaults, microinsults, and microinvalidations that occur in a healthcare context.

Workshop II: Active learning exercises

Prior to attending Workshop II, students received lecture notes and a paper to read on bias reduction strategies (Burgess et al., 2007). The notes described the importance of being aware of the potential for bias and the use of strategies for controlling bias when interacting with patients. The notes defined stereotype suppression and explained that because it can lead to rebound effects, it is NOT an effective strategy for reducing stereotyping. The notes then defined and explained five strategies for controlling stereotyping: the activation of egalitarian goals, seeking common identity information, seeking counter-stereotype information; perspective taking; and the formation of implementation intentions for using each of the strategies described above. They were informed that they would be tested on the lecture notes and reading at the start of the second workshop.

In Study 1, the same instructor led two sections of 60 students each through the 90-minute second workshop. In Study 2, the same instructor led one section of 60 students, and another instructor led the other group of 60 students. Students sat in groups of six at table

workstations that included a computer and one viewing monitor. At the start of the session, students individually completed a 10-item multiple-choice test of the information provided in the reading. At the completion of the test, the instructor led the entire class in a discussion of the answers.

After the testing portion was over, students completed five active-learning exercises:

1. Observing implicit bias: To illustrate how providers communicate implicit bias during interaction with a patient, students watched a video of a doctor-patient interaction and coded it for paraverbal and nonverbal indicators of implicit bias (see Cooper et al., 2012; Dovidio et al., 2002). Students worked together to develop an overall profile of the physician and the instructor then led a class discussion about the similarities and differences in each group's observations.

2. First impressions: Students viewed a list of behaviors culled from a textbook on doctor-patient interaction on how to initiate an interview with a new patient. They were asked to discuss the bias reduction strategy that would be most effective for executing the behaviors on the list that create the desired first impression at the start of an interview (e.g., expressing positive emotion). This exercise was dropped from the workshop in Study 2.

3. Open-ended questioning skills: Students viewed a list of behaviors that facilitate the use of open-ended questioning during a patient interview. They were asked to discuss which implicit bias reduction strategy would be most effective for facilitating the use of open-ended questioning skills (e.g., activating of egalitarian goals).

4. Acquiring the history of present illness: Students were shown a list of relationship-building skills for acquiring the history of present illness, and asked to discuss which of the skills are most likely to facilitate perspective taking, and which would be most likely to provide information about a common-identity that they share with the patient.

5. Acquiring counter-stereotypic information: In Study 1, students viewed pairs of questions and asked to identify the question in each pair that would be the most likely to reveal counter-stereotypic information, and as a result, the degree to which the patient deviates from a cultural stereotype. In Study 2, students were provided with a case study of a racial or sexual minority patient who is struggling with managing a condition (e.g., type 2 diabetes). Students were asked to read the case and identify a cultural stereotype about the patient's group that, if true of this patient, could create difficulties for the patient's diagnosis/treatment. They were then asked to generate questions to ask the patient that could reveal the degree to which the patient deviates from the cultural stereotype they had identified.

The groups worked at their own pace to complete exercises 2-5 while the instructor circulated, answered questions and discussed the exercises with each group. After the groups completed the exercises, the instructor led the entire class in a discussion of the materials.

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