

RECONSIDERING HEALTH LITERACY: THE ROLE OF IMPLICIT BIAS

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ABSTRACT

Low health literacy in the United States has numerous negative impacts on health outcomes. Efforts to equip physicians with the ability to better identify patients with low health literacy have consistently shown lackluster and transient results. The transient nature of these results closely mirror those seen in the implicit bias literature, implying that health literacy may be better addressed if considered a type of coded bias among clinicians. In this paper, a review of the literature is presented which includes the impact of health literacy on patient outcomes, physician understanding and ability to screen for low health literacy, past interventions aimed at improving physician ability to identify and assist low health literacy patients, and the existing literature involving implicit bias among physicians. This review allows for the argument that interventions aimed at helping physicians better identify low health literacy patients would be more effective if designed to address unconscious biases rather than a knowledge deficit. Finally, the ethical imperative to address these biases in the healthcare setting is described.

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CHAPTER 1: HEALTH LITERACY

Introduction

In the more than 10 years since the Institute of Medicine published their report, “Health Literacy: A Prescription to End Confusion”, numerous strategies have been devised and tested to assist clinicians in effectively screening for and addressing low patient health literacy in the United States.¹ To date, very few of these interventions have proven effective, showing only minor change and often without follow up to ensure these changes were enduring. Explanations for these lackluster results remain largely unexplored, and strategies continue to revolve around increasing health practitioner education.² While this country’s weak public health and fragmented education systems no doubt play a role in the lack of change observed over the past decade, this does not explain why programs targeted towards providers have shown similarly poor results.^{2,3} The repeated failures of educational interventions for providers strongly imply that a more complicated process underlies clinicians concept of health literacy. This pattern of healthcare disparities only transiently changed through educational programs for clinician is mirrored closely in the literature for implicit bias. By reconceptualizing health literacy as not only a public health issue but as a coded form of bias clinicians hold towards patients, more effective strategies may be designed to better address the disparate care that is rendered on the basis of a patient’s health literacy.

In this review, I will argue that health literacy is a form of coded bias, defined as a concept which activates an underlying implicit bias. Therefore, efforts targeting bias reduction among physicians is a moral imperative that would directly improve patient

health outcomes. To do so, I will first define literacy, numeracy, health literacy, and explore the prevalence of low health literacy in the United States. Next I will explore how health literacy is related to health outcomes, and how effectively physicians identify patients with low health literacy. I will then compare the effects seen in health literacy interventions to those seen in implicit bias interventions, allowing us to conclude that health literacy is less a problem of knowledge among physicians and more reliant on a subconscious cognitive process. Finally, I will summarize which interventions have and have not been successful in reducing implicit biases, and propose that such a technique must be employed in the healthcare setting for the good of our patients and our profession.

Literacy, Numeracy, and Health Literacy

Health literacy, as defined by the National Library of Medicine, is “The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions”.⁴ Understanding health information requires multiple skills, including traditional literacy and numeracy. The National Adult Literacy Survey defines literacy as “Using printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential”.⁵ Several measures, including the Rapid Estimate of Adult Literacy in Medicine (REALM), use education-based reading level (ie. third grade reading level, etc) as a proxy for literacy.⁶ Numeracy, as defined by the Program for International Assessment of Adult Competencies, is “the ability to access, use, interpret, and communicate mathematical information and ideas, to engage in and manage mathematical demands of a range of situations in adult life.”⁷ Importantly, all of these

definitions focus on functional literacy, which refers not only to the ability to comprehend and interpret information, but to further apply these skills in a useful manner. As health literacy is dependent on traditional literacy and numeracy, it is important to understand how many citizens of the United States have these skills.

Rates of all the above forms of literacy in the United States are relatively low. In terms of traditional literacy, the 1992 National Adult Literacy Survey measured the population's literacy skills in terms of prose literacy (ability to interpret prose), document literacy (ability to interpret a document), and quantitative literacy (essentially a proxy for numeracy), and divided the results into five literacy levels.⁸ The lowest was considered functionally illiterate, and the highest proficient in even challenging tasks. They found that between 40 and 44 million Americans (almost a quarter of the country) have a literacy level so low that they are functionally illiterate. Another 50 million Americans were at the next level above that, meaning that their literacy skills were intensely limited. The next iteration, called the National Assessment of Adult Literacy in 2003 found no statistically significant difference, with the exception of a slight increase in quantitative literacy.⁹

The 2003 survey also included a measure of health literacy, and divided patients into four levels of competence: Below Basic, Basic, Intermediate, and Proficient.⁹ The study tested participants' abilities to function in interactions with providers, interpretation of documents and pill bottles, and understanding of preventative care topics. Overall, the survey found that 14% of respondents were Below Basic, 22% were Basic, 53% were Intermediate, and 12% were Proficient. By raw numbers, this means that 47 million and 30 million individuals have Below Basic and Basic health literacy respectively. Notably,

the National Assessment of Adult Literacy methodology remained tied to its assessment of prose, document and quantitative literacy, and so did not measure participants understanding of medical jargon. Since medical jargon itself is a large source of confusion for many people, it likely that the survey overestimated of the health literacy skills of the nation. The study also found that lower literacy rates were associated with lower education level, older age, higher poverty rates, and were more likely to have Medicaid, Medicare, or be uninsured. Low health literacy was observed across racial categorizations, with the highest rates of Below Basic and Basic health literacy among Hispanic (65%) and Black (57%) respondents. Subgroup analysis of Below Basic alone showed that majority of these respondents were White (41%) followed by Hispanic (35%). Finally, the survey found that those at lower health literacy levels reported themselves to be in poorer health than those with higher health literacy.

Health Literacy and Patient Health

Low health literacy has been found to have direct impacts on patient health. Two studies examined the relationship between patient health literacy and engagement in preventative care activities. Scott et al. looked for the association between health literacy of Medicare enrollees and self-reported use of services including pap smears, mammograms, and vaccinations.¹⁰ They found that compared to those with adequate health literacy, the patients with low health literacy were more likely to never have received cancer screening in the form of pap smears (OR 1.7; 95% CI 1.0-3.1) and mammograms (OR 1.5; 95% CI 1.0-2.2). They also reported higher rates of never receiving important vaccines such as influenza (OR 1.4; 95% CI 1.1-1.9) and pneumococcal (OR 1.3; 95% CI 1.1-1.7). These results were found after controlling for

relevant confounders such as race, socioeconomic status, and health status. However, these results must still be interpreted cautiously since the methodology relied on patient recall of services received. The second study examined how health literacy levels impacted participants' likelihood of seeking gonorrhea screening.¹¹ In this study participants were from health clinics, community organization, and individuals recruited on the street. Patient health literacy was assessed using the REALM, an assessment of literacy used by many studies to correlate with health literacy. Administration of the REALM involves giving patients a list of 66 medical words (ex. Flu, disease, diagnosis) and having them read as many out loud as possible within 5 seconds.¹² Points are awarded for words pronounced correctly, and patients are allowed to skip words they cannot pronounce. The score is then translated into approximate grade-based reading level. Of the total sample, 54% had requested gonorrhea testing in the last year.¹¹ Those who had higher REALM scores (as defined at a 9th grade or higher reading level) were 10% more likely to have received testing in the past year (OR 1.37; 95% CI 1.02-1.93). This association held after controlling for past suspicion of having had gonorrhea, past diagnosed case of gonorrhea, and education level. In addition, those with lower literacy levels reported higher rates of believing they were at risk for contracting gonorrhea in the next year ($F=9.12$, $p<0.0001$). While this study again suffers methodologically from self-report, it is concerning that participants with lower health literacy perceived themselves to be at higher risk of contracting gonorrhea but were less likely to have undergone testing in the past.

Several studies have had more concrete methodologies to assess the impact of health literacy on hospitalizations. Baker et al. administered a measure of health literacy

to patients then used retrospective chart review to see if they had been hospitalized in the past year.¹³ They found that the patients with low health literacy were hospitalized two times more compared to those with adequate health literacy (31.5% vs 14.9%, $p < 0.001$). This association held after controlling for age, race, socioeconomic status, health status, and sex (OR 1.69, 95% CI 1.13-2.53). A second study used a prospective design to test the association between health literacy and hospitalization for Medicare enrollees.¹⁴ The study performed an intake interview including measures of health literacy, age, race, sex, health status, and socioeconomic status and then followed participants via chart review for until the study endpoint approximately 2 years later. Overall, almost a third of the sample was hospitalized in this time (29.5%). Participants with inadequate and marginal health literacy were at higher risk of being hospitalized, with relative risks of 1.29 (95% CI 1.07-1.55) and 1.21 (95% CI 0.97-1.50) respectively.

There have also been several studies that have assessed how health literacy impacts patient's ability to act towards controlling diseases. One of these studies assessed how health literacy was related to asthma patients' knowledge about their disease and ability to correctly use their inhalers.¹⁵ Participants were enrolled from either the emergency department when presenting for an asthma exacerbation or in a specialty asthma clinic. Their health literacy was assessed by proxy with the REALM. They divided the sample into quartiles based on reading ability, with the highest quartile being high school level (27%), and the lowest being equal to or below 3rd grade level (13%). As expected, asthma knowledge was found to be directly related to reading level. Concerningly, poor inhaler technique as defined by more than three mistakes in use, was seen in the majority (89%) of patients in the lowest quartile as compared to less than half

(48%) of those in the highest quartile. This is one of the few studies available in the literature which clearly demonstrates that health literacy directly impacts patients' abilities to perform health behaviors. A different study involving caregivers of children with type 1 diabetes also investigated how literacy relates to disease control.¹⁶ A sample of 200 caregivers of these children were tested for literacy level using the Newest Vital Sign assessment. The Newest Vital Sign is a test which requires patients to read a nutrition label, then answer 6 questions which require application of the information on the label.¹⁷ Based on the results, the caregivers were divided into those with adequate, limited, or inadequate literacy.¹⁶ Diabetic control was assessed based on a measure of the hemoglobin A1c, a measure of blood glycosylation which allows for an estimation of daily blood glucose level over the previous 3 months. Diabetic control was significantly worse for the children of inadequate literacy than for those with adequate literacy ($10.4 \pm 2.2\%$ vs $8.6 \pm 1.7\%$, $p < 0.001$). This effect was only attenuated by caregiver numeracy, with caregivers who answered at least half of math questions correctly having children with better glycemic control ($8.5 \pm 1.7\%$ vs. $9.8 \pm 2.1\%$, $p < 0.0005$). Given the necessity of good math skills in the management of type 1 diabetes (carb counting, insulin titration), it is unsurprising that these skills directly translate to glycemic control.

While the previously described studies have demonstrated that low health literacy can have a negative effect on patient health, other studies have shown that the effect is complicated by strong interrelations between health literacy, education level, race, and socioeconomic factors. Two studies effectively illustrate how difficult it is to parse out these issues from each other. A study of adherence to new HIV antiretroviral therapy regimens sought to identify barriers to taking the medications successfully.¹⁸ The authors

examined a multitude of possible factors that would impact adherence, including education level (as proxy for literacy), race, age, income, and substance abuse. After enrollment, they followed participants for a year and assessed adherence monthly via a multifaceted measure including self-report of missed doses, regular pill counts, and electronically monitored pill-bottle caps. In initial analysis, overall adherence as defined by 95% of doses taken was only achieved by 5% of patients. On average 71% of the sample took their doses consistently. In terms of education level, this sample saw 35% of participants as not having graduated high school, 48% having a high school degree, and 17% having a college degree. As an independent factor, education level was not found to be associated with adherence. In multivariate analysis however, lower education level, African American race, lower income, and substance abuse were all significantly associated with poorer adherence. The directionality and causality of these associations have proved extremely difficult to tease out. Another study assessing the difference in stage at presentation of prostate cancer in Black vs White men further illustrates this association.¹⁹ This study used the REALM as a proxy for health literacy, and all men participating in this study were low income. The study found that 49.5% of Black men presented with late stage prostate cancer compared to 35.9% of White men ($p < 0.05$). More than half of Black participants in the study had reading levels below the sixth-grade level (52.3%) compared with 8.7% of White participants ($p < 0.001$). After controlling for differences in reading level and age in multivariate analysis, race was no longer a significant predictor of presentation stage of prostate cancer. As found in the National Adult Assessment of Literacy, health literacy remains intimately related to race, age, sex, education level, and socioeconomic status.⁵

The complicated relationship between health literacy, race, education level, and socioeconomic status is likely attenuated to some degree by patients culturally bound beliefs about health and medicine. To date no study has assessed the relationship between culturally bound health beliefs and health literacy. While sparse in the literature, culturally bound beliefs about health have been shown to affect patient compliance with treatment.^{20,21} In the Institute of Medicine report, “*Health Literacy: A Prescription to End Confusion*”, the authors acknowledge that health literacy is directly related to the cultural context of those being assessed but make no further comment on the issue.¹

Unfortunately they make no further comment on the culturally bound nature of our understanding and assessment of health literacy. The National Assessment of Adult Literacy has consistently shown that individuals with limited English proficiency have lower health literacy scores than individuals fluent in English.⁵ However, the authors credited this discrepancy entirely to facility in the English language rather than considering the mediating factor of health beliefs of the individual. It is reasonable to assume that individuals raised outside of the United States health culture which combines factors of physician-patient partnership valuing patient autonomy, a medicolegal system which dictates what information must be provided to patients, and a scientific and often mechanistic view of the human body may still have difficulties using patient materials even after translation to the appropriate language and reading level. Even among those raised in this country, perceptions of appropriate and safe ways to interact with the health system differ significantly based on cultural norms informed by historical interactions with our medical system. Among Black patients, distrust of medical and research institutions is consistently found to be high, and this mistrust has a direct impact on

willingness to engage in therapy on various medical conditions.²²⁻²⁴ Given the long history in the United States of racism that has tied directly to medical treatment of Black citizens, including medical experimentation on slaves, dissection of Black deceased patients without permission, unethical research including the Tuskegee Syphilis study, coercive sterilization efforts directed against Black women such as the Mississippi Appendectomies, and continued unequal access to care and lower quality care that Black Americans continue to receive today.²⁵ It is reasonable to assume that individuals with a justified lack of trust in the medical institution with lower levels of health literacy may also distrust health education information disseminated from this institution. A study examining the relationship of trust, race, and HIV medication initiation have shown that both distrust in the provider and, independently, distrust in the actual medication, were related to the decision not to initiate therapy.²³ Considering health literacy independent of cultural context, the solution to the issue of distrust of the medication would be to provide educational materials appropriate to the patient's reading level. But without examination of the patient's health belief system these materials may be viewed as unreliable, and so ultimately be useless. As stated above, the interaction between culture and health literacy has yet to be studied, however it is a consideration that is necessary moving forward to improve health provider's communication and relationship with our patients.

Provider Ability to Assess Health Literacy

Despite the demonstrable importance of patient health literacy recognized above, provider identification of patients with poor health literacy remains inadequate. Two studies of medical residents directly compared patient health literacy scores to the physicians' assessments of whether their patients had low health literacy.^{26,27} The first

study involved patients presenting to their continuity internal medicine residents' clinics.²⁶ Investigators administered the REALM as a surrogate for health literacy, and separately asked the residents to identify which patients had limited literacy. Of the 182 patients participating, the residents indicated that 18 had limited literacy skills. Based on the REALM, 15 of these patients were correctly identified as having low literacy. An additional 59 patients had low literacy on the REALM but were rated as having adequate literacy skills by the physicians, which is a full 36% of the sample. Unfortunately, the demographics of the patients and residents were not reported. A second study of family medicine residents' continuity patients found similar results.²⁷ A convenience sample of continuity patients were recruited in the waiting room of the office. The investigators specifically targeted older adults on Medicare due to their higher risk of low health literacy, and non-English speakers were excluded due to logistical concerns. All patients in the study had been to the physician they were seeing between 5 and 11 times before. In the waiting room the patients were given a health literacy assessment called the S-TOFHLA, and after their visit the physician in question was asked to assess the patient's understanding of medical information. The S-TOFHLA assesses functional health literacy by asking patients to read two medically-related passages then answer a series of fill-in-the-blank questions assessing comprehension (ex. Select the correct word: Your doctor has sent you to have a stomach/diabetes/stitches/germs X-ray).⁶ Of the 140 patients who participated, almost a quarter (34) were found to have limited literacy on the S-TOFHLA.²⁷ Of these patients, physicians only identified 16 as having low health literacy. In addition, physicians identified 26 patients with adequate literacy scores to have low health literacy. Such frequent misidentification of patients with low health

literacy is alarming, particularly in samples drawn from continuity clinics, where physicians have had past interactions with the patients in question. Unfortunately, no subgroup analysis based on demographic data is available from either of these studies.

Not only are clinicians poor at identifying patients with low health literacy, but they often demonstrate poor patient communication skills. The push towards improved communication skills in medicine has encouraged physicians to make use of various communication strategies, including limiting the amount of new information provided at each visit, avoiding the use of jargon and medical terminology, and employing teach-back methods to assess patient understanding during counseling. Two studies have specifically investigated physician communication skills in practice.^{28,29} The first study involved 38 primary care physicians speaking to patients with type 2 diabetes.²⁹ The physicians were recorded during visits with 74 different patients, all of whom had low health literacy levels. Analysis of the encounters found that among follow-up patients, the physicians only checked for patient understanding and recall of a newly introduced subject in 20% of the visits. In addition, of the 124 new topics introduced in the encounters, physicians only assessed understanding of 15 topics. The second study involved internal medicine residents during a simulated patient encounter with a low-health literacy patient.²⁹ Residents were recorded during the encounter to allow for direct observation of how much medical jargon they used and how often they engaged in teach-back methods. They also assessed how confident residents were that they could communicate with the patient clearly. A total of 82 residents participated in the study, and of these 88% indicated they use simplified language when speaking with patients. Almost half (48%) of the residents indicated they make frequent use of teach-back

techniques during patient encounters. In the observed encounter however, the residents overall used 2 jargon-words every minute and only 18 of the residents engaged in any teach-back. The mismatched self-perception of communication abilities and actual communication skills implies that physician reported ratings of communication skills may be unreliable, and that for interventions to be successful directly scrutiny of communication skills employed is necessary.

Efforts to Address Inadequate Health Literacy

The clear negative impacts of low health literacy on patient outcomes have resulted in a wide variety of interventions seeking to address this issue. The vast majority of said interventions are targeted at designing improved educational materials for distribution to patients.³ Overall, these interventions have often yielded only small or equivocal results, and so no such strategy to date has been deemed successful. A small number of studies have sought to impact clinician practices to address issues of health literacy. Several of these studies have provided educational trainings to clinicians and then relied on measures of self-report to assess the affect.^{30,31} As demonstrated in studies described above,^{28,29} assuming clinicians accurately describe their use of various strategies does not necessarily translate into practice, and so these studies cannot be considered reliable. In addition, these studies involved one-time training measures and did not consider long term efficacy of these intervention. A study of medical student training in health literacy specifically assessed the long term effects of a one-time educational intervention.³² The study involved first year medical students who were given a pre-test on knowledge and strategies to better communicate with low health literacy patients, then were given an educational intervention including a video and small group

discussion. A post-test assessed change in knowledge and intended behaviors. In their second year, the same cohort was again given the same pretest, a new educational encounter, and then the post-test. While in the first year the authors observed significant improvements between the pre- and post-tests, the year two pre-test was largely unchanged from the year one pre-test. In addition, the change between the pre- and post-test values were not as dramatic as they had been in the year one tests.

This lack of enduring change after a one-time intervention indicates that provider understanding of patient health literacy is not a problem of awareness alone. In fact, the only effective intervention to address provider engagement of patients with low health literacy used a longitudinal intervention model.³³ The study in question was a randomized control trial of Veterans Administration clinic physicians and nurse practitioners, aimed at increasing patient colon cancer screening rates. Participating patients were over 50 years old and had never had colon cancer. A subset was given the REALM to assess health literacy and equal numbers of low health literacy patients were randomized into each arm. Clinicians were randomized into either the control arm of usual care or the intervention arm, which involved an initial workshop on colon cancer screening guidelines and low health literacy communication strategies. After the initial session, intervention group clinicians would receive personalized feedback in terms of colon cancer screening counseling rates, actual screening rates, and on continued practical strategies to communicate with low health literacy patients. The study continued for 18 months. At the end of this time, the intervention group had significantly higher rates of counseling on colon cancer screening (76% vs 69.4%, $p=0.02$), and significantly higher rates of actual screening (41.3% vs 32.4%, $p=0.003$). Of the subset of low health literacy

patients, those in the intervention arm also had higher rates of screening than the controls (55.7% vs 30%, $p=0.002$). The authors indicated that the repeated training encounters seemed to be key to the change, with providers who attended the most sessions showing the most improvement. One other area of the literature has consistently found repetitive intervention models to be necessary to effect lasting change, and that is the literature regarding implicit bias. While implicit bias and health literacy have yet to be examined together, the pattern of poor medical treatment/outcomes for patients with low health literacy, and the lack of efficacy of one-time provider training to address the issue, implies that a subconscious process is likely at play that has yet to be addressed.

CHAPTER 2: IMPLICIT BIAS

Implicit Bias: Background

Implicit bias has been extensively studied and described in the field of cognitive psychology, a field which studies the mechanics of how people think. Implicit bias is a subconscious and automatic thought process influenced by an individual's attitudes and prejudices that subtly affects their conscious, or explicit, thoughts and behaviors.³⁴ Implicit attitudes are not necessarily negative. A parent for example, likely holds a positive attitude towards her child and therefore on a subconscious level will judge the child's actions more positively than she would the behaviors of other children. Implicit biases become problematic when rooted in negative stereotyped thinking and discriminatory beliefs. Past research has indicated that stereotypes, which are traits perceived to be associated with groups of people, are often established at a very young age, before children have developed the capacity for critical thinking necessary to challenge them before they are incorporated into subconscious thought.³⁴ A person's beliefs about said group are informed by these subconscious stereotypes but, since beliefs exist in explicit thought processes, an individual can consciously challenge these stereotypes rather than incorporating them into their beliefs. Thus, while all individuals have subconscious stereotyped attitudes towards various groups, it is possible to prevent these stereotypes from entering explicit belief systems if the individual is aware of the stereotype and is motivated to question and reject it.^{35,36}

While it is possible to overcome implicit bias with explicit effort, this has proven to be problematic.³⁵ Implicit thought processes are largely automatic, triggered without

recognition by stimuli that have been associated with that thought process in the past. Automatic processes require no cognitive effort to be expended, and so tend to be used often.³⁷ As a result, these habitual thought processes can become very entrenched and can directly change our behaviors. As an example, the Alger myth of meritocracy in this country, i.e. ‘pulling yourself up by your bootstraps,’ has led many to associate wealth with talent, intelligence, and moral goodness.^{38,39} One study sought to assess how attitudes towards wealth (implicit and explicit) influenced assignments of blame for a car accident.³⁹ The authors first assessed implicit and explicit attitudes towards middle-class and rich individuals, and then asked participants to read a vignette in which either a rich or middle-class driver engaging in risky driving behavior got into a car accident. They found that the sample overall held positive implicit attitudes towards both rich and middle-class individuals, but had significantly more positive attitudes towards rich people. These attitudes were held more strongly by participants who had more money, were conservative, or had lower levels of education. Explicit attitudes were expressed more positively towards the middle class. However, the sample tended to assign less blame to the rich driver than the middle-class driver, and the blame assigned was predicted by implicit attitudes towards the rich. Explicit attitudes and implicit attitudes towards the middle-class had no effect. This study effectively demonstrated that automatic implicit judgements can directly affect behavior.

To understand the difficulty of trying to mediate these judgements with conscious thought, the dual process theory of cognitive psychology must be considered. Dual process theory posits that implicit and explicit cognitive processes are constantly vying for control of our thought processes and behaviors.^{40,41} Since explicit cognitive processes

require effort to exercise, implicit processes can often overcome the explicit processes. Experiments have demonstrated that participants asked to solve a logical exercise where the solution is counter to the participant's implicit beliefs would frequently solve the problem based on the implicit belief rather than using logic.⁴²

These effects, where bias is relied upon more strongly, is most often observed under ambiguous conditions and in situations where there are time limitations or stress, ie. times when the cognitive demands for effective explicit control are higher than the strength of the implicit process.³⁵ This is not to say that explicit processes will always fail to overcome implicitly held stereotypes. A study by Devine et al. in 1989 explored how White participants' beliefs about self-prejudice (ie. the belief that being prejudiced is a negative trait) affected explicit stereotyped evaluations of Black people.³⁷ For this study, the experimenters asked participants to list their thoughts about Black Americans, and then level of prejudice was assessed using the Modern Racism Scale. They found that participants who valued a low-prejudice self-identity were significantly less likely to list negative beliefs or traits about Black Americans than those with high-prejudice. The experimenters theorized that being asked to directly list thoughts about Black Americans put the low-prejudice groups self-identity at risk, and so encouraged them to make explicit effort to list counter-stereotypical thoughts during the experiment. Therefore, when there is a personal value placed at direct risk by implicit processes, an individual becomes more motivated to exert the effort to overcome their automatic biases.

Implicit Bias and Behavior

To understand how health literacy could be a source of implicit bias among healthcare providers, it is useful to see how implicit bias has already been observed in the

medical field. In 2002, the Kaiser Family Foundation completed the *National Survey of Physicians* to assess beliefs that physicians hold about healthcare inequality.⁴³ They found that the majority of doctors believe that patients ‘rarely’ or ‘never’ receive unequal treatment based on qualities such as race (55%,14%), sex (57%, 27%), socioeconomic status (42%, 10%), sexual orientation (59%, 16%), education level (48%, 12%), disability (57%, 19%), and English fluency (44%, 11%). This perception is starkly out of line with the views of the general population, who are between 9% and 24% more likely to believe inequities in the areas listed above occur at a ‘somewhat often’ frequency. The only area the majority of physicians endorsed as a cause of care inequality was insurance coverage, with 72% saying this was a source of inequality somewhat or very often. In subgroup analysis, both Black (77%) and Latino (52%) physicians were more likely to say that there is unequal treatment based on race somewhat or very often. Women were more likely than men to say there was unequal treatment somewhat or very often in all categories, with the biggest difference being for sex (33% vs 10%). Interestingly, physicians were likely to correctly postulate that Black patients are less likely than White patients to receive the newest HIV treatments and medications or the most specialized treatments for heart disease. As will be described below, equal healthcare access, quality, and outcomes in this country is a myth. That physicians seem to strongly endorse this fallacy is likely a result of threat to their altruistic self-image. The fact that respondents accurately recognized care disparities when specific conditions were mentioned indicates that physicians are aware of healthcare inequality in this country, but fail to recognize this appropriately when their identity as unprejudiced is threatened.

The prevalence of implicit bias among physicians regarding race is supported by the literature.^{44,45} A sample of physicians who had taken the race subset of the Harvard Implicit Association Test were analyzed and compared to other test takers with similar educational level (PhD, JD).⁴⁴ The study found that the majority of the physician sample was White, male, with a mean age in the mid-thirties. Overall, the physician group showed a strong implicit bias towards White people. In subgroup analysis this attitude was the strongest among White physicians, and was weakest among Black physicians, who showed no consistent implicit preference for White or Black people. When considered in terms of gender, male physicians held stronger implicit bias towards White people than female physicians. This trend held true across racial groups with Black female physicians showing no implicit bias due to race whatsoever. The widespread implicit biases detected among voluntary participants of the IAT have alarming implications. Meta-analyses have shown that results on the IAT have widespread implications for prejudiced behavior.⁴⁶⁻⁴⁸ These unconscious attitudes may have direct impacts on patient care.

There have been numerous reports of unequal care and health outcomes between different races, although a smaller number have directly correlated clinician bias with care rendered to the patient.^{25,49-51} The Institute of Medicine Report “*Unequal Treatment*” details the numerous ways in which non-White patients receive inadequate care compared to White patients, including lower rates of kidney transplant, dialysis, antiretroviral therapy in HIV, pediatric care, maternity care, and specialized surgical procedures.²⁵ They also found that Black patients are at higher risk of being offered undesirable procedures, such as lower limb amputation and bilateral orchiectomy, and

further that Black patients have a higher mortality rate across a broad range of conditions than White patients. These associations hold even after control for other confounding factors such as disease severity, age, sex, and socioeconomic status. Several studies have directly examined how physician race-bias directly influences how physicians behave with patients.^{45,50} One study assessed whether physician communication with Black vs. White patients was different based on how physicians score on the racial implicit association test.⁴⁵ In this experiment physicians underwent the implicit association test, then each physician's encounters with patients were recorded and scored by experimenters. The patients themselves were also interviewed about their perceptions of the physician. The study found that physicians with higher implicit racial bias communicated differently with Black and White patients. In encounters with Black patients, clinicians with higher bias were more domineering of the conversation, were less likely to involve the patient in decision making, used slower speech and had longer visits, and made less use of patient centered dialogue. Black patients in turn perceived high bias clinicians as less respectful and less likeable, had lower confidence in the clinician, and were less likely to recommend the clinician to other people. Another study sought to explore the association between physician implicit racial bias and decision to send cardiac patients for thrombolysis (standard of care for this condition whenever possible).⁵⁰ This experiment involved showing physicians patient vignettes involving a Black or White patient presenting with symptoms of coronary artery disease, and asking physicians first how likely it was that the patient was experiencing coronary artery disease, and second if they would refer the patient for thrombolysis. Physicians then completed the racial implicit association test. As an entire group, physicians were more

likely to diagnose Black patients with coronary artery disease than White patients, but were equally likely to recommend thrombolysis to each patient so diagnosed. Analysis showed physician's explicit evaluations of race did not interact with treatment recommendation. Implicit anti-Black bias however proved to be strongly associated with treatment decision, with physicians having high anti-Black implicit bias significantly less likely to refer Black patients for thrombolysis. While this result is certainly alarming, in light of the above evidence for treatment inequality based on race it is in no way surprising. Past research had observed treatment discrepancies for thrombolysis on the basis of both race and sex,⁵² but the present study's direct observation of bias makes it particularly useful.⁵⁰ Interestingly, physicians with high anti-Black bias who had identified the purpose of the study (to evaluate treatment discrepancies on the basis of race), were significantly more likely recommend thrombolysis for Black patients than physicians with low bias regardless of awareness of the study purpose. This is consistent with dual process theory, where awareness of the study purpose posed a threat to the high-bias physician's self identity as providing unprejudiced care, and allowed them to exert cognitive effort to overcome their subconscious prejudice.

Implicit bias among physicians has been studied in domains other than race, although not as extensively. One study measured obesity bias among healthcare providers involved in obesity medicine.⁵³ Past studies had indicated high levels of anti-obesity attitudes are prevalent in the healthcare field, and that these attitudes lead to many obese patients to avoid seeking preventative care services.^{51,54} The present study administered the obesity implicit association test to obesity-related healthcare workers at a National Conference on Obesity.⁵³ Participants completed a demographic survey and then

completed the implicit association test for obesity. The obesity implicit association test includes several attributions, including a good/bad, smart/stupid, motivated/lazy, and valuable/worthless scales. The sample showed high levels of anti-obesity implicit bias, with particularly high attributions that obese people are ‘bad’, ‘stupid’, and ‘lazy’. Alarmingly, this sample showed higher levels of explicit negative evaluations of obese people as well, that mirrored the results of the implicit testing above. This result is somewhat unexpected, as one might expect participants at a conference focusing on obesity research to feel it is less acceptable to embrace openly prejudiced beliefs in that setting. However, given the ubiquity of discrimination against obese people and the continued public embrace of anti-obesity concepts, perhaps there is yet to be a sufficient culture of acceptance to allow such explicit evaluations to trigger identity threat. Sitcoms continue to use obesity as a source of humor, and fat-shaming continues publicly on a regular basis. Subgroup analysis demonstrated that older participants, men, obese participants, and participants who worked with obese people directly all had lower levels of anti-obesity bias on some attribution subscales.⁵³ The high levels of anti-obesity bias among clinicians has poor implications for care. Patients who perceive that their clinician judges them for their weight are more likely to attempt weight loss and less likely to be successful.⁵⁵ For bias to have such a profound negative effect on patients demonstrates the need to address implicit bias in healthcare.

CHAPTER 3: CONCLUSIONS

Whether rooted in race, sex, socioeconomic status, sexual orientation, obesity, or others, implicit bias has direct negative impacts on care equality when allowed to operate unchecked. These underlying biases must be addressed to improve the health of our patients, the question is, how? While there remains a dearth of studies available to elucidate these interactions in the healthcare field, the theoretical framework of bias can guide thinking of where else bias may be present. Since bias is often rooted in stereotyped thinking instilled at a young age, any social group which has been assigned negative value by social norms of the time is at risk for care decisions driven by negative implicit bias. This could be on the basis of gender, sexual orientation, age, educational status, and very likely health literacy. As outlined earlier in this paper, the social groups found to be at highest risk of low health literacy are non-White people, non-English speakers, older adults, people with lower educational levels, and people with lower socioeconomic status.⁵ This paper has already noted that many of these groups have been targets of implicitly biased associations, particularly in terms of race and income level.^{38,39,44,45,56} Based on the cognitive theory of paired association (in which two concepts or events repeated introduced together become linked in a person's thought processes),³⁴ if a clinician holds an unconscious bias against Black patients and then encounters Black patients with low health literacy, that clinician may also come to associate the negative attributions they hold about Black patients to the concept of low health literacy. This associative assignment of value could transfer based on any preformed implicit negative judgement that is then associated with the concept of health literacy. Certainly, the fact that short term interventions to address provider health

literacy skills have failed, and the only successful health literacy provider intervention described to date was not only longitudinal, but involved personalized feedback on performance with various groups, is consistent with a subconscious rather than conscious cognitive process at play.³³ Thus, health literacy can be considered a form of coded bias associated with any of several other commonly held implicit biases. Considering health literacy in this way may provide useful opportunities for adopting more effective strategies to address care and communication disparities with low health literacy patients, and to help propel a necessary movement to make healthcare egalitarian as a whole.

Interventional research has demonstrated that it is possible to affect implicit bias and behaviors based on those biases, but has also demonstrated that many conventionally tried strategies result in only temporary or counterproductive change.^{57,58} For example, in several studies discussed throughout this paper, activation of threat to an individual's self-identity as non-prejudiced was found to result in counterstereotypic behaviors.⁵⁷ One might logically expect that this means that an effective strategy would be to engage people directly to consider their biases consciously and act against them. This strategy however, has consistently yielded poor results. Studies in racial prejudice have found that directly appealing to participants' egalitarian values or giving positive feedback that their behavior was becoming more egalitarian was observed to increase participants implicit racial bias.⁵⁷ Similarly, offering information that logically challenges an implicit belief seems as if it should be effective in dismantling said belief, but the opposite has been found to be true. In a study of participants with implicit anti-obesity bias, presenting the participants with causes of obesity such as overeating and lack of exercise increased implicit bias, while receiving information on genetic factors in obesity cause no change.⁵⁴

Since implicit bias is coded by value systems, facts such as overeating and low exercise could be reinterpreted by the participants existing cognitive structure to mean that obese patients have low self-control and are lazy, while information on genetics is valueless and so does not affect their existing beliefs. Many other interventional strategies have been tried and show only transient change in implicit bias, which typically returns to baseline within hours to days of the intervention.^{57,59} Examples of these strategies include counter-conditioning (paired association of bias target with a positive association), counterstereotypic scenarios, and subconsciously activating egalitarian values. While these strategies have been proving effective in temporary shifts in implicit bias, their efficacy rapidly diminishes and bias returns to baseline.

There are however, several effective strategies that can be employed to shift bias in the long term. The most robustly studied and successful methods rely on intergroup contact theory.⁶⁰ Intergroup contact theory posits that repeated exposure to ‘out-groups’ (i.e groups a person does not self-identify with) decreases the implicit biases held against these groups based on repeated counterstereotypic encounters that gradually undermine the strength of the stereotypic associations on which the implicit biases are based.⁶¹ The effect of intergroup contact has been observed in the literature, although not always explicitly identified. White medical students at schools with higher numbers of non-White medical students were more likely to strongly endorse the importance of equitable access to healthcare.⁶² Another study of medical student’s implicit racial biases found that positive contact with Black physicians was significantly associated with lower levels of racial bias among White medical students.⁶³ Only one randomized control trial to date has shown a lasting effect in implicit bias reduction.⁶⁴ This study sought to address racial

prejudice as a learned habit, and randomized students who had undergone the racial implicit association test to a control or intervention group. The control group was given the test, informed of their results, and then asked to return for repeated tests at 4 and 8 weeks after baseline. Intervention participants were administered the test, given their results, and then were given a 45 minute interactive lecture. The lecture taught participants that implicit prejudice is a habit, how implicit processes are automatically activated, the validity of the test they had just taken, prevalence of implicit racial bias and ways that these biases can lead to discrimination, and finally strategies for reducing implicit bias. The strategies taught included reflection on stereotyped thinking when it occurs and coming up with strategies to use unbiased thinking in the future, counterstereotypic imagery, individuation (i.e. seeking to learn about a person in an outgroup to inhibit stereotypic thinking), seeking out intergroup contact, and perspective taking (i.e. trying to visualize oneself in the situation of the person in the outgroup to inhibit stereotypic thinking). The authors found this strategy to be extremely effective, with reductions in implicit bias among the intervention group at 4 and 8 weeks after intervention. This effect was, in part, driven by intervention group concern about prejudice and discrimination in society, which increased at two weeks and continued to increase at 6 weeks after the intervention. This is similar to results of several of the above discussed bias studies, which indicated that high motivation to act without prejudice allows individuals to act counter to their stereotyped biases.^{35,36}

Effective strategies for bias reduction have been identified, but to date no such intervention has been directly studied in the healthcare setting. In the case of health literacy, where numerous interventions to address care disparities have been tried with

minimal success, the use of the bias model to design future measures is an important opportunity to affect real change in egalitarian care. Such a task is increasingly important. Examples of increasingly explicit displays of racism and toxic nationalism abound in our current political and national climate. Many individuals as well as professional groups are speaking about the importance of taking an active stance against bias, prejudice, and discrimination. Physicians have always held a position of power and influence in this country, and so are in an important position to both spearhead open efforts to fight discrimination and to correct the longstanding discriminatory practices in healthcare that persist to this day. Efforts targeting these biases would lead to improved patient outcomes with time. Furthermore, improving care quality for such vulnerable groups would allow for better health for all residents of this country, increasing their opportunities to pursue the many freedoms our country offers. Active efforts to combat bias will be challenging, but will give physicians a chance to be the providers we think ourselves to be, and the ones our patients deserve.

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