

## RACIAL BIASES IN MEDICINE AND HEALTHCARE DISPARITIES

JOHN F. DOVIDIO  
YALE UNIVERSITY

SUSAN EGGLEY  
TERRANCE L. ALBRECHT  
WAYNE STATE UNIVERSITY  
KARMANOS CANCER INSTITUTE

NAO HAGIWARA  
VIRGINIA COMMONWEALTH UNIVERSITY

LOUIS A. PENNER  
WAYNE STATE UNIVERSITY  
KARMANOS CANCER INSTITUTE

---

Healthcare disparities, which represent differential treatment by patient race and the experience of bias within the medical system in ways that cannot be accounted for by medical factors, systematically contribute to the relatively poor health of members of stigmatized groups internationally. We focus on bias in healthcare experienced by Blacks relative to Whites in the USA because, practically, these disparities are significant and socially consequential, and, empirically, these disparities are the most comprehensively documented and studied. Specifically, we describe the nature and extent of racial bias among healthcare providers; examine the effects of these biases on treatment, behavior toward Black patients, and the responses and perceptions of Black patients; and suggest ways of reducing the negative effects of racial bias in healthcare. Although physicians generally inhibit the direct effects of conscious (explicit) bias in the healthcare they provide, implicit bias, both independently and in combination with explicit attitudes, plays an influential role in the dynamics of physicians' healthcare interactions with Black patients, producing lower quality care. We further identify several theory-based interventions to limit, and potentially eliminate, the negative consequences of provider biases within the medical context, recognizing the active roles that both providers and patients have in these exchanges.

Key words: Healthcare; Implicit bias; Intergroup bias; Prejudice; Racial disparities.

*Correspondence concerning this article should be addressed to John F. Dovidio, Department of Psychology, Yale University, 2 Hillhouse Rd, PO Box 208205, New Haven, CT 06520 - 8205, USA. Email: john.dovidio@yale.edu*

---

In over 100 countries, which include 94.4% of the world's population, and across a broad spectrum of physical illnesses, members of socially disadvantaged racial and ethnic groups typically experience poorer physical health than members of socially advantaged groups (Dorling, Mitchell, & Pearce, 2007). Several different biological, environmental, and social factors contribute to these disparities. One significant social factor that is receiving increasing attention is racism, involving both racial bias and the experience of discrimination (Paradies et al., 2015; Penner, Hagiwara, et al., 2014). Racism indirectly negatively affects health by limiting economic and

social opportunities and access to high quality medical care; it directly influences health by creating high chronic levels of stress among members of socially disadvantaged and stigmatized groups (Brondolo, 2015; Brondolo et al., 2011; Major, Mendes, & Dovidio, 2013). However, disparate treatment and the experience of bias *within the medical system* also play unique roles in shaping racial disparities in health (Penner, Hagiwara, et al., 2014; Penner, Phelan, Earnshaw, Albrecht, & Dovidio, in press; Smedley, Stith, & Nelson, 2003). These healthcare disparities, which have been well-documented in the United States and Europe (e.g., Nazroo & Karlsen, 2001; Shavers et al., 2012; Smedley et al., 2003), produce unjustifiably poorer quality care. Drawing largely but not exclusively from our own research, we consider the roles of racial bias and discrimination and the ways they affect the behaviors of both healthcare providers and patients to adversely affect quality of healthcare that members of a socially disadvantaged group — specifically Blacks in the USA — receive.

We focus on racial biases and healthcare disparities between Black and White patients because the disparities between Black and White patients are typically the largest and most consistent of any minority racial or ethnic group in the USA. The Agency for Healthcare Research and Quality (2015), which reviewed studies conducted in the USA that had compared the quality of healthcare received by different minority racial or ethnic groups to the quality of healthcare received by Whites, found that Blacks received poorer healthcare than Whites in about 35% of the studies and better healthcare in about 12%. More specifically, racial disparities occur in the treatment of cardiac disease and many different cancers, including breast, lung, prostate, colorectal and other gastrointestinal cancers (e.g., Berger, Lund, & Brawley, 2007; Hayn et al., 2011; Lin & Virgo, 2013; Morris et al., 2008; Murphy, Harlan, Warren, & Geiger, 2015). These healthcare disparities exist even when statistically controlling for the severity of the disease, insurance coverage, and socioeconomic status and other demographic variables (Hassett et al., 2016). Thus, these disparities represent an important and timely social problem. Despite this specific focus, we believe that the processes we describe are quite relevant to the effects of bias on the healthcare interactions and disparities experienced by a large number of other racial and ethnic groups, both inside and outside the USA.

Racial bias contributes to healthcare disparities through two processes. One process involves the thoughts, feelings, and actions of healthcare providers. That is, bias among healthcare providers involves negative attitudes (i.e., prejudice), beliefs about the characteristics of individuals based on their group membership (i.e., stereotypes), or specific actions that affect health outcomes (i.e., interpersonal discrimination). The other process that contributes to healthcare disparities concerns individuals becoming aware of and reacting to the thoughts, feelings, and actions directed toward them because of their racial or ethnic identity. In the current review of work on racial bias in medicine and healthcare disparities, we examine both the role of racial bias among healthcare providers and the race-related attitudes and beliefs among their patients or potential patients. Racial bias may be manifested in both the treatment decisions physicians make for Black, relative to White patients, and the ways that healthcare providers behave toward Black patients in medical interactions. Feelings and actual experiences with racial bias and discrimination can cause Black patients to avoid medical interactions or to alter their behavior during these interactions in ways that could reduce the effectiveness of the healthcare they receive — for example by being less willing to cooperate with their physician in the treatment of their disease (Penner, Dovidio, Hagiwara, et al., 2016).

In our review and analysis of racial bias in medicine and healthcare disparities, we next consider the effects of racial bias among healthcare providers on their interactions with Black patients. We then discuss the ways feelings about bias and discrimination among Black patients can negatively affect the quality of the healthcare they receive. After that, we consider ways of reducing the negative effects of racial bias in healthcare.

## RACIAL BIAS AMONG HEALTHCARE PROVIDERS

Racial bias is a persistent and pervasive social problem across a range of countries. In this section we thus consider the nature and consequences of racial bias among physicians and other healthcare providers by discussing the nature of contemporary racial bias, and research on how bias may affect medical decision making and the quality of healthcare interactions.

### The Nature of Contemporary Racial Bias

In recent years, the degree to which people blatantly express racial prejudice and stereotyping has substantially declined in the USA and in other countries that generally hold core egalitarian values (e.g., Ford, 2008). In addition, the way these attitudes and stereotype relate to discrimination — the unfair treatment of members of another group — has changed. Blatant discrimination, while still a socially significant problem, is less common. Instead, current discrimination is more subtle, indirect, and less recognizable as racial bias (Dovidio, Gaertner, & Pearson, in press). Both the nature of contemporary racial attitudes and stereotypes and the ways discrimination is subtly expressed have important implications for understanding and addressing racial healthcare disparities.

#### *Racial Attitudes and Stereotypes*

Evidence of these substantial declines in racial bias has typically involved explicit attitudes that are consciously expressed and controlled. They may reflect both a motivation to respond in a socially acceptable way, as well as genuine, consciously-held egalitarian beliefs (Gaertner & Dovidio, 1986).

Despite the substantial reduction in expressions of racial prejudice and stereotyping (explicit feelings and beliefs) over time in the USA, large numbers of White Americans still harbor implicit racial biases. Implicit biases, which are most commonly measured using response-latency tasks such as the Implicit Association Test (IAT; Greenwald, Poehlman, Uhlmann, & Banaji, 2009), are automatically activated responses that occur often without conscious awareness. Outside of the USA, there is evidence that people have strong implicit biases against a range of social groups defined by religion (e.g., Muslims), nationality (e.g., Moroccans, Turks), and other markers (e.g., drug use) of devalued status in the society (e.g., Blommaert, van Tubergen, & Coenders, 2012).

Implicit attitudes result from repeated exposure to positive or negative information about a group, either through socialization or direct experience, and can be resistant to change in response to new information (Gregg, Seibt, & Banaji, 2006). Unlike explicit biases, implicit biases

---

do not vary as a function of people's socio-demographic characteristics or profession. Because the two levels of bias differ with regard to a person's awareness of them, explicit and implicit racial biases are largely independent of one another (Dovidio et al., in press). Thus, in the USA, even though most Whites eschew racist feelings and thoughts explicitly, a substantial percentage of them (estimated from 44% to 70%; Morin, 2015; Nosek, Hawkins, & Frazier, 2011) hold implicit negative feelings toward and thoughts about Blacks.

Whites can readily recognize and thus inhibit blatant forms of discrimination; however, implicit prejudice and stereotypes can often influence the way people attend to and process information often without their awareness. Thus, implicit bias can lead to subtle forms of discrimination. This includes differential treatment that can be justified by Whites as being due to ostensibly nonracial factors (Dovidio & Gaertner, 2004) or everyday slights and indignities that may be expressed by well-intentioned people but are experienced as demeaning by Blacks (i.e., microaggressions; Sue, 2010). Although these behaviors may be expressed without awareness of Whites of being racially biased, the behaviors continue to have a significant negative impact on the economic, physical, and mental well being of Black Americans (Godsil, Tropp, Goff, & Powell, 2014) and to be perceived by Blacks as racial discrimination.

Despite their relatively unprejudiced explicit attitudes, there is substantial evidence that physicians as a group do have rather strong negative implicit feelings about Blacks patients. Sabbin, Nosek, Greenwald, and Rivara (2009), for example, assessed implicit bias in about 2,500 physicians and estimated the magnitude of physicians' implicit bias against Blacks (i.e., computed the effect size). The level of implicit prejudice was, by conventional statistical standards, large — almost a full standard deviation away from a no-bias position (effect size,  $d = .89$ ). This substantial level of bias was not confined to physicians who self-identified as White; it was also found (albeit at slightly lower levels) among physicians who self-identified as Hispanic/Latino or Asian. By contrast, Black physicians displayed almost no implicit racial bias against other Blacks or Whites. Students in U.S. medical schools show similarly strong levels of implicit racial bias when they begin medical training and display comparable levels when they complete their medical training (van Ryn et al., 2015).

### *Aversive Racism*

The subtlety of contemporary bias and the distinction between explicit and implicit bias are integral to the phenomenon of aversive racism (Dovidio et al., in press; Gaertner & Dovidio, 1986). Aversive racism represents a contemporary form of bias among people who hold conscious egalitarian values (and therefore appear nonprejudiced when measured explicitly) but who also harbor unconscious negative feelings and beliefs (and thus show implicit racial prejudice and stereotypes). These implicit negative attitudes and stereotypes are rooted in basic psychological processes (e.g., social categorization) that promote intergroup bias generally (Dovidio & Gaertner, 2004). In addition, the negative feelings that aversive racists have toward Blacks do not reflect open hostility or hatred. Instead, aversive racists' reactions typically involve discomfort, anxiety, or fear. Thus, because of these negative feelings, they find Blacks "aversive," and, because of the value they place on their egalitarian principles, they find any suggestion that they might be prejudiced "aversive," as well.

Because the basic mechanisms of aversive racism are not tied to specific targets of bias and the U.S. political context, its principles are applicable to behaviors of dominant groups toward minorities in nations other than the USA. Biases similar to aversive racism occur in countries that, like the USA, also have strong societal egalitarian values, such as Canada (Son Hing, Chung-Yan, Hamilton, & Zanna, 2008), England (Hodson, Hooper, Dovidio, & Gaertner, 2005), the Netherlands (Kleinpenning & Hagendoorn, 1993), Portugal (de França & Monteiro, 2013), and Spain (Wojcieszak, 2015).

The aversive racism framework also sheds light on when people are most likely to exhibit racial bias. Because aversive racists consciously endorse egalitarian values and truly believe that they are nonprejudiced, they will *not* act inappropriately toward Blacks or other socially disadvantaged groups when discrimination would be obvious to others and themselves — such as in situations in which the normatively appropriate response is clear. By contrast, because implicit attitudes influence more spontaneous behaviors and responses that people do not view as indicative of their attitudes (Dovidio, Kawakami, Smoak, & Gaertner, 2009; Fazio, 1990; Fazio & Olson, 2014), implicit racial biases exert their influence in more negative responses to or treatment of Blacks in situations that are normatively ambiguous or allow the attribution of this treatment to nonracial factors. There is large body of research showing that, under these circumstances, aversive racists may engage in behaviors that ultimately harm Blacks but in ways that allow aversive racists to maintain their self-image as nonprejudiced (for a review, see Dovidio et al., 2009). These processes outlined in the aversive racism framework are directly relevant to biases in healthcare.

### Racial Bias and Medical Decision-Making

As we noted earlier, there is substantial evidence that Blacks in the USA and members of other stigmatized groups internationally experience lower quality healthcare than do members of dominant groups in those societies, even after statistically controlling for a range of medically-relevant factors. For example, an analysis in the USA of over one million clinical visits for children diagnosed with respiratory infections found that, even after controlling for relevant medical and socio-economic variables, Black children were significantly less likely than White children to receive antibiotics (Gerber et al., 2013). Another national study revealed that Black children who lose a finger are half as likely as White children to have the finger reattached (Mahmoudi, Swiatek, Chung, & Ayanian, 2016). A review of almost 800,000 hospital discharge records found that Blacks with peripheral arterial disease were 77% more likely than Whites to have the affected limb amputated (Durrazzo, Frencher, & Gusberg, 2013). Although there is a dearth of experimental studies that systematically vary patient race and its effect on treatment, there is an extensive body of nonexperimental research that shows that even when other variables are carefully controlled, Black patients receive lower quality healthcare than do White patients (Penner, Hagiwara, et al., 2014).

But, how do negative racial feelings among healthcare providers affect the healthcare their Black patients receive? Not only is explicit prejudice relatively rare among physicians, but there is little evidence that providers' explicit negative feelings *directly* affect the treatment they give to Black patients (Penner & Dovidio, 2016). Providers who do possess explicit negative attitudes toward Blacks appear to be both willing and able to control its expression when they encounter Black patients or make treatment decisions about them.

However, physicians' explicit biases can indirectly influence treatment decisions through their influence on the stereotypes they may hold about Blacks. For example, van Ryn, Burgess, Malat, and Griffin (2006) studied physicians treating Black and White patients who were medically appropriate candidates for needed coronary bypass surgery. Physicians were asked to rate each of their patients (both Blacks and Whites) on characteristics such as education, intelligence, self-control and preference for physical activity, and to report how strongly they would recommend the surgical procedure for each patient. Black men were significantly less likely to be recommended for bypass surgery than were White men. However, the process occurred indirectly. The direct cause of the disparity in physicians' recommendations was the perception that relative to their White patients, their Black patients were less well-educated and less likely to engage in physical activity after the surgery. Thus, the physicians concluded that they were poorer candidates for the surgery. Similarly, Calabrese, Earnshaw, Underhill, Hansen, and Dovidio (2014) found that after reading a medical case involving a Black versus White patient at risk for HIV, medical students did not recommend prophylactic antiretroviral drug treatment less for Black than White patients overall. However, these medical students reported that they believed that the Black patient would be more likely to engage in risky sexual activity if given these drugs, and this belief reduced their willingness to provide the drugs.

One other area in which racial attitudes and stereotypes affect medical care is pain management. Because physicians are more likely to underestimate the intensity of pain in Blacks relative to other racial/ethnic groups (Hoffman, Trawalter, Axt, & Oliver, 2016) and more likely to believe that Blacks require scrutiny if they are given narcotic pain killers (Becker et al., 2011), physicians often prescribe lower levels of pain medications for Black than White patients (Burgess et al., 2014). This is even true when the Black patients are children (Goyal, Kuppermann, Cleary, Teach, & Chamberlain, 2015).

Turning to the impact of implicit bias on medical decisions, a critical question is whether, independent of explicit bias, physicians' implicit racial bias can affect the treatment decisions they make about Black patients. That is, do the implicit negative feelings toward Blacks, which providers may not be aware they possess and are harder to control, frequently directly affect the quality of healthcare that Blacks receive? The research on this issue has produced mixed findings. In one of the first studies of this issue (Green et al., 2007), physicians read a scenario about a patient displaying substantial distress, suggesting acute coronary syndrome. Higher levels of physician implicit bias were associated with lower probabilities that a physician would recommend the appropriate treatment (clot-reducing drugs) for Black patients relative to White patients. Also, in a study of hypothetical treatment for pain, Sabin and Greenwald (2012) found that greater physician implicit bias (but not explicit prejudice) predicted less willingness to prescribe pain-killing narcotics to Black pediatric patients.

However, other researchers have failed to find effects of implicit prejudice on providers' treatment decisions. For example, in a series of studies Haider and colleagues (Haider et al., 2011; Haider, Schneider, Sriram, Dossick, et al. 2015; Haider, Schneider, Sriram, Scott, et al., 2015) also used simulations (e.g., scenarios, virtual reality) to study the impact of implicit bias on healthcare decisions by surgeons, surgical nurses, and medical students. These studies did not find a significant association between the healthcare providers' implicit bias and their treatment decisions. Other studies report similar null findings with respect to treatment decisions (Oliver, Wells, Joy-Gaba, Hawkins, & Nosek, 2014). In a meta-analysis of the impact of implicit bias on

medical decisions, Hall et al. (2015) reported that only about 10% of the studies that have studied this relationship find significant associations. Penner, Blair, Albrecht, and Dovidio (2014) suggested that this limited effect may be because, in most cases, physicians have time to thoughtfully consider what treatment is best for their patient and the impact of their treatment decision. As a consequence, these highly deliberative decisions would be less likely to be influenced by physicians' implicit racial attitudes.

Nonetheless, even the infrequent cases for which implicit bias influence treatment decision merit attention. The context in which this bias occurs — medical decision-making — has immediate and long-term consequences on both individual patients and their families. Further, as Penner, Dovidio, Gonzales, et al. (2016) have recently argued, even small effects of racial bias can have substantial cumulative negative health consequences when they *systematically* disadvantage large groups of people.

### Provider Bias and Medical Interactions

There is a large body of research showing that, relative to medical interactions between a doctor and patient of the same race, racially discordant medical interactions (e.g., between a White doctor and a Black patient) are less positive and productive (Penner, Eggly, Griggs, Orom, & Underwood, 2012). Racially discordant medical interactions are shorter in length (Cooper et al., 2003), as well as less patient-centered and characterized by less positive affect (Johnson, Roter, Powe, & Cooper, 2004). These interactions involve fewer attempts at relationship building (Siminoff, Graham, & Gordon, 2006), less patient participation in decision-making (Koerber, Gajendra, Fulford, BeGole, & Evans, 2004) and typically less information is provided to Black than White patients (Eggly, Barton, Winckles, Penner, & Albrecht, 2015; Eggly et al., 2011). Furthermore, racially discordant medical interactions are more likely to be verbally dominated by the physician (Johnson et al., 2004). Finally, Oliver, Goodwin, Gotler, Gregory, and Stange (2001) demonstrated that White physicians spent significantly less time planning treatment, providing health education, assessing health knowledge, engaging in informal conversation, and answering questions with Blacks as compared to White patients.

One explanation for these communication disparities, at least in part, involves physician bias. In contrast to the mixed findings for treatment decision-making, researchers have consistently found that non-Black physicians' implicit feelings do affect their *interactions* with Black patients. Hall et al.'s (2015) review of the literature identified over 30 studies that have found significant or marginally significant negative effects of physician implicit bias on the quality of medical interactions. A core premise of this work is that physician implicit bias affects their behavior in ways that adversely affect the quality of their healthcare interaction with Blacks. Indeed, as assessed by independent coders, in medical interactions with Black patients, healthcare providers higher in implicit racial bias speak faster, are less patient-centered, spend less time with the patients (Cooper et al., 2012), and show less positive affect in the interaction (Schaa, Roter, Biesecker, Cooper, & Erny, 2015).

Hagiwara et al. (2013) also studied the influence of physician implicit bias on their behavior, using a sample of non-Black physicians treating very low income Black patients in a primary care clinic. They measured physician bias and video recorded their interactions with their

Black patients. One of their measures of physician behaviors was how much a physician talked during the interaction relative to their patient. Overall, physicians talked more than patients did — a typical pattern in medical interactions. However, Hagiwara et al. also found that physicians who were more implicitly biased were more likely to verbally dominate the conversation. That is, the ratio of the amount of time they talked to the amount of time their patients talked was greater among the higher implicit bias physicians than among the lower bias physicians. Despite this, their interactions with their patients were significantly shorter. However, as predicted, there was no association between explicit physician bias and the talk time ratio. Hagiwara et al. speculated that physicians with higher levels of implicit bias harbor negative attitudes toward and stereotypes about Black patients (e.g., seeing Black patients as less compliant and trustworthy), which might lead them to want to exert more control during interactions with them. This is manifested in the association between their implicit bias and how much they talked relative to their patients.

Relative talk time is important for several reasons. First, relative talk time is considered a valid measure of participants' motivation to dominate an interaction. Second, there is clinical significance to the relative amount of time patients and physicians talk during medical interactions because it is believed to be related to healthcare outcomes, such as patient satisfaction and adherence. For example, according to the Patient-Centered Communication Model (Stewart et al., 2003), greater physician talk time is associated with less patient satisfaction and adherence, while greater patient talk time is associated with more satisfaction and adherence (Hahn, 2009). And third, the findings further illustrate the differential effects of implicit and explicit bias on physician's behaviors in medical interactions. As already noted, people (including physicians) are much better at self-regulating how explicit racial bias is manifested in more planned behaviors than they are at regulating how implicit racial bias is manifested in more spontaneous behaviors (Dovidio et al., 2009). Thus, a relatively spontaneous behavior, such as how one speaks, may not be strongly self-regulated and therefore may be much more affected by the level of a physician's implicit than explicit racial bias.

Although most studies of the effects of provider racial bias on their behavior separately consider the effects of explicit and implicit bias, some have looked at how these biases may interact to affect physicians and their medical encounters. Specifically, these studies have focused on how aversive racism may affect non-Black physicians' reactions to their Black patients. Hagiwara, Dovidio, Eggly, and Penner (2016) used the same sample of physicians and patients as discussed earlier. In this study these investigators were specifically interested in the interaction between explicit and implicit bias and, thus, identified physicians who fit the aversive racist profile — that is, those low in explicit but high in implicit racial bias. The researchers then compared how the aversive racist physicians and the other physicians responded to different kinds of patients. The thin slicing method, in which short segments of the interactions are coded (Hagiwara & Dent, 2016), was employed to assess the positive and negative affect displayed by the physicians as they interacted with their patients.

The aversive racist physicians (i.e., those low in explicit but high in implicit bias) did not differ from the other physicians in the affect they displayed toward Black patients, on average. However, Hagiwara et al. (2016) then examined differences in how physicians responded to patients who had previously reported different histories of discrimination in their everyday lives. Patients were divided into those who indicated that they had experienced some discrimination in their lives and those who reported no prior discrimination. Black patients who had experienced

more discrimination outside the medical context tend to anticipate more bias in their interactions with physicians (Dovidio et al., 2008) and are generally more dissatisfied with their encounters with White physicians and talked more in these exchanges (Hagiwara et al., 2013).

When aversive racist physicians interacted with patients who reported that they had been discriminated against in the past, they exhibited particularly low levels of positive and high levels of negative affect during the interaction. This effect did not occur when they interacted patients who reported that they had not experienced discrimination, nor did it occur among the other physicians. That is, these affective reactions only appeared when the aversive racist physicians encountered apparently more “difficult” Black patients (i.e., those who had experienced a likely anticipated discrimination). Note that, in accord with the aversive racism framework, these displays of low positive and high negative affect only occurred when such reactions could reasonably be attributed to the patient’s behavior rather than to the physician’s bias. If the cause was simply that the high discrimination patients were more difficult, these effects should have been observed across all physicians’ reactions. Instead, only the aversive racist physicians responded in this manner to the high discrimination patients. Note also that these results suggest that Black patients’ attitudes and experience do affect their own feelings about and behavior in racially discordant interactions. We discuss this issue in the next section.

#### Patient Influences on Medical Interactions

Research conducted outside medical settings reveals that when Blacks enter social interactions they are quite sensitive to the race of the other party and often assume that, because they are identified as Black, they will be the target of prejudice and discrimination (Bergsieker, Shelton, & Richeson, 2010). This effect can occur even in the absence of an immediate agent of discrimination. That is, the anticipation of being discriminated against can have substantial effects on Blacks’ thoughts, feelings, and actions, even in the absence of immediate discriminatory behavior against them. This general effect can influence Black patients’ reactions to their medical care and to the providers with whom they may interact (Dovidio et al., 2008; Penner et al., 2009).

Simply being aware of this potential outcome can activate *stereotype threat*. Stereotype threat occurs when a member of some social group worries that what they do or say may confirm some stereotype about their group. It often occurs when a person encounters a situation that increases the salience of either their membership in a group or the stereotypes about the group. For example, in initial research on this topic, Steele and Aronson (1995) activated stereotype threat by making negative stereotypes about lower intelligence of Blacks salient to Black college students. This had the effect of lowering these students’ performance on a supposed test of their intelligence. In medical settings, awareness of racial stereotypes (e.g., Black patients are less intelligent or cooperative than White patients) or knowledge of historical (e.g., the Tuskegee syphilis experiments) or contemporary discrimination against Blacks can elicit medically-related stereotype threat among Blacks (Aronson, Burgess, Phelan, & Juarez, 2013).

Aronson et al. (2013) proposed three ways that this kind of stereotype threat could result in poorer healthcare for Black patients. These are: a) avoidance of medical interactions, b) impaired communication during medical interactions, and c) poorer medical adherence. In a study of the first of these possible effects, Jones et al. (2013) demonstrated that the more strongly Black

students endorsed statements that represented health-related stereotype threat (e.g., “Doctors expect that Black patients will do worse on their routine checkups than White patients”), the more likely they were to report they had delayed or avoided getting a routine medical check-up or a tests such as a cholesterol screening.

Overall, Blacks are less trustful of medical care and those who provide it than are Whites (Dovidio et al., 2008). However, there is still considerable variability in the race-related attitudes of Blacks, which is reflected in differences in health-related behaviors. For example, Thompson, Valdimarsdottir, Winkel, Jandorf, and Redd (2004) found that Blacks who are highly suspicious of the way healthcare systems treat Black patients are less likely to engage in prevention behaviors (e.g., cancer screenings). More recently, Penner, Dovidio, Hagiwara, et al. (2016) reported that Black cancer patients who are more suspicious of healthcare systems indicate less willingness to cooperate with physicians in treatment decisions, and they diminished the importance of physicians in the course of their disease.

With regard to impaired communication, stereotype threat may play a role in the well-documented finding that communication in racially discordant medical interactions is less effective, informative, productive, and positive than it is in racially concordant ones (Penner, Hagiwara, et al., 2014). Stereotype threat may contribute to such problems by making Black patients feel uncomfortable and anxious during the interaction (Abdou & Fingerhut, 2014). Patient anxiety during racially discordant medical interactions can have several negative consequences. It can exacerbate the discomfort and anxiety that non-Black people feel in interracial interactions. Thus, both physicians and their patients may communicate less effectively and, as a consequence, be less able to understand and remember what they say to one another. Also, because of stereotype threat, Black patients may be reluctant to provide information that they believe could confirm a racial stereotype (Aronson et al., 2013). Greater perceived past discrimination and general mistrust of healthcare are also associated with Black patients reporting less satisfaction with their medical interactions and less trust in their own physician (Hagiwara et al., 2013; Penner et al., 2009; Penner et al., 2013).

Stereotype threat and mistrust might also make Black patients less likely to adhere to their physician’s treatment plan. Aronson et al. (2013) proposed two ways in which stereotype threat may have such effects. One way is that stereotype threat engenders anxiety in Black patients, and such anxiety interferes with efficient processing of information and other cognitive tasks. Thus, patients experiencing stereotype threat may have difficulty remembering what the physician recommended they do. A second way is that stereotype threat undermines Black patients’ medical adherence is because it engenders distrust. When Black patients distrust their healthcare provider, they may discount the information and recommendations the provider offers them. Consistent with these proposals, Hagiwara et al. (2013, 2016) found an association between perceived discrimination and how much Black patients trusted their individual physician, and Penner et al. (2013) demonstrated that Black patients’ trust of their physician predicted their adherence to physician treatment recommendations 12 weeks later.

### Reciprocal Provider-Patient Influences and Medical Interactions

In addition to the individual effects of provider and patient influences in medical interactions separately, it is also important to consider the dynamic, reciprocal processes that occur in

medical interactions. For example, earlier we discussed how implicit racial bias influences physicians' behaviors in their interactions with Black patients. Another related way in which health providers' implicit racial bias influences medical interactions involves how this bias affects Black patients' reactions to the physicians. Black patients are able to detect provider behaviors associated with implicit racial bias, and they react negatively to them. Across a variety of medical settings, Black patients who interact with healthcare providers who are higher in implicit bias are less satisfied with the interaction, report less trust in their physician, and experience less positive affect (Blair et al., 2013; Cooper et al., 2012; Hagiwara et al., 2013; Penner et al., 2013). These effects are specific to Black patients; provider implicit bias against Blacks is often associated with more positive perceptions, experiences, and interactions for White patients (Blair et al., 2013).

Much of our own research has investigated the role of physician bias, both implicit and explicit, on physicians' enacted stigma in medical interactions. For example, Penner, Dovidio, Gonzales, et al. (2016) studied the effects of non-Black oncologists' implicit racial prejudice on their interactions with Black patients and the perceptions and behaviors of Black patients in these interactions. Oncologists completed an implicit racial bias measure several weeks before interactions with new patients to discuss cancer treatment. Interactions were video recorded. Following the interactions, patients answered questions about oncologists' patient-centeredness and their own difficulty remembering contents of the interaction, and treatment expectations.

Patients and independent judges both rated oncologists higher in implicit bias as less patient-centered in these interactions. In addition, Black patients had more difficulty remembering contents of the medical interactions with oncologists higher in implicit racial bias. Moreover, oncologist implicit bias indirectly affected Black patients' response to the oncologist's recommended treatment for cancer. Black patients with oncologists higher in implicit bias, because they had poorer quality interactions with their oncologist, had less confidence in the recommended treatment and perceived that they would have greater difficulty successfully completing the treatment. Greater hesitance to pursue the recommended treatment and less confidence that they could complete it can adversely affect the quality of care for these patients, ultimately with substantial life-or-death consequences for these patients.

As we noted earlier, beyond the effects of implicit and explicit biases of providers separately, the joint effects of these biases — and particularly the low explicit/high implicit bias combination reflecting aversive racism — plays an important role in healthcare interactions. Penner et al. (2010) tested the separate and combined effects of the implicit and explicit racial biases primary care physicians who treated Black patients. In terms of the separate effects, physicians higher in explicit prejudice reported involving the patient less in decision-making; that is, physicians who were consciously more racially biased indicated that they were less motivated to have the patient share responsibility in the treatment decision. These physicians also felt less like they were on the “same team” with their Black patients. Black patients perceived physicians higher in implicit bias as less warm and friendly in the interactions.

With respect to the unique combined effects of physician implicit and explicit bias, Penner et al. (2010) also found differences between the patients' reaction to physicians classified as aversive racist (i.e., those low in explicit but high in implicit bias) and the other physicians. As illustrated in Figure 1, Black patients who interacted with the aversive racist physicians were less satisfied with the interaction and felt less positive about and close to their physicians than Black patients who interacted with other physicians, including physicians who were high on both expli-

cit and implicit bias. In subsequent analyses of these interactions, Penner et al. (2013) found that patients trusted the “aversive racist” physicians significantly less than the other physicians. These results reinforce previous work demonstrating the different effects of explicit and implicit bias on medical interactions. Of equal importance, the findings reveal that Black patients can detect the inconsistency in the physicians’ explicit and implicit bias, and that they react particularly negatively to physicians with this combination of explicit (low bias) and implicit (high bias) racial attitudes.

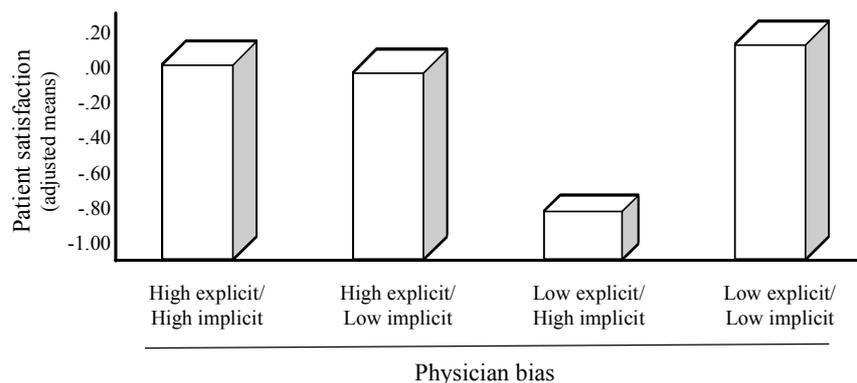


FIGURE 1

Black patients’ satisfaction with their medical interaction as a function of the doctor’s explicit and implicit racial attitudes: a) high explicit prejudice-high implicit bias, b) high explicit prejudice-low implicit bias, c) low explicit prejudice-high implicit bias (i.e., aversive racist), and d) low explicit prejudice and low implicit bias (from Penner et al., 2010).

#### REDUCING RACIAL DISPARITIES IN HEALTHCARE

Because healthcare disparities have multiple causes, interventions must address the various ways that bias influences healthcare. Some of these interventions can focus on system-level factors that help healthcare providers and administrators recognize whether disparities are occurring within their facilities and provide data for developing more standardized, evidence-based guidelines for treating patients with specific conditions (Penner, Blair, et al., 2014). Subtle bias is difficult to recognize in individual cases because it is often cloaked by seemingly nonracial explanations (Dovidio & Gaertner, 2004; Dovidio et al., in press), but *aggregating information* within a particular healthcare system can make systematic disparities on healthcare more apparent. In addition, because implicit racial bias is more influential when the criteria for decisions are less clear or standardized, aggregated information can represent a basis for identifying variability in healthcare and formulating more structured and effective procedures of treatment for patients from different social groups. If there is less latitude for racial bias to operate and more quality control because of standardized protocols, this could reduce racial disparities in treatment for patients with the same symptoms and medical problems.

Because the success of medical care involves responses of both physicians and patients, interventions also need to focus on physicians and other healthcare providers, on patients, and on the interaction between providers and patients. We offer examples of each of these types of interventions.

---

### Physician-Focused Approaches

The Institute of Medicine report on healthcare disparities (Smedley et al., 2003) had a substantial impact on medical school training and postgraduate medical education. One result was introducing more courses on racial health disparities into the curriculum of many medical schools. Sensitizing medical students and physicians to past and current disparities is an important step. However, simply educating people about the existence of bias in healthcare is insufficient (Kalev, Dobbin, & Kelly, 2006). Implicit biases are habits of mind acquired over time (Dovidio & Gaertner, 2004). Like other habits, they are difficult to unlearn.

One of the most effective ways of improving intergroup attitudes, both explicit and implicit, is through positive and frequent intergroup contact (Pettigrew & Tropp, 2011). These experiences demonstrate the inaccuracy of stereotypes, reduce intergroup anxiety, promote empathy, and facilitate the development of new associations with members of the group that are inconsistent with, and thus inhibit, previous negative evaluations of and associations with the group. Two recent papers with longitudinal designs demonstrate the effectiveness of intergroup contact for changing medical students' explicit and implicit racial attitudes over the four-year period of medical training. White medical students who had more positive intergroup contact with Black students, faculty, and other healthcare providers in medical school decreased their explicit prejudice (Burke et al., in press) and implicit bias (van Ryn et al., 2015) more over the course of their medical school training. By contrast, those who more frequently witnessed instructors make disparaging remarks about Blacks displayed more negative explicit and implicit racial attitudes. The amount of formal coursework about bias in healthcare or cultural competence had a more limited effect on medical students' explicit or implicit racial bias, beyond the effects of these informal experiences. Thus, both positive intergroup contact, often in incidental, interpersonal ways within medical school, and a climate of inclusion of Blacks can ultimately address the kinds of behaviors in practice that contribute to racial disparities in healthcare.

### Patient-Focused Approaches

Besides direct attempts to change physicians' behavior, interventions may also attempt to make patients less vulnerable to the effects of bias. Most Blacks report experiences of bias and discrimination in a variety of settings, including healthcare (Dovidio et al., 2008). Patients may respond to bias in a variety of ways, some of which can interfere with the effectiveness of the medical encounter. Two relevant patient-focused interventions focus on reducing the impact of patient stereotype threat and on directly facilitating patients' active participation in medical exchanges.

#### *Reducing Stereotype Threat*

As previously discussed, because of their prior experiences with discrimination, Black patients often experience stereotype threat in medical encounters (Aronson et al., 2013). In medical visits, a Black patient might be concerned about confirming negative stereotypes of Blacks as

---

hostile or unintelligent. Indeed, physicians often hold these stereotypes (van Ryn et al., 2006). The stress created by this concern might manifest itself as an appearance of being cold, inattentive, or disrespectful. Patients under stereotype threat may be reluctant to ask questions or volunteer relevant medical information (Aronson et al., 2013). Such an appearance might lead to negative responses from the physician, thus confirming the patient's fear of being judged according to a negative stereotype.

One way to reduce stereotype threat and strengthen a person's self-integrity is by affirming important personal values. For example, people identify values that characterize them best and then write a paragraph about why these values are important. Values affirmation can address stereotype threat in healthcare. In one study (Havranek et al., 2012), Black patients with hypertension completed a values affirmation exercise or a control exercise just before a regularly scheduled primary care visit. Patient-physician communication was then assessed by coding the subsequent conversation. The patients who completed the values affirmation exercise requested and provided more information about their medical conditions and had interactions that were more positive in emotional tone. Preliminary evidence also suggests that values affirmation can increase patient adherence.

#### *Increasing Patient Active Participation*

Also as noted earlier, Black patients in racially discordant interactions tend to receive less information from their physicians than do White patients (Eggly et al., 2015) and, perhaps because of stereotype threat (Aronson et al., 2013), Black patients are often more reluctant to ask questions or offer information during medical interactions. One possible solution to the problem of more limited exchange of information in interracial medical interactions, which can adversely affect the quality of care, is to facilitate Black patients' level of engagement in racially discordant medical interactions.

Eggly et al. (2016) have attempted to do this with an intervention known as a Question Prompt List. As the name implies, a Question Prompt List provides patients with a list of questions they might ask their physicians when they meet with them. In a randomized trial with Black cancer patients, Eggly et al. found that simply providing patients with a Question Prompt List a few days before they met with their oncologist significantly increased Black patients' level of active participation, relative to a standard of care control condition.

Although Eggly et al. (2016) did not directly explore other effects, this kind of intervention can potentially increase the amount of information available to Black patients. Stimulating Black patients to be more active and facilitating greater information exchange can also lead non-Black physicians to individuate a Black patient — that is, to see him/her more as a unique individual and less member of their racial group — and thereby reduce the impact of negative physician stereotypes about Black patients (e.g., as less intelligent than White patients; van Ryn et al., 2006) on the quality of care they provide to a particular Black patient. Thus, future research might directly examine the potential of a Question Prompt List intervention for reducing racial disparities in healthcare.

---

### Physician-Patient Relations Interventions

The quality of healthcare is affected by physicians' implicit bias and by Black patients' previous experience with discrimination, distrust of the healthcare system, and personal feelings (Dovidio et al., 2008). Although addressing the effects of each of these causes independently has the potential to reduce racial disparities in healthcare, interventions to improve the quality of the *social exchange* between physicians and patients may be particularly valuable.

Treatment disparities could reflect uninformed or medically irrelevant decisions (i.e., not based on the best current medical practice and the particular patient's characteristics) (Albrecht et al., 2008). Uninformed decisions result from miscommunication: effective communication with a patient requires clearly transmitting *technical information* about diagnosis, prognosis, and care, with effective *relational communication* as well. Effective relational communication requires the physician forming an alliance with the patient, which should increase patient understanding and trust. Patient-centered communication may provide one path to alliance building, but there may be other ways.

One method tries to change the perspective of people from different racial groups from an "us versus them" to a sense of "we-ness" — creating a common ingroup identity (Gaertner & Dovidio, 2012). In intergroup relations, a common ingroup identity reduces intergroup bias and increases intergroup cooperation and trust. This shared identity can be induced when members of different groups focus on common interests or goals. A common ingroup identity was created between Black patients and their physicians in a primary care facility by using strategies that included messages and symbols that repeatedly stressed the team nature of the interaction (Penner et al., 2013). Compared to patients in a standard-of-care control condition, patients who received this intervention trusted their physicians more and adhered more to their recommendations four months later.

### CONCLUSIONS

Fifty years ago, the Dr. Martin Luther King Jr. said, "Of all the forms of inequality, injustice in health care is the most shocking and inhumane" (King, 1966). Our review of the literature on healthcare illustrates that these inequalities based on patient race still exist in abundance in the USA, as well as more generally for members of stigmatized groups in other countries (Williams, 2012). These disparities persist despite enormous strides in the quality of medical care in general and significant declines in expressed negative racial attitudes over time.

Our core argument has been that racial bias among healthcare providers plays a significant role in racial healthcare disparities, but its effects may be subtle (Dovidio et al., in press; Penner, Hagiwara, et al., 2014). With respect to treatment recommendations, physicians are generally successful in inhibiting any direct and obvious effects of explicit, consciously-held prejudice. Nevertheless, these biases can still indirectly erode the quality of care provided by physicians by activating negative racial stereotypes (e.g., expectations of non-adherence or risky health behaviors) that are used to rationalize differential treatment.

In addition, there is some evidence, albeit inconsistent, for direct effects of implicit racial bias on physicians' treatment decisions. As Penner, Blair, et al. (2014) observed, the limited and inconsistent effect of implicit bias on physicians' treatment decisions may be because physicians

often have, both in the paradigms used in experimental studies (e.g., scenarios) and in actual practice, time to fully deliberate about what treatment is best for their patient and the impact of different courses of treatment. Physicians therefore have the opportunity and resources to correct for implicit bias in treatment decisions. Implicit biases exert a stronger effect on responses when cognitive resources are limited (e.g., because of divided attention) or diminished (e.g., because of fatigue) (Dovidio et al., 2009; van Ryn et al., 2011) — conditions that may frequently occur in certain actual medical contexts, such as emergency rooms or busy primary care clinics. Future research might thus productively investigate the potential moderating role of medical context on the influence of physicians' implicit biases on their treatment decisions for Blacks and members of racial or ethnic minority groups.

Consistent with the role of implicit bias in social interactions more generally (Dovidio et al., in press), non-Black providers' implicit racial bias often has negative consequences for their interactions with Black patients. Research on medical interactions reveals that implicit racial bias, either alone or in combination with explicit bias, affects both providers' actions toward their Black patients and patients' reactions to them. Furthermore, Black patients' prior experiences with and beliefs about racial discrimination, generally and in healthcare, shape their own perceptions and behaviors when they interact with non-Black healthcare providers (Penner, Dovidio, Hagiwara, et al., 2016). Thus, there are reciprocal effects of racial bias between Black patients and their non-Black providers that interfere with the quality of communication and adversely affect rapport, which ultimately produces lower quality of care for Black patients.

The effects of providers' implicit bias may extend beyond just feelings about the provider and the interaction; physician implicit bias can impact the decisions Black patients make about pursuing medical options, directly and indirectly influencing Black patients to make less than optimal decisions about their treatment (Penner, Dovidio, Gonzales, et al., 2016). These dynamics can have profound impact on Blacks' actual health. Given that in the USA about 80% of Black patients' medical interactions are with non-Black providers (Hamel et al., 2015; LaVeist & Nuru-Jeter, 2002), the influence of implicit racial bias among healthcare providers represents a substantive medical factor that merits attention from social scientists and the medical community itself. We note that the studies of the effects of providers' implicit racial bias on healthcare interactions have primarily focused on physicians. Because patients often have significant interactions with other health professionals (e.g., nurses), we suggest that more future research be devoted to understanding how the implicit biases of other medical staff affect patient care, recovery, and health of Black patients (e.g., Haider, Schneider, Sriram, Scott, et al. 2015).

The range of different influences of racial bias on the quality of healthcare that Blacks relative to Whites receive in the USA, the often subtle effects racial bias has in medical treatment and interactions, and the reciprocal dynamics of physician and patient responses in these encounters require interventions that focus on providers, on patients, and on the interactions between providers and patients. Many such interventions have the goal of changing the explicit and implicit attitudes of providers generally, which is difficult to achieve and sustain and thus may have limited effectiveness across time (Kalev et al., 2006). Instead, we identified specific interventions that are directed primarily at limiting the potential negative *consequences* of provider biases within the medical context and recognizing the active roles that both providers and patients have in these exchanges.

As we acknowledged at the outset, we focused on one particular type of bias in healthcare — biases against Blacks relative to Whites in the USA — to describe in detail the complex issues,

dynamics, and outcomes involved. Although many of the processes we have described apply to a range of intergroup biases that have been studied internationally, we note that different forms of intergroup relations are unique in the historical, political, and economic influences that underlie them, as well as in the cultural and societal context in which they occur. Even within the U.S. context, in which Latinos also experience significant social bias and exhibit substantial disadvantages in health, there may be fundamental differences in the nature and dynamics of bias in healthcare for Latinos compared to those we have reviewed for Blacks. For example, greater physician implicit bias predicts lower trust among Black patients but not among Latino patients (Blair et al., 2013). In the USA, Latinos are less concerned than Blacks about feeling judged by providers and are less aware of hierarchical patient-provider relations (Mulvaney-Day, Alegria, Earl, & Diaz-Linhart, 2011). These differences may make Latinos less sensitive to subtle cues of bias expressed by providers higher in implicit bias and, perhaps because they already perceive more cooperative relations with providers, they might benefit less than Blacks from healthcare interventions that emphasize the “team” (common group) relationship between doctors and patients (Penner et al., 2013). Thus, while the literature we reviewed, which focused on Black-White relations in the USA, may help contribute to a general understanding of the role of bias in healthcare, its application to other groups and in other cultures should be made thoughtfully and cautiously.

In conclusion, although racial biases among healthcare providers may be unintentional, unconscious, and often expressed subtly, they shape the quality of medical care in highly consequential ways. Recognizing that these biases exist, understanding the complex and reciprocal effects of these biases on providers and patients, and developing new interventions to combat these effects are necessary to eliminate the inhumane injustice, of which Dr. King spoke, of disparities in healthcare and health.

#### FUNDING

The authors gratefully acknowledge the following sources of support for their research reported in this article and the writing of this article: an NIH/NHLBI Grant 2R01HL085631-06 awarded to the first author; an NCI (R03CA130588) awarded to the second author; an NCI Program Award, (1U54CA153606-01) to the third author; and NICHD (1R21HD050445001A1), NCI (1R01CA13898), (NIA 2 P30 AG015281-16) and Society for Psychological Study of Social Issues Sages awards to the last author.

#### REFERENCES

- Abdou, C. M., & Fingerhut, A. W. (2014). Stereotype threat among Black and White women in health care settings. *Cultural Diversity and Ethnic Minority Psychology, 20*, 316-323. doi:10.1037/a0036946
- Agency for Healthcare Research and Quality (U.S. Department of Health and Human Services). (2015). *2014 national healthcare quality and disparities report* (AHRQ Publication No. 15-0007). Retrieved from <http://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/nhqdr/nhqdr14/2014nhqdr.pdf>
- Albrecht, T. L., Eggy, S., Gleason, M., Harper, F., Foster, T., Peterson, A., . . . Ruckdeschel, J. C. (2008). The influence of clinical communication on patients' decision making about clinical trials. *Journal of Clinical Oncology, 26*, 2666-2273. doi:10.1200/JCO.2007.14.8114
- Aronson, J., Burgess, D., Phelan, S. M., & Juarez, L. (2013). Unhealthy interactions: The role of stereotype threat in health disparities. *American Journal of Public Health, 103*, 50-56. doi:10.2105/AJPH.2012.300828

- Becker, W. C., Starrels, J. L., Heo, M., Li, X., Weiner, M. G., & Turner, B. J. (2011). Racial differences in primary care opioid risk reduction strategies. *Annals of Family Medicine*, 9, 219-225. doi:10.1370/afm.1242
- Berger, M., Lund, M. J., & Brawley, O. W. (2007). Racial disparities in lung cancer. *Current Problems in Cancer*, 31, 202-210. doi: 10.1016/j.currprobcancer.2007.02.002
- Bergsieker, H. B., Shelton, J. N., & Richeson, J. A. (2010). To be liked versus respected: Divergent goals in interracial interactions. *Journal of Personality and Social Psychology*, 99, 248-264. doi:10.1037/a0018474
- Blair, I. V., Steiner, J. F., Fairclough, D. L., Hanratty R., Price, D.W., Hirsh, H. K., . . . Havranek, E. P. (2013). Clinicians' implicit ethnic/racial bias and perceptions of care among Black and Latino patients. *Annals of Family Medicine*, 11, 43-52. doi:10.1370/afm.1442
- Blommaert, L., van Tubergen, F., & Coenders, M. (2012). Implicit and explicit interethnic attitudes and ethnic discrimination in hiring. *Social Science Research*, 41, 61-73. doi:10.1016/j.ssresearch.2011.09.007
- Brondolo, E. (2015). Racial and ethnic disparities in health: Examining the contexts that shape resilience and risk. *Psychosomatic Medicine*, 77, 2-5. doi:10.1097/PSY.0000000000000149
- Brondolo, E., Hausmann, L. R., Jhalani, J., Pencille, M., Atencio-Bacayon, J., Kumar, A., . . . Schwatz, J. (2011). Dimensions of perceived racism and self-reported health: Examination of racial/ethnic differences and potential mediators. *Annals of Behavioral Medicine*, 42, 14-28. doi:10.1007/s12160-011-9265-1
- Burgess, D. J., Nelson, D. B., Gravely, A. A., Bair, M. J., Kerns, R. B., Higgins, D. M., . . . Partin, M. R. (2014). Racial differences in prescription of opioid analgesics for chronic noncancer pain in a national sample of veterans. *Journal of Pain*, 15, 447-455. doi:10.1016/j.jpain.2013.12.010
- Burke, S. E., Dovidio, J. F., Perry, S. P., Burgess, D. J., Hardeman, R. R., Phelan, S. M., . . . van Ryn, M. (in press). The effects of informal training experiences on explicit bias against African Americans among medical students: A report from the Medical Student CHANGE Study. *Social Psychology Quarterly*.
- Calabrese, S. K., Earnshaw, V. A., Underhill, K., Hansen, N. B., & Dovidio, J. F. (2014). The impact of patient race on clinical decisions related to prescribing HIV pre-exposure prophylaxis (PrEP): Assumptions about sexual risk compensation and implications for access. *AIDS and Behavior*, 18, 226-240. doi:10.1007/s10461-013-0675-x
- Cooper, L. A., Roter, D. L., Carson, K. A., Beach, M. C., Sabin, J. A., Greenwald, A. G., & Inui, T. S. (2012). The associations of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care. *American Journal of Public Health*, 102, 979-987. doi: 10.2105/AJPH.2011.300558
- Cooper, L. A., Roter, D. L., Johnson, R. L., Ford, D. E., Steinwachs, D. M., & Powe, N. R. (2003). Patient-centered communication, ratings of care, and concordance of patient and physician race. *Annals of Internal Medicine*, 139, 907-915. doi:10.7326/0003-4819-139-11-200312020-00009
- de França, D. X., & Monteiro, M. B. (2013). Social norms and the expression of prejudice: The development of aversive racism in children. *European Journal of Social Psychology*, 43, 263-271. doi:10.1002/ejsp.1965
- Dorling, D., Mitchell, R., & Pearce, J. (2007). The global impact of income inequality on health by age: An observational study. *British Medical Journal*, 335, 833-834. doi:10.1136/bmj.39349.507315.DE
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive racism. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 1-51). San Diego, CA: Academic Press.
- Dovidio, J. F., Gaertner, S. L., & Pearson, A. R. (in press). Aversive racism and contemporary bias. In F. K. Barlow & C. G. Sibley (Eds.), *The Cambridge handbook of the psychology of prejudice*. Cambridge, UK: Cambridge University Press.
- Dovidio, J. F., Kawakami, K., Smoak, N., & Gaertner, S. L. (2009). The nature of contemporary racial prejudice: Insights from implicit and explicit measures of attitudes. In R. E. Petty, R. H. Fazio, & P. Brinol (Eds.), *Attitudes: Insights from the new implicit measures* (pp. 165-192). New York, NY: Psychology Press.
- Dovidio, J. F., Penner, L. A., Albrecht, T. L., Norton, W. E., Gaertner, S. L., & Shelton, N. J. (2008). Disparities and distrust: The implications of psychological processes for understanding racial disparities in health and health care. *Social Science and Medicine*, 67, 478-486. doi:10.1016/j.socscimed.2008.03.019
- Durazzo, T. S., Frencher, S., & Gusberg, R. (2013). Influence of race on the management of lower extremity ischemia: Revascularization vs. amputation. *Journal of the American Medical Association Surgery*, 148, 617-623. doi:10.1001/jamasurg.2013.1436
- Eggly, S., Barton, E., Winckles, A., Penner, L. A., & Albrecht, T. L. (2015). A disparity of words: Racial differences in oncologist-patient communication about clinical trials. *Health Expectations*, 18, 1316-1326. doi:10.1111/hex.12108

- Eggly, S. Hamel, L., Albrecht, T. L., Harper, F. W., Poster, T., Chapman, R., & Penner, L. A. (2016, September). *Randomized trial of a question prompt list to increase patient active participation during racially-discordant oncology interactions*. Paper presented at the Annual Meeting of American Association for Cancer, Fort Lauderdale, FL.
- Eggly, S., Harper, F. W., Penner, L. A., Gleason M. J., Foster, T., Albrecht, T. L. (2011). Variation in question asking during cancer clinical interactions: A potential source of disparities in access to information. *Patient Education and Counseling*, 82, 63-68. doi:10.1016/j.pec.2010.04.008
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE Model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). Orlando, FL: Academic Press.
- Fazio, R. H., & Olson, M. A. (2014). The MODE model: Attitude-behavior processes as a function of motivation and opportunity. In J. W. Sherman, B. Gawronski, & Y. Trope (Eds.), *Dual-process theories of the social mind* (pp. 155-171). New York, NY: Guilford.
- Ford, R. (2008). Is racial prejudice declining in Britain? *British Journal of Sociology*, 59, 609-638. doi:10.1111/j.1468-4446.2008.00212.x
- Gaertner, S. L., & Dovidio, J. F. (1986). The aversive form of racism. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 61-89). Orlando, FL: Academic Press.
- Gaertner, S. L., & Dovidio, J. F. (2012). The common ingroup identity model. In P. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 2, pp. 439-457). Thousand Oaks, CA: Sage Publications Ltd.
- Gerber, J. S., Prasad, P. A., Localio, R., Fiks, A. G., Grundmeier, R. W., Bell, L. M., . . . Zaoutis, T. E. (2013). Racial differences in antibiotic prescribing by primary care pediatricians. *Pediatrics*, 131, 677-684. doi:10.1542/peds.2012-2500
- Godsil, R. D., Tropp, L. R. Goff, P. A., & Powell, J. A. (2014). *Addressing implicit bias, racial anxiety, and stereotype threat in education and health care*. Berkley, CA: Perception Institute.
- Goyal, M. K., Kuppermann, N., Cleary, S. D., Teach, S. J., & Chamberlain, J. M. (2015). Racial disparities in pain management of children with appendicitis in emergency departments. *Journal of American Medical Association Pediatrics*, 169, 996-1002. doi:10.1001/jamapediatrics.2015.1915
- Green, A. R., Carney, D. R., Pallin, D. J., Ngo, L. H., Raymond, K. L., Iezzoni, L. I., & Banaji, M. R. (2007). The presence of implicit bias in physicians and its predictions of thrombolysis decisions for Black and White patients. *Journal of General Internal Medicine*, 22, 1231-1238. doi:10.1007/s11606-007-0258-5
- Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology*, 97, 17-41. doi:10.1037/a0015575
- Gregg, A. P., Seibt, B., & Banaji, M. R. (2006). Easier done than undone: Asymmetry in the malleability of implicit preferences. *Journal of Personality and Social Psychology*, 90, 1-20. doi:10.1037/0022-3514.90.1.1
- Hagiwara, N., Dovidio, J. F., Eggly, S., & Penner L. A. (2016). The effects of racial attitudes on affect and engagement in racially discordant medical interactions between non-Black physicians and Black patients. *Group Processes and Intergroup Relations*, 19, 509-527. doi:10.1177/1368430216641306
- Hagiwara, N., & Dent, R. (2016). Patient-physician communication during racially discordant medical interactions: Limitations with the current coding systems. *TPM – Testing, Psychometrics, Methodology in Applied Psychology*, 23, 511-529. doi:10.4473/TPM23.4.6
- Hagiwara, N., Penner, L. A., Gonzalez, R., Eggly, S., Dovidio, J. F., Gaertner, S L., . . . Albrecht, T. L. (2013). Racial attitudes, physician-patient talk time ratio, and adherence in racially discordant medical interactions. *Social Science & Medicine*, 87, 123-131. doi:10.1016/j.socscimed.2013.03.016
- Hahn, S. R. (2009). Patient-centered communication to assess and enhance patient adherence to glaucoma medication. *Ophthalmology*, 116, S37-S42. doi:10.1016/j.ophtha.2009.06.023
- Haider, A. H., Sexton, J., Sriram, N., Cooper, L. A., Efron, D. T., Swoboda, S., . . . Cornwell, E. E. III (2011). Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *Journal of the American Medical Association*, 306, 942-951. doi:10.1001/jama.2011.1248
- Haider, A. H., Schneider, E. C., Sriram, N., Dossick, D. S., Scott, V. K., Swoboda, S. M., . . . Freischlag, J. A. (2015). Unconscious race and social class bias among acute care surgical clinicians and clinical treatment decisions. *Journal of the American Medical Association Surgery*, 150, 457-464. doi:10.1001/jamasurg.2014.4038

- Haider, A. H., Schneider, E. C., Sriram, N., Scott, V. K., Swoboda, S. M., Zogg, C. K., . . . Cooper, L. A. (2015). Unconscious race and class biases among registered nurses: Vignette-based study using implicit association testing *Journal of American College of Surgeons*, *220*, 1077-1086. doi:10.1016/j.jamcollsurg.2015.01.065
- Hall, W. J., Chapman, M. V., Lee, K. M., Merino, Y. M., Thomas, T. W., Payne, B. K., . . . Coyne-Beasley, T. (2015). Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes: A systematic review. *American Journal of Public Health*, *105*, e60-e76. doi:10.2105/AJPH.2015.302903
- Hamel, L. M., Chapman, R., Malloy, M., Eggly, S., Penner, L. A., Shields, A. F., . . . Albrecht, T. L. (2015). Critical shortage of African American medical oncologists in the United States. *Journal of Clinical Oncology*, *33*, 3697-3700. doi:10.1200/JCO.2014.59.2493
- Hassett, M. J., Schymura, M. J., Chen, K., Boscoe, F. P., Gesten, F. C., & Schrag, D. (2016). Variation in breast cancer care quality in New York and California based on race/ethnicity and Medicaid enrollment. *Cancer*, *122*, 420-431. doi:10.1002/cncr.29777
- Havranek, E. P., Hanratty, R., Tate, C., Dickinson, M., Steiner, J., Cohen, G., & Blair, I. (2012). The effects of values affirmation on race-discordant patient provider communication. *Archives of Internal Medicine*, *172*, 1662-1667. doi:10.1001/2013.jamainternmed.258
- Hayn, M. H., Orom, H., Shavers, V. L., Sanda, M. G., Glasgow, M. H., Mohler, J. L., & Underwood, W. III. (2011). Racial/ethnic differences in receipt of pelvic lymph node dissection among men with localized/regional prostate cancer. *Cancer*, *117*, 4651-4658. doi:10.1002/cncr.26103
- Hodson, G., Hooper, H., Dovidio, J. F., & Gaertner, S. L. (2005). Aversive racism in Britain: Legal decisions and the use of inadmissible evidence. *European Journal of Social Psychology*, *35*, 437-448. doi:10.1002/ejsp.261
- Hoffman, K. M., Trawalter, S., Axt, J. R., & Oliver, M. N. (2016). Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between Blacks and Whites. *Proceedings of the National Academy of Sciences*, *113*, 4296-4301. doi:10.1073/pnas.1516047113
- Johnson, R. L., Roter, D., Powe, N. R., & Cooper, L. A. (2004). Patient race/ethnicity and quality of patient-physician communication during medical visits. *American Journal of Public Health*, *94*, 2084-2090. doi:10.2105/AJPH.94.12.2084
- Jones, P. R., Taylor, D. M., Dampeer-Moore, J., Van Allen, K. L., Saunders, D. R., Snowden, C. B., & Johnson, M. B. (2013). Health-related stereotype threat predicts health services delays among Blacks. *Race and Social Problems*, *5*, 121-136. doi:10.1007/s12552-013-9088-8
- Kalev, A., Dobbin, F., & Kelly, E. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review*, *71*, 589-617. doi:10.1177/000312240607100404
- King, M. L. Jr. (1966). National Convention for Medical Committee for Human Rights. Washington, DC. Excerpt from speech retrieved from <http://www.goodreads.com/quotes/106932-of-all-the-forms-of-inequality-injustice-in-health-care>
- Kleinpenning, G., & Hagendoorn, L. (1993). Forms of racism and the cumulative dimension. *Social Psychology Quarterly*, *56*(1), 21-36.
- Koerber, A., Gajendra, S., Fulford, R. L., BeGole, E., & Evans, C. A. (2004). An exploratory study of orthodontic resident communication by patient race and ethnicity. *Journal of Dental Education*, *68*(5), 553-562.
- LaVeist, T. A., & Nuru-Jeter, A. (2002). Is doctor-patient race concordance associated with greater satisfaction with care? *Journal of Health and Social Behavior*, *43*(3), 296-306.
- Lin, C. C., & Virgo, K. S. (2013). Association between the availability of medical oncologists and initiation of chemotherapy for patients with stage III colon cancer. *Journal of Oncological Practice*, *9*, 27-33. doi:10.1200/JOP.2012.000627
- Mahmoudi, E., Swiatek, P. R., Chung, K. C., & Ayanian, J. Z. (2016). Racial variation in treatment of traumatic finger/thumb amputation: A national comparative study of replantation and revision amputation. *Plastic and Reconstructive Surgery*, *137*, 576e-585e. doi:10.1097/01.prs.0000479969.14557.9d
- Major, B., Mendes, W. B., & Dovidio, J. F. (2013). Intergroup relations and health disparities: A social psychological perspective. *Health Psychology*, *32*, 514-524. doi:10.1037/a0030358
- Morin, R. (2015). *Exploring racial bias among biracial and single-race adults: The IAT*. Pew Research Center: Washington, DC. Retrieved from <http://www.pewsocialtrends.org/2015/08/19/exploring-racial-bias-among-biracial-and-single-race-adults-the-iat>

- Morris, A. M., Billingsley, K. G., Hayanga, A. J., Matthews, B., Baldwin, L. M., & Birkmeyer, J. D. (2008). Residual treatment disparities after oncology referral for rectal cancer. *Journal of the National Cancer Institute, 100*, 738-744. doi:10.1093/jnci/djn145
- Mulvaney-Day, N. E., Alegria, M., Earl, T., & Diaz-Linhart, Y. (2011). Preferences for relational style with mental health clinicians: A qualitative analysis of African American, Latino, and non-Latino White patients. *Journal of Clinical Psychology, 67*, 31-44. doi:10.1002/jclp.20739
- Murphy, C. C., Harlan, L. C., Warren, J. L., & Geiger, M. A. (2015). Race and insurance differences in the receipt of adjuvant chemotherapy among patients with stage III colon cancer. *Journal of Clinical Oncology, 33*, 2530-2536. doi:10.1200/JCO.2015.61.3026
- Nazroo, J. Y., & Karlsen, S. (2001). *Ethnic inequalities in health: Social class, racism, and identity: ESRC research findings 10 from the health variation programme*. Lancaster, UK: Lancaster University.
- Nosek, B. A., Hawkins, C. B., & Frazier, R. S. (2011). Implicit social cognition: From measures to mechanisms. *Trends in Cognitive Sciences, 15*, 152-159. doi:10.1016/j.tics.2011.01.005
- Oliver, M. N., Goodwin, M. A., Gotler, R. S., Gregory, P. M., & Stange, K. C. (2001). Time use in clinical encounters: Are African-American patients treated differently? *Journal of the National Medical Association, 93*(10), 380-385.
- Oliver, M. N., Wells, K. M., Joy-Gaba, J. A., Hawkins, C. B., & Nosek, B. A. (2014). Do physicians' implicit views of African Americans affect clinical decision making? *Journal of American Board of Family Medicine, 27*, 177-188. doi:10.3122/jabfm.2014.02.120314
- Paradies, Y., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., . . . Gee, G. (2015). Racism as a determinant of health: A systematic review and meta-analysis. *Plos ONE, 10*, e0138511. doi:10.1371/journal.pone.0138511
- Penner, L. A., Blair, I. V., Albrecht, T. L., & Dovidio, J. F. (2014). Reducing racial healthcare disparities: A social psychological analysis. *Policy Insights from Behavioral and Brain Sciences, 1*, 204-212. doi:10.1177/2372732214548430
- Penner, L. A., & Dovidio, J. F. (2016). Colorblindness and Black-White health disparities. In H. Neville, M. Gallardo, & D. Sue (Eds.), *What does it mean to be color-blind? Manifestation, dynamics, and impact* (pp. 275-293). Washington, DC: APA Press.
- Penner, L. A., Dovidio, J. F., Edmondson, D., Dailey, R., Markova, T., Albrecht, T. L., & Gaertner, S. (2009). The experience of discrimination, and Black-White health disparities in medical care. *Journal of Black Psychology, 35*, 180-203. doi:10.1177/0095798409333585
- Penner, L. A., Dovidio, J. F., Gonzalez, R., Albrecht, T. L., Chapman, T., Foster, T., . . . Eggly, S. (2016). The effects of oncologist implicit racial bias in racially discordant oncology interactions. *Journal of Clinical Oncology*. Advance online publication. doi:10.1200/JCO.2015.66.3658
- Penner, L. A., Dovidio, J. F., Hagiwara, N., Foster, T., Albrecht, T. L., Chapman, R. A., & Eggly, S. (2016). An analysis of race-related attitudes and beliefs in Black cancer patients: Implications for health care disparities. *Journal of Healthcare for Poor and Underserved, 27*, 1503-1520. doi:10.1353/hpu.2016.0115
- Penner, L. A., Dovidio, J. F., West, T. W., Gaertner, S. L., Albrecht, T. L., Dailey, R. K., & Markova, T. (2010). Aversive racism and medical interactions with Black patients: A field study. *Journal of Experimental Social Psychology, 46*, 436-440. doi:10.1016/j.jesp.2009.11.004
- Penner, L. A., Eggly, S., Griggs, J., Underwood, W. III., Orom, H., & Albrecht, T. L. (2012). Life-threatening disparities: The treatment of Black and White cancer patients. *Journal of Social Issues, 68*, 328-357. doi:10.1111/j.1540-4560.2012.01751.x
- Penner, L. A., Gaertner, S., Dovidio, J. F., Hagiwara, N., Porcerelli, J., Markova, T., & Albrecht, T. L. (2013). A social psychological approach to improving the outcomes of racially discordant medical interactions. *Journal of General Internal Medicine, 28*, 1143-1149. doi:10.1007/s11606-013-2339-y
- Penner, L. A., Hagiwara, N., Eggly, S., Gaertner, S. L., Albrecht, T. L., & Dovidio, J. F. (2014). Racial healthcare disparities: A social psychological analysis. *European Review of Social Psychology, 24*, 70-122. doi:10.1080/10463283.2013.840973
- Penner, L. A., Phelan, S. M., Earnshaw, V., Albrecht, T. L., & Dovidio, J. F. (in press). Patient stigma, medical interactions, and healthcare disparities: A selective review. In B. Major, J. F. Dovidio, & B. G. Link (Eds.), *Oxford handbook of stigma, discrimination, and health*. New York, NY: Oxford University Press.
- Pettigrew, T. F., & Tropp, L. R. (2011). *When groups meet: The dynamics of intergroup contact*. New York, NY: Psychology Press.

- Sabin, J. A., & Greenwald, A. G. (2012). The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: Pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma. *American Journal of Public Health, 102*, 988-995. doi:10.2105/AJPH.2011.300621
- Sabin, J. A., Nosek, B. A., Greenwald, A. G., & Rivara, F. P. (2009). Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender. *Journal of Healthcare for the Poor and Underserved, 20*, 896-913. doi:10.1353/hpu.0.0185
- Schaa, K. L., Roter, D. L., Biesecker, B. B., Cooper, L. A., & Erny, L. H. (2015). Genetic counselors' implicit racial attitudes and their relationship to communication. *Health Psychology, 34*, 111-119. doi:10.1037/hea0000155
- Shavers, V. L., Fagan, P., Jones, D., Klein, W. M., Boyington, J., Moten, C., & Rorie, E. (2012). The state of research on racial/ethnic discrimination in the receipt of health care. *American Journal of Public Health, 102*, 953-966. doi:10.2105/AJPH.2012.300773
- Siminoff, L. A., Graham, G. C., & Gordon, N. H. (2006). Cancer communication patterns and the influence of patient characteristics: Disparities in information-giving and affective behaviors. *Patient Education and Counseling, 62*, 355-360. doi:10.1016/j.pec.2006.06.011
- Smedley, B. E., Stith A. Y., & Nelson A. R. (2003). *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, DC: National Academies Press.
- Son Hing, L. S., Chung-Yan, G. A., Hamilton, L. K., & Zanna, M. P. (2008). A two-dimensional model that employs explicit and implicit attitudes to characterize prejudice. *Journal of Personality and Social Psychology, 94*, 971-987. doi:10.1037/0022-3514.94.6.971
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*, 797-811. doi:10.1037/0022-3514.69.5.797
- Stewart, M., Brown, J. B., Weston, W. W., McWhinney, I. R., McWilliam, C. L., & Freeman, T. R. (2003). *Patient-centered medicine: Transforming the clinical method* (2nd ed.). Abingdon, UK: Radcliffe Medical Press Ltd.
- Sue, D. W. (2010). *Microaggressions in everyday life: Race, gender, and sexual orientation*. New York, NY: Wiley.
- Thompson, H. S., Valdinarsdottir, H. B., Winkel, G., Jandorf, L., & Redd, W. (2004). The Group-Based Medical Mistrust Scale: Psychometric properties and association with breast cancer screening. *Preventive Medicine, 38*, 209-218. doi:10.1016/j.ypmed.2003.09.041
- van Ryn, M., Burgess, D. J., Dovidio, J. F., Phelan, S. M., Saha, S., Malat, J., . . . Perry, S. (2011). The impact of racism on clinician cognition, behavior, and clinical decision-making. *Du Bois Review: Social Science Research on Race, 8*, 199-218. doi:10.1017/S1742058X11000191
- van Ryn, M., Burgess, D. J., Malat, J., & Griffin, J. (2006). Physicians' perceptions of patients' social and behavioral characteristics and race disparities in treatment recommendations for men with coronary artery disease. *American Journal of Public Health, 96*, 351-357. doi:10.2105/AJPH.2004.041806
- van Ryn, M., Hardeman, R., Phelan, S., Burgess, D. J., Dovidio, J. F., Herrin, J., . . . Przedworski, J. (2015). Medical school experiences associated with change in implicit racial bias between 1st and 4th year among 3547 medical students: A report from the Medical Student CHANGES Study. *Journal of General Internal Medicine, 30*, 1748-1756. doi:10.1007/s11606-015-3447-7
- Williams, D. R. (2012). Miles to go before we sleep: Racial inequalities and health. *Journal of Health and Social Behavior, 53*, 279-295. doi:10.1177/0022146512455804
- Wojcieszak, M. (2015). Aversive racism in Spain: Testing the theory. *International Journal of Public Opinion Research, 27*, 22-45. doi:10.1093/ijpor/edu007