

# Assessment of Biases Against Latinos and African Americans Among Primary Care Providers and Community Members

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Significant ethnic/racial disparities in health care and health outcomes show remarkable consistency across illnesses and health care services in the United States.<sup>1,2</sup> Reduction of these disparities and their associated excess morbidity and mortality is a major goal for quality improvement.<sup>3-6</sup> A 2003 report by the Institute of Medicine crystallized long-standing concerns that provider attitudes are part of the problem, concluding that “bias, stereotyping, prejudice, and clinical uncertainty on the part of healthcare providers” likely play a role in the continuation of health disparities.<sup>7(p12)</sup>

For present purposes, bias can be defined as the negative evaluation of one group and its members relative to another. Such an evaluation can be expressed explicitly (e.g., “I don’t want to work with Latinos”) or more implicitly (e.g., negative nonverbal behavior). Explicit bias also differs from implicit bias in terms of the underlying process. Explicit bias requires that the person is aware of the evaluation, believes that evaluation to be correct in some manner, and has the time and motivation to act on it in the current situation.<sup>8-10</sup> Accordingly, explicit bias is measured by asking individuals to report on their own feelings and beliefs. Such measures show that explicit bias against ethnic/racial groups has declined significantly over the past 50 years and is now unacceptable in general society.<sup>11</sup>

Implicit bias, by contrast, operates in an unintentional and even unconscious manner.<sup>8-10,12</sup> Activated by situational cues (e.g., a person’s skin color), implicit bias can quickly and unknowingly exert its influence on perception, memory, and behavior.<sup>10,13-17</sup> Self-report is therefore not a good measure of implicit bias. This form of bias is instead measured by sophisticated instruments that have been developed for this purpose, the most common being the Implicit Association Test (IAT).<sup>18,19</sup> These instruments reveal that, unlike the

**Objectives.** We assessed implicit and explicit bias against both Latinos and African Americans among experienced primary care providers (PCPs) and community members (CMs) in the same geographic area.

**Methods.** Two hundred ten PCPs and 190 CMs from 3 health care organizations in the Denver, Colorado, metropolitan area completed Implicit Association Tests and self-report measures of implicit and explicit bias, respectively.

**Results.** With a 60% participation rate, the PCPs demonstrated substantial implicit bias against both Latinos and African Americans, but this was no different from CMs. Explicit bias was largely absent in both groups. Adjustment for background characteristics showed the PCPs had slightly weaker ethnic/racial bias than CMs.

**Conclusions.** This research provided the first evidence of implicit bias against Latinos in health care, as well as confirming previous findings of implicit bias against African Americans. Lack of substantive differences in bias between the experienced PCPs and CMs suggested a wider societal problem. At the same time, the wide range of implicit bias suggested that bias in health care is neither uniform nor inevitable, and important lessons might be learned from providers who do not exhibit bias. (*Am J Public Health.* 2013;103:92–98. doi:10.2105/AJPH.2012.300812)

decline in explicit bias, implicit bias appears to be common and persistent.<sup>20-22</sup>

To better understand how implicit bias may affect clinical outcomes, consider the example of an implicitly biased physician who wrongly perceives that an African American patient with uncontrolled hypertension is uncooperative and unlikely to adhere to a more intensive treatment regimen. Unaware of the distortions introduced by bias, the physician may not intensify treatment appropriately. Furthermore, the physician may demonstrate bias in unconsciously negative behavior (e.g., in facial expression, body language, and voice tone), making the patient uncomfortable and hesitant to engage in honest dialogue. In this manner, implicit bias may hamper the flow of information and weaken the patient’s resolve to follow treatment recommendations.<sup>23-28</sup>

Six studies directly measured ethnic/racial biases among health care providers, all focused

on bias against African Americans.<sup>29-34</sup> Five of these studies found evidence that providers had implicit bias against African Americans to varying degrees, whereas explicit bias against the same group was low to nonexistent.<sup>35</sup>

Although the number of studies is not high, the evidence has been generally consistent in suggesting that implicit, but not explicit, ethnic/racial bias exists in health care settings. This conclusion is circumscribed, however, by limitations of the research.<sup>35</sup> First, ethnic/racial bias in health care has not yet been assessed with regard to groups other than African Americans. Of particular concern in this regard is the lack of research on bias against Latinos, who constitute the largest and fastest-growing minority group in the United States,<sup>36</sup> and who also experience a disproportionate burden of poor health outcomes.<sup>1,2</sup> Second, all but 1 of the studies were conducted with relatively young and inexperienced providers (residents and

students). It is therefore unknown how experienced providers might respond. Third and finally, nearly all of the studies had very low (e.g., 26%) or unknown response rates, again calling into question the representativeness of the results.<sup>35</sup> In this study, we hypothesized that primary care providers (PCPs) would demonstrate, on average, a substantial level of implicit bias (Cohen's  $d \geq 0.50$ ) against Latinos and against African Americans; that PCPs would demonstrate little explicit bias (Cohen's  $d \leq 0.50$ ) against either group; and that PCPs and community members (CMs) would not differ in implicit or explicit ethnic/racial bias.

## METHODS

We measured the implicit and explicit ethnic/racial biases of PCPs in the metropolitan Denver, Colorado, area between May 2009 and May 2010. Several steps were taken to address the limitations of previous research. First, we measured implicit and explicit biases against both Latinos and African Americans. Second, only experienced, practicing PCPs with established patient panels were eligible to participate. Third, we recruited the PCP sample from Family Medicine and Internal Medicine providers working in 3 different health care settings that broadly reflect the organization of primary care practices in the United States. Fourth, we attempted to recruit all of the eligible providers in these organizations, setting a predetermined participant denominator to calculate a firm response rate. Fifth, the study measures were concurrently administered to a sample of CMs who visited the health care clinics of the participating PCPs, allowing for a geographically and temporally close comparison group. Such a comparison permitted additional conclusions about the degree to which providers had biases that were similar to or different from other members of the community. No research to date has provided such a comparison.

The 3 different clinical settings were: Denver Health (DH), Kaiser Permanente Colorado (KPCO), and the State Network of Colorado Ambulatory Practices & Partners (SNOCAP). DH is a public institution nationally recognized for its model of care to underserved, indigent, and minority patients. DH provides

approximately 42% of the indigent care in the Denver area, and more than 25% of Denver residents use DH. KPCO is a private, group-model nonprofit health maintenance organization that provides integrated health care services in Colorado, serving approximately 16% of Denver metropolitan residents. SNOCAP is an association of practice-based research networks, including traditional private medical practices and federally qualified health centers.

## Participants and Procedure

Across the 3 settings, 351 Family Medicine and General Internal Medicine PCPs in 34 offices in the Denver metropolitan area were eligible to participate in this study. The primary investigator of the study (I. V. B.) and a physician co-investigator from each of the organizations gave presentations at each clinic and invited each PCP to participate via a secure Web site with assigned pass codes. The study team and participating organizations were blinded to PCP participation by the following: (1) anonymous informed consent was administered on the Web site; (2) all PCPs, regardless of participation, were given the study incentives (\$10 gift card and the book *Blink* by Malcolm Gladwell); and (3) all PCPs were sent 2 personalized reminders following the initial invitation to participate.

Concurrently, we recruited CMs from the waiting areas of clinics in the same organizations. CMs completed the study measures on laptop computers and received a \$20 gift card.

## Measures

**Implicit bias.** The IAT measures the strength with which concepts (e.g., African American and White people) are associated with attributes (e.g., good and bad).<sup>18,19,22</sup> Stimulus items from 4 categories appear on a computer screen and participants are asked to categorize them, 1 at a time, by pressing the computer key that corresponds to the correct category. During one critical block of trials, for example, the “f” key must be pressed when either an African American face or a “good” word appears on the screen, whereas the “j” key must be pressed for a White face or a “bad” word. In another critical block of trials, the response pairings are reversed, such that participants must categorize African American faces and bad words using the same key, and White faces and good words

using the other key. If the concepts sharing a response key are associated, participants ought to be faster to categorize the stimulus items compared with when the concepts sharing a response key are not associated. The majority of White respondents, for example, are significantly faster when African American faces and bad words require the same response, whereas White faces and good words require another response, compared with the reversed pairing.<sup>20–22</sup> The larger this performance difference, the stronger the implicit bias for a particular person. Demonstrations of this test can be found online at <https://implicit.harvard.edu>.

The IAT has been used in more than 700 studies across a wide array of disciplines, including psychology, health, education, political science, and market research.<sup>15,19</sup> The IAT has greater documented reliability and validity than other implicit measures, and its methodological strengths and limitations have been extensively reviewed.<sup>15,19,22,37</sup>

Two IATs were administered in this study, one to measure implicit bias against Latinos compared with Whites and another to measure implicit bias against African Americans compared with Whites. These IATs were developed and validated using a separate community sample.<sup>38</sup> Each IAT required participants to categorize faces as Latino versus White (first IAT) or as African American versus White (second IAT) while also categorizing words as positive versus negative. The order of the 2 critical blocks within each IAT (e.g., Latino + positive and Latino + negative) was randomized across participants. Community participants had the option to complete the IATs in either English or Spanish.

**Explicit bias.** Participants were asked to indicate their explicit attitudes toward African Americans, Latinos, and Whites on 2 standard measures<sup>39,40</sup>: the Feeling Thermometer (0–100 for “cool” to “warm” feelings), and a set of semantic differential scales (7-point trait ratings of “hard-working–lazy,” “wise–foolish,” and “cooperative–hostile”).

**Demographic characteristics.** PCPs were asked to indicate their gender, age, ethnic/racial identification, Spanish fluency, medical specialty, and how many years postresidency they had been practicing medicine. Community participants were asked the same questions,

except instead of medical specialty and years of medical practice, they were asked about their household income and level of education. Because of the sensitivity of the research, results were aggregated across the 3 participating organizations to prevent the identification of data from any one.

**Statistical Analysis**

We were primarily interested in (1) the mean and heterogeneity (variance) of PCPs' implicit and explicit ethnic/racial biases; (2) the degree to which biases differed between PCPs and CMs, overall and within the majority ethnic/racial group (Whites); and (3) the relations among implicit and explicit attitudes for both samples.

All of the bias measures were scored such that higher numbers indicated greater bias against the minority group compared with Whites, with a score of zero indicating no bias. IAT scores were calculated following the recommendations of Greenwald et al.,<sup>41</sup> with separate IAT scores for Latino:White implicit bias and African American:White bias for each participant. Comparable explicit bias scores were created for the thermometer measure by subtracting the warmth rating for each minority group from the rating for Whites. Explicit bias scores were created for the trait rating measure by first averaging the 3 trait ratings for each group, and then subtracting the average rating for Whites from the average rating for each minority group.

The primary analyses examined each of the 6 bias scores for significant departures from zero within each sample (PCPs or CMs) and for differences between the 2 samples. These single degree-of-freedom tests were conducted using general linear models. Tests of between-sample differences were repeated in multivariate models that adjusted for participants' background characteristics (e.g., race/ethnicity). To avoid overfitting the models, only characteristics that revealed consistent relations to bias—potential confounders—were included.

Bivariate correlations between continuous variables were estimated using Spearman's statistic. Correlations involving noncontinuous variables were estimated with the Kendall  $\tau$  coefficient; the  $\chi^2$  test of association was used for categorical characteristics. All statistical

tests were 2-sided and were considered significant at  $\alpha = 0.05$ . Effect sizes are reported in terms of Cohen's *d* with "small," "medium," and "large" effects defined as  $d = 0.20, 0.50$  and  $0.80$ , respectively. All statistical analyses were performed using SAS version 9.1 (SAS Institute Inc, Cary, North Carolina).

**RESULTS**

Of the 351 eligible PCPs, 210 (60%) participated. Of the 375 CMs approached, 205 consented, and 190 provided useable data (final response rate of 51%). The PCP and community samples differed in several ways (Table 1): PCPs had higher socioeconomic status, reported greater fluency in speaking Spanish, and were more likely to be White and 36 to 55 years old.

**Implicit Bias**

Table 2 provides the mean, SD, and size of effect for each IAT. Figure 1 provides a visual display of the range of scores obtained on the IATs, by PCPs and CMs. As Figure 1 shows, there was a wide range of implicit biases among both the PCPs and the CMs, including greater positivity toward each minority group than toward Whites. However, as hypothesized, the more frequent and stronger response was greater positivity toward Whites (i.e., bias against the minority groups): the average Latino:White IAT score indicated strong bias against Latinos compared with Whites for both PCPs (Cohen's  $d = 0.87$ ) and CMs (Cohen's  $d = 0.69$ ); the average African American:White IAT score indicated strong bias against African Americans compared with Whites, again for both PCPs (Cohen's  $d = 0.79$ ) and CMs

**TABLE 1—Sociodemographic Characteristics of Participating PCPs and Community Members: Denver, CO, Metropolitan Area; May 2009–May 2010**

Characteristic	PCPs (n = 210), %	Community Members (n = 190), %
Specialty		
Family medicine	54	...
Internal medicine	36	...
Clinical experience, y		
1–10	47	...
11–20	30	...
≥ 21	21	...
Ethnicity/race**		
White	84	44
Latino	6	29
African American	< 1	21
Gender: female	53	59
Age,** y		
18–35	14	32
36–55	73	32
≥ 56	11	33
Spanish fluency**		
None	19	31
A little	37	38
Brief conversation	28	16
Fluently	16	15
Education** : ≥ 4-y college degree	100 <sup>a</sup>	29
Income** : ≥ \$56 000	100 <sup>a</sup>	28

Note. PCP = primary care providers. All PCPs in this study were known to have 4-year college degrees and an income of at least \$56 000; PCPs were not asked to provide more specific information.  
 \*\*  $P \leq .01$ . *P* for difference between PCPs and community members.

**TABLE 2—Levels of Implicit and Explicit Ethnic/Racial Bias Among PCPs and Community Members: Denver, CO, Metropolitan Area; May 2009–May 2010**

Bias Measure	PCPs			Community Members		
	No.	Mean (SD)	<i>d</i>	No.	Mean (SD)	<i>d</i>
Latino:White IAT D score	210	0.33 (0.38)	0.87***	190	0.29 (0.42)	0.69***
African American:White IAT D score	210	0.27 (0.34)	0.79***	189	0.26 (0.36)	0.72***
Latino:White thermometer	200	1.34 (13.45)	0.10	143	2.55 (13.85)	0.18*
African American:White thermometer**	202	5.09 (13.89)	0.37***	143	0.76 (13.36)	0.06
Latino:White trait rating**	207	-0.55 (0.85)	-0.65***	181	-0.09 (1.11)	-0.08
African American:White trait rating	207	0.08 (0.81)	0.10	181	0.25 (1.16)	0.22*

Note. *d* = Cohen's *d* with "small," "medium," and "large" effects indicated by *d* = 0.20, 0.50, and 0.80, respectively; IAT = Implicit Association Test; PCPs = primary care providers. These numbers are unadjusted for background characteristics of PCPs and community members. A positive effect indicates bias against the minority group, whereas a negative effect indicates bias against Whites.

\**P* ≤ .05; \*\**P* < .01; \*\*\**P* < .001. *P* values for Cohen's *d* indicate significantly different from zero; *P* values for bias measure indicate significantly different between PCPs and community members.

(Cohen's *d* = 0.72). Scores on the Latino:White IAT and scores on the African American:White IAT were correlated to a moderate extent for both PCPs (*r* = 0.44) and CMs (*r* = 0.49).

Table 3 provides the model estimates from tests of differences in bias between the PCPs and CMs, both unadjusted and adjusted for relevant background characteristics (i.e., those showing bivariate associations with bias scores). In the unadjusted analysis, the PCPs and CMs did not differ in implicit bias on the Latino:White IAT (*t*[396] = 0.93; *P* = .35) or the African American:White IAT (*t*[395] = 0.38; *P* = .70). In the adjusted analysis, the PCPs were found to have somewhat less implicit bias than CMs on both the Latino:White IAT (*t*[371] = -1.93; *P* = .05), and the African American:White IAT (*t*[371] = -2.64; *P* < .01).

### Explicit Bias

As expected, explicit bias was weak to non-existent ( $M_{\text{Cohen's } d} = 0.04$ ) among both PCPs and CMs. In the unadjusted analysis comparing PCPs and CMs, PCPs reported somewhat greater positivity toward Whites on the African American:White thermometer measure but not on the African American:White trait measure, the Latino:White thermometer measure, or the Latino:White trait measure (Table 3). Multivariate adjustment for background characteristics eliminated the difference between PCPs and CMs in thermometer ratings of African Americans (Table 3).

Across participants, implicit and explicit biases were only modestly related, with correlations somewhat stronger for the thermometer measures of explicit bias (*r* = 0.27 and 0.28, for Latino:White and African American:White, respectively) than the trait-rating measures (*r* = 0.13 and 0.12, for Latino:White and African American:White, respectively).

### Subgroup Analysis of White Participants

Comparisons between PCPs and CMs were repeated with just the White participants; there were too few Latino or African American PCPs to analyze those groups separately. In this analysis, White PCPs showed less bias against minorities than did White CMs on 5 of the 6 measures: Latino:White IAT (*P* < .02), African American:White IAT (*P* < .01), Latino:White thermometer (*P* < .05), Latino:White trait ratings (*P* < .001), and African American:White trait ratings (*P* < .05). The sixth measure, the African American:White thermometer, showed no difference between the subgroups (*P* = .23).

### DISCUSSION

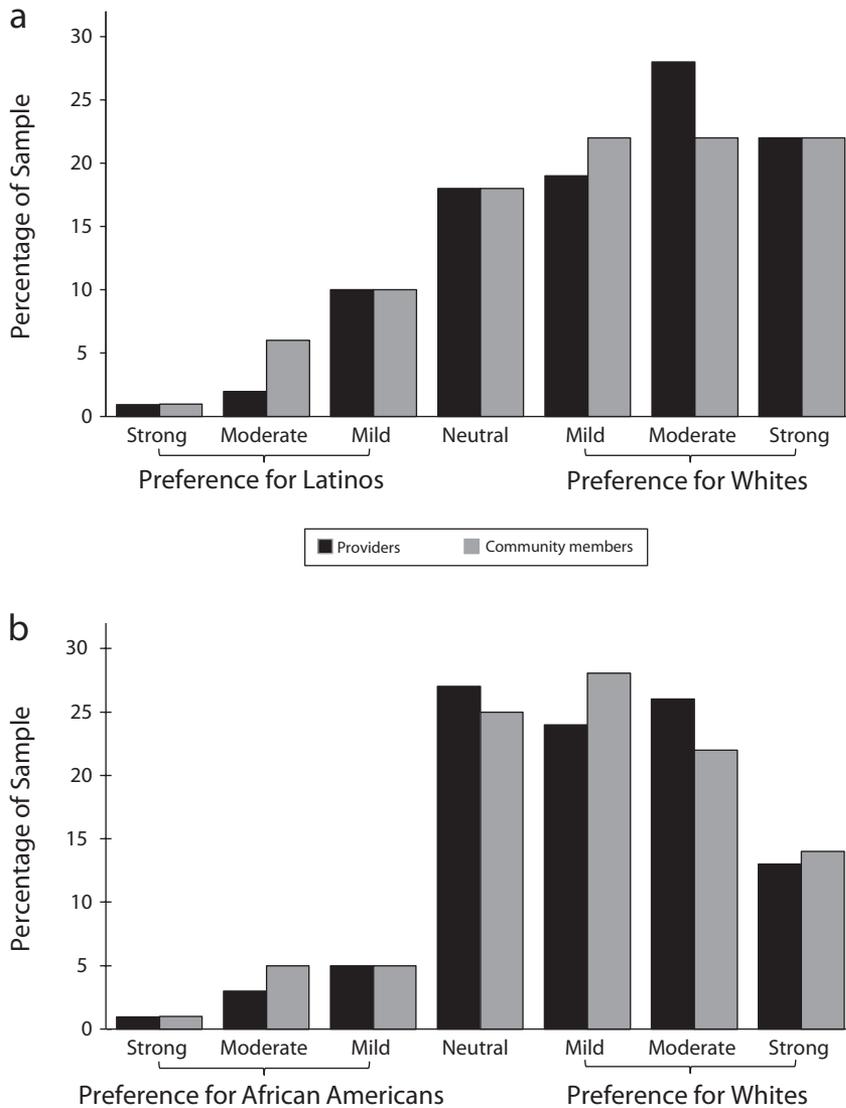
This study confirmed previous findings of implicit bias against African Americans with a sample of more experienced providers working in 3 different health care settings and with a higher response rate than obtained in previous work.<sup>35</sup> More importantly, however, was the new finding of substantial implicit bias against Latinos, a target group that has been

neglected in research on ethnic/racial bias. Approximately two thirds of the providers in this sample demonstrated implicit bias against Latinos, even as they explicitly reported egalitarian attitudes toward the group. Neither implicit nor explicit bias against Latinos was related to the providers' age, gender, medical specialty, or years practicing medicine.

Comparisons between the providers and CMs using the same clinics revealed no substantial differences in ethnic/racial biases. These null results suggested that the implicit biases observed were not a problem particular to health care professionals, but reflected broader community or societal issues. The remarkable similarity between providers and CMs raised the question of how those similarities are perceived. Is it enough for patients that no more bias is likely to appear within the health care setting than outside, or are health care providers held to a higher standard? What is the standard to which providers hold themselves?

Although it is common practice to focus on the central tendencies of a group, it is important not to lose sight of the differences that appear among individuals. In this study, approximately 18% of the providers showed no implicit bias when considering Latinos, and 28% showed no implicit bias when considering African Americans. These numbers were not insubstantial, and they suggested a somewhat different approach to the problem of health disparities. That is, instead of focusing on what biased providers might be doing wrong, it might be more productive to consider what this select group of providers is doing right. Do they have an approach that allows them to work more effectively with diverse patients? Do patients seek out these providers as a means to work within a system that otherwise seems biased? What allows these providers to have attitudes that are both implicitly and explicitly egalitarian? Can it be taught to others?

Although research is just beginning on the conditions under which implicit bias may or may not affect health care,<sup>29,31,33,34</sup> there is concern whether anything can be done to combat an unintentional or even unconscious process. Laboratory research in social psychology shows that implicit bias is potentially malleable and does respond to changes in situational cues and social norms.<sup>42</sup> These



Note. Implicit Association Test scores are conventionally interpreted as showing a group preference that is strong ( $\geq 0.65$ ), moderate (0.35–0.64), or mild (0.15–0.34), or as showing no group preference (Cohen's  $d = 0-0.14$ ).

**FIGURE 1—Percentage of providers and community members in each scoring category of the Implicit Association Tests for (a) Latino:White bias and (b) African American:White bias: Denver, CO, metropolitan area; May 2009–May 2010.**

laboratory methods have yet to be adapted and tested in a clinical setting, but the findings nonetheless suggest the real possibility of change. Additional interventions may also be developed for other points of contact, for example, by bolstering patients' defenses against bias or altering care delivery systems to mitigate the effects of bias.

The general lack of explicit bias against both African Americans and Latinos (i.e., generally

egalitarian explicit attitudes) was noteworthy because it pointed to the types of judgments and behaviors that might contribute to ethnic/racial disparities in health care and the situational factors that may exacerbate the problem. In particular, research shows that explicit egalitarian attitudes are more likely to produce egalitarian outcomes when (1) individuals are thinking more deeply about what they are doing, (2) the situation contains fewer

competing demands on the individual's time and attention, and (3) the relevant evidence is clear and consistent.<sup>8–10,13,14</sup> Health care encounters that lack 1 or more of those conditions would be less likely to gain the benefits of providers' explicit egalitarian attitudes, and simultaneously more likely to be affected by implicit biases.<sup>43</sup> The lack of explicit bias among PCPs also suggested that widely practiced efforts to combat this form of bias (i.e., rational arguments about the importance of cultural sensitivity) might be ineffective in producing further reductions in bias.

### Strengths and Limitations

The strengths of this study included the assessment of bias against both Latinos and African Americans, the sampling of experienced PCPs across 3 clinical settings that represented different models of health care delivery in the United States, and the comparison of PCPs with other members of the community. Our 60% participation rate was also higher than most previous studies on this topic.<sup>35</sup>

Most research on implicit bias has occurred in laboratory settings with narrow populations (college students) or with undenominated volunteers. Moving the research into actual health care settings permitted stronger conclusions about the potential effects of implicit bias in health care, specifically, and at the same time it also validated the laboratory work in the consistency of results.

The limitations of the research include the possibility that response bias affected the results. The study was also limited in its focus on PCPs and CMs within a clinical setting. Because our provider sample was predominantly White, we had inadequate power for detailed subanalyses of other ethnic/racial groups of PCPs. We also did not address the link between providers' (implicit) ethnic/racial biases and actual health disparities, an important next step.

### Conclusions

The patient-provider relationship remains at the center of health care, increasing the stakes for assessing and addressing ethnic/racial biases among providers. The findings of the present study contributed to an understanding of provider bias in several ways. We added

**TABLE 3—Unadjusted and Adjusted Models Testing for Differences Between PCPs and Community Members on Latino:White and African American:White Bias Measures: Denver, CO, Metropolitan Area; May 2009–May 2010**

Bias measure	Latino:White Bias		African American:White Bias	
	Unadjusted, b (SE)	Adjusted, b (SE)	Unadjusted, b (SE)	Adjusted, b (SE)
<b>IAT D score</b>				
Intercept	0.29*** (0.03)	0.37*** (0.04)	0.26 (0.03)	0.34*** (0.03)
Sample = PCP	0.04 (0.04)	-0.11* (0.06)	0.01 (0.03)	-0.13** (0.05)
Ethnicity/race = African American	–	-0.16* (0.07)	–	-0.35*** (0.06)
Ethnicity/race = Latino	–	-0.10 (0.06)	–	-0.01 (0.05)
More proficient in Spanish	–	-0.06** (0.02)	–	-0.02 (0.02)
Higher income	–	0.07** (0.03)	–	0.04 (0.02)
<b>Feeling thermometer ratings</b>				
Intercept	2.55 (1.14)	3.66** (1.39)	0.76 (1.14)	0.60 (1.38)
Sample = PCP	-1.21 (1.49)	-3.28 (2.09)	4.33*** (1.49)	3.92 (2.08)
Ethnicity/race = African American	–	-4.57 (2.63)	–	-11.52*** (2.62)
Ethnicity/race = Latino	–	-6.62** (2.31)	–	1.39 (2.30)
More proficient in Spanish	–	-2.60** (0.79)	–	0.17 (0.79)
Higher income	–	0.16 (1.03)	–	-0.76 (1.03)
<b>Trait ratings</b>				
Intercept	-0.09 (0.07)	-0.14 (0.09)	0.25 (0.07)	0.14 (0.09)
Sample = PCP	-0.46*** (0.10)	-0.38** (0.14)	-0.17 (0.10)	0.00 (0.14)
Ethnicity/race = African American	–	-0.02 (0.17)	–	-0.29 (0.17)
Ethnicity/race = Latino	–	-0.23 (0.15)	–	0.24 (0.15)
More proficient in Spanish	–	-0.21*** (0.05)	–	-0.08 (0.05)
Higher income	–	-0.05 (0.06)	–	-0.08 (0.07)

Note. IAT = Implicit Association Test; PCP = primary care provider. Community members are the reference group for sample; Whites are the reference group for ethnicity/race; higher scores on all bias measures indicate greater bias against the minority group.

\* $P \leq .05$ ; \*\* $P < .01$ ; \*\*\* $P < .001$ .

new evidence of implicit ethnic/racial biases among experienced PCPs, particularly with regard to bias against Latinos. At the same time, we showed that a number of providers did not appear to have such biases, and nearly all providers had generally egalitarian attitudes explicitly. Such evidence was important as a guide for future research on the pathways through which bias might operate and the types of interventions most likely to be effective in eliminating ethnic/racial disparities. ■

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### Contributors

All authors contributed to the design and conduct of the study, interpretation of the findings, and edited drafts of the article. I. V. Blair wrote the initial draft of the article. D. L. Fairclough conducted the data analysis. Both I. V. Blair and D. L. Fairclough had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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### Human Participant Protection

The research protocol, including informed consent procedures, received full ethical review and approval from the Colorado Multiple institutional review board and the institutional review board of Kaiser Permanente Colorado.

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