

# **Incoming Medical Students' Political Orientation Affects Outcomes Related to Care of Marginalized Groups: Results from the Medical Student CHANGES Study**

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**Abstract** This article characterizes the political ideology of first-year medical students and describes the extent to which their political ideology was associated with attitudes and beliefs related to the care of marginalized patients assessed during their fourth year. Analyses use data from online questionnaires administered to 3,756 medical students from a stratified random sample of forty-nine medical schools in their first and fourth years of study. The primary measure of political ideology was a five-point scale anchored by “very conservative” and “very liberal.” Mixed-effects linear regression was used to test the predictive power of political ideology at year 1 on year 4 outcomes. Among incoming medical students, 47.7% identified as liberal, 33.3% as moderate, and 19.0% as conservative. More conservative ideology was associated at year 4 with greater implicit bias against black and gay individuals, more negative explicit attitudes toward stigmatized groups, lower internal motivation to control racial prejudice, lower levels of trait empathy and empathy toward patients, and lower levels of patient-centered attitudes. Future research is needed to inform and develop interventions to improve care of patients from marginalized groups that are effective for medical students and health care providers across the political spectrum.

**Keywords** medical education, implicit bias, stigmatization, health care disparities

## Introduction

There is widespread consensus from researchers, policy makers, and health care leaders that health care professionals contribute to health care disparities for members of racial, ethnic, and sexual minority groups and so are a key focus to eliminate these disparities (Koh, Graham, and Glied 2011; Andrulis et al. 2010). Provisions in the Affordable Care Act (Andrulis et al. 2010) as well as disparity-reduction plans developed by numerous other professional and governmental organizations (e.g., the Federation Task Force on Disparities in Health Care, the Commission to End Health Care Disparities) likewise call for cultural competence education (Andrulis et al. 2010) and for programs to increase awareness of and engagement in addressing health and health care disparities by health care professionals (Alexander et al. 2008). Curricula intended to reduce health care disparities have largely taken a one-size-fits-all approach. However, engagement with this curriculum, as well as the approaches that are likely to be effective, may vary in important ways based on learners’ beliefs and values, as prior attitudes affect the way learners respond to curricula (Bransford, Brown, and Cocking 2000).

Decades of research outside of health care has shown that political ideology is a robust determinant of a wide array of attitudes and orientations that are highly relevant to health care. For example, greater political conservatism (vs. liberalism) is associated with greater conscientiousness

(see review by Carney et al. 2008), which is a robust predictor of better job performance across occupations (Barrick, Mount, and Judge 2001) and is related to such traits as self-control, persistence, and reliability (Carney et al. 2008), as well as personal agency (Schlenker, Chambers, and Le 2012). People who are more politically conservative also tend to have stronger physiological responses to negative stimuli and devote more psychological resources to them (Hibbing, Smith, and Alford 2014), which, in the context of health care, may lead to more responsive treatment. This possibility is consistent with findings from a survey using patient vignettes, in which Republican physicians pursued more active treatment options than did Democrats (Hersh and Goldenberg 2016).

With respect to factors that may relate to health care equity, greater political conservatism predicts more negative attitudes toward marginalized groups and greater acceptance of inequality (Jost, Federico, and Napier 2009). Political ideology also affects how individuals respond to persuasive communication related to health disparities (Gollust and Cappella 2014) and social determinants of health (Gollust, Lantz, and Ubel 2009). For example, among different messages about the causes of health disparities, the message that identified the role of “personal choices” elicited the most anger among Democrats and the least anger among Republicans (Gollust and Cappella 2014); among messages about the causes of type 2 diabetes, a message focused on the causal role of social determinants led to greater support for policy solutions among Democrats and lower support among Republicans (Gollust, Lantz, and Ubel 2009). Yet much less is known about how political ideology affects these attitudes specifically among health care providers and trainees. Understanding the extent to which political ideology of health care professionals and trainees affects their attitudes related to disparities can inform the development of training initiatives and communication strategies and provide insight into provider contributions to disparities.

Most of the research to date examining the provider contribution to health disparities focuses on racial/ethnic health care differences. However, evidence suggests that the phenomenon holds for other marginalized groups (e.g., sexual minority, poor, and obese; Cunningham, Nezlak, and Banaji 2004). While our literature review focuses on studies that measure conservatism/liberalism, we also include related constructs: right-wing authoritarianism (RWA), a sociopolitical attitude associated with conservatism expressing the degree to which people believe strongly in traditional values and norms and are especially likely to have difficulty in interactions with individuals from socially stigmatized groups (Altemeyer 1998;

Duckitt et al. 2002); medical authoritarianism (MA), which adapts RWA to the clinical environment (Merrill et al. 1995; Holleman, Thornby, and Merrill 2000); and social dominance orientation (SDO), which captures support for intergroup inequality.

### Explicit and Implicit Attitudes toward Low-Status Groups

There is direct and indirect evidence that explicit and implicit biases (attitudes and stereotypes) contribute to health care disparities for racial and ethnic minority groups (Hall et al. 2015; van Ryn et al. 2011). Two recent systematic reviews of implicit bias among health care professionals and its influence on health care outcomes concluded that implicit biases were related to patient-provider communication quality, treatment decisions, treatment adherence, and patient health outcomes (FitzGerald and Hurst 2017; Hall et al. 2015). More generally, meta-analytic reviews of studies conducted outside health care suggest that both implicit and explicit attitudes are generally associated with likelihood of discrimination (Greenwald et al. 2009), although the associations with implicit attitudes may be small for many important behaviors (see Oswald et al. 2013), and a meta-analysis of 101 effect sizes from 57 studies found a significant association between negative intergroup attitudes and discrimination ( $r=0.26$ ; Talaska, Fiske, and Chaiken 2008).

Importantly, while explicit prejudice toward and negative stereotypes of racial and ethnic minorities have declined substantially over time (Bobo 2001), negative implicit prejudice and stereotypes have remained widespread, with the majority of whites holding negative implicit stereotypes of blacks and showing an implicit preference for whites over blacks (Nosek et al. 2007). Moreover, recent studies have shown that medical students and physicians also hold implicit racial biases and stereotypes (Sabin, Rivara, and Greenwald 2008; Blair et al. 2013a; van Ryn et al. 2015), which can contribute to disparities via poorer-quality clinical encounters (Cooper et al. 2012; Blair et al. 2013b; Hagiwara et al. 2013; Penner et al. 2010, 2016) and racial biases in clinical decisions (Green et al. 2007; Sabin and Greenwald 2012). It should be noted, however, that not all randomized vignette studies have found an association between implicit bias and disparities in clinical decisions (Haider et al. 2011; Sabin and Greenwald 2012). Although most research examining implicit biases held by health care providers has focused on race, there is also evidence that medical students and providers hold negative implicit biases and stereotypes of obese/overweight people (Schwartz et al. 2003; Waller, Lampman, and Lupfer-Johnson 2012; Teachman and Brownell 2001; Sabin, Marini, and Nosek 2012; Miller et al.

2013; Phelan et al. 2014), the lower class (Haider et al. 2011), and gay/lesbian people (Cochran, Peavy, and Cauce 2007; Burke et al. 2015).

Numerous studies have shown that higher levels of political conservatism are associated with greater negative explicit biases related to members of socially stigmatized and lower-status groups (e.g., blacks, Hispanics, gay people, the poor), including beliefs about whether individuals from those groups are deserving of help (Furr, Usui, and Hines-Martin 2003; Peterson, Doty, and Winter 1993; Dekker and Mootz 1992; Peterson, Duncan, and Pang 2002; Pratto et al. 1994; Jost et al. 2003; Duckitt et al. 2002; Skitka et al. 2002; Nosek et al. 2007; Altemeyer 1988; Nosek, Banaji, and Jost 2009). Several recent studies have shown that conservative orientation is also associated with a greater implicit bias against low-status/stigmatized groups (Jonathan 2008; Nosek et al. 2007; Cunningham, Nezlek, and Banaji 2004; Tsang and Rowatt 2007; Nosek, Banaji, and Jost 2009), although the association is weaker than the association between conservative orientation and explicit bias (Nosek et al. 2007) and not all studies have found an effect (Rowatt et al. 2006). Specifically, although both liberals and conservatives had implicit biases and stereotypes against low-status or stigmatized groups (black, dark-skinned, Arab/Muslim, Jewish, disabled, gay/lesbian, and overweight people), conservatives had consistently and significantly stronger implicit biases than did liberals (Nosek et al. 2007; Nosek, Banaji, and Jost 2009).

Studies using the MA construct have documented a similar relationship between conservative ideology and attitudes toward stigmatized patients among medical students and physicians. Among medical students, MA was associated with negative attitudes toward stigmatized social groups (chronic pain patients, hypochondriacs, and patients addicted to drugs and alcohol) and more pessimistic beliefs about their ability to successfully treat these patients (Merrill et al. 1995). Likewise, among physicians working in community health centers, those with higher MA levels had more negative attitudes and expectations for substance abuse patients (Holleman, Thornby, and Merrill 2000). Similarly, among a national sample of primary care physicians, greater MA was associated with more negative attitudes toward chronic pain patients (Burgess et al. 2011).

### Internal and External Motivation to Respond without Prejudice

Individuals vary in their motivation to control their own prejudiced attitudes and in the degree to which their motivation is internal (e.g., based on one's own values) or external (e.g., based on felt pressure to comply with prevailing social norms; Plant and Devine 1998). Individuals who are

internally motivated are more successful at controlling implicit racial bias than those who are externally motivated (Payne 2001; Monteith, Lybarger, and Woodcock 2009). Hence, internal motivation to control bias should reduce the likelihood that patient race will inappropriately affect clinical judgments and decisions and communication within the clinical encounter. Compared with liberals, conservatives have been found to have lower internal and higher external motivation to control prejudice, to be less likely to hold beliefs, values, and norms that restrain prejudice, and to be more likely to hold beliefs that justify prejudice toward different groups (Crandall and Eshleman 2003; Webster et al. 2014).

### Empathy

Individuals who manifest higher levels of emotional empathy (awareness of another person's feelings) and perspective taking (a cognitive form of empathy involving the ability to consider a situation from the position of another) are more likely to have positive attitudes toward stigmatized groups and are less likely to exhibit implicit and explicit stereotyping and bias (Dovidio et al. 2004). In one study, physicians classified as "empathic/compassionate" were found to have less stereotypic attitudes toward patients relative to physicians classified as low in empathy (Carmel and Glick 1996). Moreover, experimentally inducing individuals to take the perspective of a stigmatized group can lead to a reduction in implicit and explicit stereotyping and bias (Galinsky and Moskowitz 2000; Finlay and Stephan 2000). This suggests that greater empathy should decrease the likelihood that patient race will inappropriately influence clinical judgments and decisions.

Several studies have documented a negative relationship between conservative ideology and emotional empathy and perspective taking. For example, liberals have been shown to be more compassionate than conservatives (Graham, Nosek, and Haidt 2012; Hirsh et al. 2010; McAdams et al. 2008) and more likely to take the perspective of members of racial/ethnic minority groups (Sparkman and Eidelman 2016). SDO has been associated with "hard-headedness" and "toughness" and has been shown to be negatively associated with empathy across numerous nonphysician samples (Pratto et al. 1994).

### Orientation toward Patient-Centered Care

Patient-centered care, defined as "providing care that is respectful of and responsive to individual patient preferences, needs, and values, and

ensuring that patient values guide all clinical decisions” (IOM 2001: 40), has been identified as having the potential to reduce health care disparities through several mechanisms (Beach et al. 2007; Burgess et al. 2007). First, patient-centered care is designed to promote individuation, in which patients are treated in terms of their individual characteristics and preferences, thereby reducing the effect of stereotypes on clinical decisions and processes of care. Moreover, creating a partnership, which produces a common group identity, has been shown to reduce conscious and unconscious biases (Gaertner and Dovidio 2000; Nier et al. 2001). Additionally, because patient-centered care emphasizes patient-centered communication, it should be particularly beneficial to minorities and members of other low-status groups (e.g., the less well educated) that experience poorer-quality communication with their physicians (Johnson et al. 2004; Williams et al. 2002). In one study, medical students with low patient-centered attitudes had lower performance in encounters with black compared to white standardized patients, whereas students with high patient-centered care attitudes did not show this discrepancy (Beach et al. 2007).

There is some evidence that conservatives are less inclined than liberals to have a patient-centered orientation (Bellas, Asch, and Wilkes 2000). In one study, conservative physicians were shown to be less patient centered than liberals in their communication (Waitzkin 1985). Several studies also have found that conservative medical students and physicians were less likely to choose careers in primary care and psychiatry and more likely to choose technical, non-primary-care specialties (Diehl et al. 2006; Frank, Carrera, and Dharamsi 2007; Merrill et al. 1995), although it is not clear whether it may be because they are less interested than liberals in working directly with patients (vs., e.g., more attracted than liberals to more technical specialties).

### Intergroup Anxiety

Interracial anxiety describes the increased arousal and anxiety experienced by members of different races when interacting (Shelton and Richeson 2006; Trawalter and Richeson 2008). Numerous studies, conducted outside the medical setting, have shown that interracial anxiety has an adverse effect on interaction quality (Shelton and Richeson 2006; Trawalter and Richeson 2008). Among members of minority groups, the nonverbal behavior elicited by whites' interracial anxiety may be interpreted as dislike or animosity (Plant and Devine 2003; Pearson et al. 2008). Among whites, interracial anxiety can exacerbate hostility and increase the desire to avoid such interracial contact in the future (Plant and Devine 2003; Plant

2004). Although there is little research on whether interracial anxiety is associated with political ideology, one might expect that conservatism (and RWA in particular) would be associated with greater intergroup anxiety, given its association with heightened out-group threat (Altemeyer 1988). Indeed, in one study, RWA was associated with greater intergroup anxiety when imagining that one would interact with a gay person of the same gender (Blair, Park, and Bachelor 2003).

### Overview of the Present Study

Although the existing evidence suggests the possibility that providers' political ideology may be associated with attitudes and beliefs that can affect care for stigmatized and marginalized patients, this topic has received relatively little study. The objective of the present study was to characterize the political ideology of first-year medical students attending a national sample of forty-nine medical schools and describe the extent to which students' political ideology reported in their first year of medical school (year 1) predicted their attitudes and beliefs relevant to the care of vulnerable patient populations (members of sexual minority groups, members of racial/ethnic minority groups, people who are obese) reported in their fourth and final year of school (year 4; Pratto et al. 1994). It should be noted that we did not examine whether conservative ideology affected students' treatment of vulnerable groups; rather, we examined attitudes associated with treatment of vulnerable groups, within and outside of health care (FitzGerald and Hurst 2017; Hall et al. 2015; Greenwald et al. 2009; Talaska, Fiske, and Chaiken 2008).

We hypothesized that conservative political ideology, assessed at the start of medical school would predict year 4 attitudes that have been shown to influence the treatment of marginalized populations (explicit prejudice, implicit bias, motivation to respond without prejudice, trait empathy, valuing empathy toward patients, patient-centered orientation, and interracial anxiety). We also examined two secondary measures of political ideology related to conservatism: SDO and MA.

## Methods

### Participants

This study used data collected as part of the Medical Student Cognitive Habits and Growth Evaluation Study (CHANGES), a national longitudinal

study of medical students who matriculated in US medical schools in the fall of 2010, designed to examine changes in medical student attitudes and well-being between their first year (baseline) and last year of medical school (year 4). The CHANGES study employed a stratified multistage sampling design. In the first stage, medical schools were stratified by geographical region and public/private status into eleven strata, and a probability sample of schools was selected. Roughly the same proportion (43%) of schools was sampled from each stratum, resulting in the target sample size of fifty schools. Within each stratum, the specific schools selected were sampled using a proportional-to-(class)-size sampling methodology. One school was a military school with highly distinctive curricula and student body and was therefore dropped from the sample, leaving a final sample of forty-nine schools.

In the second stage, we recruited first-year students from the selected schools. As a comprehensive list of all first-year medical students was not available at the time of recruitment, we ascertained participants using a combination of three strategies: (1) we obtained e-mails of students interested in participating in the study through a question included as part of the Association of American Medical Colleges Matriculating Student Questionnaire, a voluntary annual survey sent to all students entering medical school; (2) a list of first-year medical students (incomplete) purchased from a vendor licensed by the American Medical Association; and (3) referral (i.e., snowball) sampling through recruited survey respondents. Students that agreed to participate in the study completed an extensive online survey questionnaire, a race Implicit Association Test (IAT; Greenwald et al. 2009), and (assigned randomly) a sexuality or obesity IAT. All students who completed the survey received a \$50 incentive for participation.

Between October 2010 and January 2011, a total of 3,756 first-year medical students completed the baseline survey, representing 81% of students invited to participate in the study. Our overall response rate was comparable to or better than other published studies of medical students (Dyrbye et al. 2009). The demographic characteristics of students in our sample were similar to the demographics of all students who enrolled in medical schools in 2010, as reported by the Association of American Medical Colleges (van Ryn et al. 2014). Our study sample comprised 3,756 students who completed both the baseline and follow-up survey (completed in their fourth year of medical school).

This study was approved by and conducted in compliance with the institutional review boards of the Mayo Clinic and the University of Minnesota. Participants gave their consent to participate in this study.

## Measures of Political Ideology

Liberal/conservative identification was measured by a five-point scale. Participants were asked to answer the question, "How do you characterize your political leaning?" by selecting (1) very conservative, (2) conservative, (3) moderate, (4) liberal, or (5) very liberal. This scale is widely used, including in prior studies of physicians and medical students (Frank, Carrera, and Dharamsi 2007). So that all measures of political ideology were of similar direction (with higher scores indicating more conservative responses), we reversed this scale for analysis. Answers to this question were collected at both years 1 and 4; the year 1 response was used as an independent variable and the year 4 response as a dependent variable.

Social dominance orientation (SDO) is a validated scale that measures egalitarian and social justice beliefs, in which higher scores indicate greater support for inequality; it was assessed with six items taken from the fourteen-item SDO scale (Cronbach's  $\alpha = 0.84$ ; Sidanius and Pratto 1999).

Medical authoritarianism (MA) was measured with five items drawn from Merrill et al.'s (1995) seven-item scale. Sample items included: "Conscientious patients deserve better health care than those with self-inflicted problems" and "Those who contribute the most to society should get better health care." Items were scored on a five-point scale, with lower numbers indicating lower MA levels. A composite variable was calculated using the mean score for all five items. Cronbach's  $\alpha$  was 0.88, similar to Cronbach's  $\alpha = 0.86$  reported in two previous studies using the full scale (Merrill 1995).

## Dependent Measures (Assessed at Year 4)

Explicit prejudice was measured using a validated "feeling-thermometer" technique for assessing social attitudes in which participants indicated their feelings toward a number of socially vulnerable populations by moving a slider (Alwin 1997). Numbers along the side of the thermometer ranged from 0 (labeled "very cold or unfavorable") to 100 (labeled "very warm or favorable"). For the purpose of this study we looked at feeling-thermometer scores for the following groups: African Americans, Hispanics, gay men, lesbians, poor people, intravenous drug users, and obese people.

We measured implicit bias toward people who are (1) obese, (2) gay and lesbian, and (3) black using the Implicit Association Test (IAT; Greenwald et al. 2009). We used the weight, sexual orientation, and race IATs, which are computer-based measures that compare the time it takes to categorize

images associated with marginalized and nonmarginalized groups (fat/thin, homosexual/heterosexual, black/white) at the same time as positive and negative words. The entire sample completed the black/white race IAT; half of the sample completed the obesity IAT, and the other half completed the sexuality (gay/lesbian vs heterosexual) IAT. Based on participants' reaction times, we computed IAT scores as suggested by Greenwald, Nosek, and Banaji (2003). Larger positive scores indicate greater degrees of racial bias.

Motivation to respond without prejudice was assessed by the six-item scale, which contains subscales for internal and external motivation to respond without prejudice (Cronbach  $\alpha=0.75$ ,  $0.87$  respectively; Plant and Devine 1998). The internal motivation subscale included three items like "I am personally motivated by my beliefs to be non-prejudiced toward Blacks." The external motivation subscale included three items like "Because of today's PC (politically correct) standards I try to appear non-prejudiced toward people who are Black." Response options for both ranged from 1 (strongly disagree) to 7 (strongly agree).

Trait empathy was assessed using the Interpersonal Reactivity Index (Davis 1980). We used the subscales of empathic concern ( $\alpha=0.82$ ) and perspective taking ( $\alpha=0.83$ ) for this index, both consisting of a set of seven statements with seven-point response scales ranging from "strongly disagree" to "strongly agree." Empathic concern included items like "I am often quite touched by things that I see happen," and perspective taking included items like "Before criticizing somebody, I try to imagine how I would feel if I were in their place."

Attitudes on the value of empathy toward patients were assessed with the student version of the Jefferson Scale of Physician Empathy (Hojat et al. 2001). An example question is, "A physician who is able to view things from another person's perspective can render better care." Response options ranged from 1 (strongly disagree) to 7 (strongly agree) (Cronbach's  $\alpha=0.88$ ).

Patient-centered orientation was assessed using the six-item subscale of the Health Beliefs Attitudes Survey (Crosson et al. 2004; Cronbach's  $\alpha=0.78$ ). Sample items included "Physicians should learn about their patients' cultural perspective" and "Understanding patients' opinions about their illnesses helps physicians provide better care."

Interracial anxiety toward black patients was measured using a shortened version of an instrument by Somnath Saha and colleagues (Earl et al. 2013), based on a scale developed by E. Ashby Plant and Patricia G. Devine

(2003). The scale contained six items, such as “When interacting with Black patients I am concerned they may not trust me” and “I get anxious when interacting with Black patients.”

We used standard demographic questions to assess age and gender. We used parents’ highest level of education as a measure of socioeconomic status. The highest educational attainment for either parent was recoded into categories for completion of a doctoral degree, other graduate degree, undergraduate degree, and less than an undergraduate degree.

### Primary Analyses

We summarized student demographics at year 1 by political ideology and summarized all dependent variables by political ideology. Mixed-effects linear regression models were used to examine the extent to which each of the political ideology measures at year 1 predicted cognitions and orientations relevant to the care of marginalized patient populations at year 4, incorporating a random intercept for school. In each model, political ideology was the predictor of interest; we controlled for age, gender, race, sexuality, and socioeconomic status. Effect size, confidence interval, and significance of the effect are reported for each predictor.

### Secondary Analyses

We conducted several secondary analyses to assess the impact of assumptions and to further explore the primary findings. First, because the relationship between ideology and attitudes toward marginalized groups may be heterogeneous across these groups, we replicated the main models excluding students who were members of the corresponding marginalized group. Specifically, we excluded black, Hispanic, obese, and gay/lesbian students from the models for measuring explicit and implicit attitudes toward those groups. We also replicated the main models for each racial/ethnic group. Next, we conducted exploratory analyses to determine (1) whether there was significant variation in the magnitude of the relationship between year 1 conservatism and outcomes related to poorer care of marginalized groups among schools at year 4 and, if so, (2) whether contextual factors might strengthen or weaken the relation between conservatism and these outcomes. For this analysis, we replicated the primary models with the additional specification of random ideology slopes across schools; a slope variance that was significantly greater than zero would

indicate that the effect of ideology varied across schools beyond the variation expected due to chance. We also explored whether race or geographic region might moderate the association between conservatism and outcomes by adding these factors and their interaction with ideology to the primary models. Finally, we examined whether the effect of conservatism on outcomes depended on the measurement time point by estimating a repeated-measures model including both year 1 and year 4 measures of conservatism, along with an interaction for conservatism with time; these models were also adjusted for age and gender.

Analyses were done in Stata (version 15.1; StataCorp, College Station, TX).

## Results

Table 1 reports the demographic characteristics of our sample, broken down by political orientation. The total sample was 66.4% white, 12.3% East Asian, 9.1% South Asian, 4.6% black, 4.5% Hispanic, 0.1% American Indian, 0.2% Native Hawaiian/Pacific Islander, and 4.9% multiracial; race was unknown for 2.6% of the sample. The sample was evenly split between men and women, and most students had at least one parent who had a bachelor's or higher degree.

Medical students were most likely to identify themselves as liberal ("very liberal" or "liberal"; 47.7%), followed by moderate (33.3%) and then conservative ("very conservative" or "conservative"; 19.0%; table 1). Students who identified as conservative were more likely to be white, male, twenty-four years of age or younger, and identify as straight rather than gay, lesbian, or bisexual. We explored variance inflation factors (VIFs) for all models, and the results suggested that no multicollinearity problem existed among our IVs ( $VIF < 3$ ). Distribution of the means and standard deviations of the dependent variables at each level of political orientation is shown in table 2.

Conservative political orientation was positively correlated with MA [ $r(3689) = 0.23, p < 0.0001$ ] and SDO [ $r(3676) = 0.39, p < 0.0001$ ]. MA and SDO were also positively correlated [ $r(3691) = 0.50, p < 0.0001$ ].

Consistent with our hypotheses, model results suggested that conservative ideology assessed at year 1 was associated with the following at year 4 (see table 3): (a) greater implicit bias against black and gay individuals and more negative explicit attitudes toward African Americans, Hispanics, gay men, lesbians, obese people, and intravenous drug users; (b) lower internal

**Table 1** Characteristics of national sample of first-year medical students attending a stratified sample of 49 US medical schools in 2010, distributed by political orientation [mean (SD)]

Characteristic	Very conservative	Conservative	Moderate	Liberal	Very liberal	All	$\chi^2$	<i>p</i>
N	89 (100.0)	650 (100.0)	1304 (100.0)	1409 (100.0)	457 (100.0)	3909 (100.0)	111.0	<0.001
Gender								
Male	71 (79.8)	381 (58.6)	713 (54.7)	600 (42.6)	186 (40.7)	1951 (49.9)		
Female	18 (20.2)	268 (41.2)	586 (44.9)	807 (57.3)	270 (59.1)	1949 (49.9)		
Other	0 (0.0)	1 (0.2)	3 (0.2)	1 (0.1)	1 (0.2)	6 (0.2)		
Missing	0 (0.0)	0 (0.0)	2 (0.2)	1 (0.1)	0 (0.0)	3 (0.1)		
Age (years)							71.3	<0.001
<24	52 (58.4)	422 (64.9)	809 (62.0)	764 (54.2)	197 (43.1)	2244 (57.4)		
24+	37 (41.6)	223 (34.3)	484 (37.1)	639 (45.4)	255 (55.8)	1638 (41.9)		
Missing	0 (0.0)	5 (0.8)	11 (0.8)	6 (0.4)	5 (1.1)	27 (0.7)		
Race							134.7	<0.001
American Indian/ Alaska Native	1 (1.1)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	2 (0.1)		
East Asian	3 (3.4)	51 (7.8)	179 (13.7)	208 (14.8)	39 (8.5)	480 (12.3)		
South Asian	1 (1.1)	35 (5.4)	136 (10.4)	141 (10.0)	42 (9.2)	355 (9.1)		
Black	1 (1.1)	12 (1.8)	73 (5.6)	74 (5.3)	19 (4.2)	179 (4.6)		
Native Hawaiian/ Pacific Islander	0 (0.0)	1 (0.2)	3 (0.2)	3 (0.2)	0 (0.0)	7 (0.2)		

**Table 1** (continued)

Characteristic	Very conservative	Conservative	Moderate	Liberal	Very liberal	All	$\chi^2$	<i>p</i>
White	81 (91.0)	508 (78.2)	821 (63.0)	870 (61.7)	314 (68.7)	2594 (66.4)		
Unknown	2 (2.2)	9 (1.4)	33 (2.5)	36 (2.6)	20 (4.4)	100 (2.6)		
Multiracial	0 (0.0)	34 (5.2)	59 (4.5)	76 (5.4)	23 (5.0)	192 (4.9)		
Parents' highest education							30.4	0.002
PhD	30 (33.7)	222 (34.2)	479 (36.7)	557 (39.5)	196 (42.9)	1484 (38.0)		
Master's	27 (30.3)	164 (25.2)	309 (23.7)	392 (27.8)	102 (22.3)	994 (25.4)		
Bachelor's	21 (23.6)	155 (23.8)	320 (24.5)	261 (18.5)	97 (21.2)	854 (21.8)		
Less than bachelor's	11 (12.4)	109 (16.8)	192 (14.7)	198 (14.1)	62 (13.6)	572 (14.6)		
Missing	0 (0.0)	0 (0.0)	4 (0.3)	1 (0.1)	0 (0.0)	5 (0.1)		
Sexual orientation							90.2	<0.001
Other	0 (0.0)	19 (2.9)	61 (4.7)	94 (6.7)	71 (15.5)	245 (6.3)		
Heterosexual	88 (98.9)	617 (94.9)	1219 (93.5)	1297 (92.1)	381 (83.4)	3602 (92.1)		
Missing	1 (1.1)	14 (2.2)	24 (1.8)	18 (1.3)	5 (1.1)	62 (1.6)		

**Table 2** Distribution of the dependent variables at each level of political orientation [mean (SD)]

Variable	Very conservative	Conservative	Moderate	Liberal	Very liberal	All
Implicit bias						
Black	0.53 (0.42)	0.48 (0.44)	0.45 (0.43)	0.41 (0.45)	0.37 (0.46)	0.43 (0.44)
Gay	0.49 (0.35)	0.44 (0.42)	0.37 (0.42)	0.26 (0.46)	0.10 (0.48)	0.31 (0.45)
Obese	0.44 (0.37)	0.32 (0.45)	0.34 (0.41)	0.30 (0.42)	0.24 (0.42)	0.31 (0.42)
Explicit prejudice						
Black	73.95 (24.74)	80.26 (21.04)	79.21 (20.60)	81.99 (19.85)	84.98 (19.40)	80.95 (20.47)
Hispanic	75.14 (24.58)	81.94 (19.83)	80.37 (20.54)	83.22 (19.11)	85.93 (18.55)	82.19 (19.88)
Gay men	59.81 (29.21)	71.89 (26.23)	77.24 (22.58)	83.44 (19.30)	86.37 (19.42)	79.27 (22.63)
Lesbians	62.45 (26.64)	71.72 (25.40)	76.79 (22.11)	82.09 (19.82)	85.82 (19.69)	78.61 (22.31)
Obese	58.34 (28.17)	63.05 (25.34)	63.69 (24.45)	65.78 (24.13)	67.82 (25.41)	64.71 (24.74)
Intravenous drug users	37.84 (33.81)	42.01 (28.45)	46.93 (28.13)	47.83 (27.75)	59.64 (28.07)	47.74 (28.60)
Motivation to control prejudice						
Internal motivation	5.67 (1.42)	5.58 (1.25)	5.77 (1.17)	6.02 (1.03)	6.22 (1.09)	5.88 (1.15)
External motivation	4.28 (1.89)	4.35 (1.58)	4.38 (1.62)	4.29 (1.59)	3.76 (1.80)	4.27 (1.64)
Orientation						
Empathy toward patients	6.06 (0.90)	6.23 (0.77)	6.32 (0.72)	6.46 (0.63)	6.56 (0.70)	6.38 (0.71)
Emotional empathy	5.45 (0.93)	5.58 (0.93)	5.65 (0.94)	5.79 (0.87)	6.02 (0.89)	5.73 (0.92)
Cognitive empathy	5.04 (1.07)	5.24 (0.96)	5.36 (0.94)	5.41 (0.92)	5.50 (0.99)	5.37 (0.95)
Patient-centered care	5.44 (0.99)	5.65 (0.87)	5.73 (0.89)	5.88 (0.82)	5.97 (0.91)	5.79 (0.87)
Intrracial anxiety	2.39 (1.46)	2.26 (1.20)	2.25 (1.18)	2.28 (1.21)	2.10 (1.12)	2.25 (1.19)

**Table 3** Associations between conservatism, social dominance orientation (SDO), and medical authoritarianism (MA) with factors associated with care of marginalized patients

Outcome	Conservatism			MA $\beta$ (95% CI)
	$\beta$ (95% CI)	Cohen's $d$	SDO $\beta$ (95% CI)	
Implicit bias				
Black	0.047** (0.011 to 0.084)	0.149	0.026*** (0.012 to 0.041)	0.015** (0.004 to 0.026)
Gay	0.122*** (0.070 to 0.174)	0.364	0.042*** (0.022 to 0.062)	0.018* (0.003 to 0.033)
Obese	0.016 (-0.034 to 0.066)	0.069	0.021* (0.001 to 0.040)	0.018* (0.003 to 0.032)
Explicit prejudice				
African Americans	-2.222** (-3.891 to -0.553)	-0.087	-4.033*** (-4.673 to -3.393)	-2.968*** (-3.454 to -2.481)
Hispanics	-1.611* (-3.237 to 0.014)	-0.066	-3.613*** (-4.237 to -2.989)	-2.457*** (-2.933 to -1.981)
Gay men	-10.738*** (-12.535 to -8.942)	-0.490	-5.064*** (-5.759 to -4.369)	-3.178*** (-3.712 to -2.644)
Lesbians	-9.983*** (-11.781 to -8.186)	-0.449	-4.870*** (-5.566 to -4.173)	-3.109*** (-3.642 to -2.575)
Obese people	-3.111** (-5.139 to -1.083)	-0.111	-4.596*** (-5.377 to -3.815)	-4.825*** (-5.411 to -4.240)
Intravenous drug users	-7.452*** (-9.812 to -5.091)	-0.269	-5.427*** (-6.336 to -4.518)	-6.162*** (-6.836 to -5.488)

(continued)

**Table 3** Associations between conservatism, social dominance orientation (SDO), and medical authoritarianism (MA) with factors associated with care of marginalized patients (*continued*)

Outcome	Conservatism			MA $\beta$ (95% CI)
	$\beta$ (95% CI)	Cohen's <i>d</i>	SDO $\beta$ (95% CI)	
Motivation to control prejudice				
Internal motivation	-0.318*** (-0.412 to -0.224)	-0.316	-0.328*** (-0.363 to -0.293)	-0.198*** (-0.225 to -0.171)
External motivation	0.051 (-0.083 to 0.186)	0.056	0.163*** (0.113-0.217)	0.163*** (0.124-0.203)
Orientation				
Empathy toward patients	-0.153*** (-0.210 to -0.096)	-0.284	-0.189*** (-0.211 to -0.167)	-0.110*** (-0.126 to -0.093)
Emotional empathy	-0.123** (-0.197 to -0.049)	-0.216	-0.256*** (-0.284 to -0.229)	-0.166*** (-0.188 to -0.145)
Cognitive empathy	-0.162*** (-0.241 to -0.083)	-0.196	-0.191*** (-0.221 to -0.160)	-0.120*** (-0.143 to -0.097)
Patient-centered care	-0.161*** (-0.233 to -0.089)	-0.233	-0.199*** (-0.226 to -0.172)	-0.135*** (-0.156 to -0.114)
Interracial Anxiety	0.027 (-0.075 to 0.129)	0.026	0.164*** (0.124-0.203)	0.190*** (0.160-0.219)

Notes:  $\beta$  indicates regression coefficient or effect size; CI = confidence interval. Estimates adjusted for gender, age, race, sexuality, and parental education.  
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

motivation to control racial prejudice; (c) lower levels of trait empathy and of valuing empathy toward patients; and (d) lower levels of patient-centered attitudes, as assessed by the Health Beliefs Attitude Survey. Results were similar when SDO and MA were used as predictors of cognitions and orientations relevant to the care of marginalized patient populations, except that SDO and MA were associated with greater implicit bias against obese people, greater external motivation to control prejudice, and greater inter-racial anxiety at year 4, whereas conservatism was not.

Overall, the association between year 1 conservatism and year 4 outcomes did not significantly vary by medical school, nor were these associations moderated by race or geographic region. Additionally, the conclusions did not differ when participants who would be evaluating their in-group (black, Hispanic, gay/lesbian, and obese people) were excluded from each model.

The effect of conservatism on the following attitudes was significantly weaker at year 4, compared to year 1, with statistically significant conservatism by time interactions for implicit attitudes toward gay targets [ $\beta$  (SE) =  $-0.090$  (0.033);  $p < 0.01$ ], explicit attitudes toward gay men [3.949 (1.054);  $p < 0.001$ ], and explicit attitudes toward lesbians [4.492 (1.052);  $p < 0.001$ ]. The association between conservatism and implicit attitudes toward African Americans and obese individuals were also weaker in year 4 than in year 1, although these differences were not statistically significant. However, the association between conservatism and less favorable explicit attitudes toward obese people [ $\beta$  (SE) =  $-2.274$  (1.132);  $p < 0.05$ ] and intravenous drug users [ $-3.466$  (1.373);  $p < 0.05$ ] were stronger at year 4 than at year 1; the association between conservatism and empathy toward patients was also more negative at year 4 than at year 1 [ $\beta$  (SE) =  $-0.063$  (0.032);  $p < 0.05$ ].

## Discussion

Conservative ideology, assessed among first-year medical students, predicted many attitudes assessed during their fourth year of school that have been associated with lower-quality interactions with patients who are members of marginalized groups (FitzGerald and Hurst 2017) and hence may potentially contribute to inequities in physical and mental health. Our findings are consistent with research conducted outside health care showing an association between conservative ideology and attitudes related to marginalized groups (Jost, Federico, and Napier 2009; Nosek,

Banaji, and Jost 2009). Interestingly, the relationship between conservatism and implicit bias in this study (standardized effect sizes, adjusted for gender, age, race, sexuality, and parental education: 0.149 for black, 0.364 for gay, and 0.069 for obese IAT targets) is stronger than the relationship found in a similar study conducted with a large, heterogeneous sample of participants who completed IATs from 2000 through 2006, in which the effect of conservatism on implicit bias (weighted average of the effect magnitudes, adjusted for gender, ethnicity, and age) was 0.029 for black, 0.162 for gay, and 0.001 for obese IAT targets (Nosek et al. 2007).

Results of this study have important implications for designing curricula and programs for trainees and providers to reduce inequities and improve the care of patients from marginalized groups. The imperative to increase the ability of health care employees to address inequities has been advocated by US policy makers and leaders of professional organizations and health care systems (Koh, Graham, and Glied 2011). These recommendations include increasing awareness of disparities, increasing awareness of unconscious racial bias, improving cross-cultural interactions, and increasing education and training to address disparities. Yet, there is scant research about the most effective ways to achieve these objectives, particularly with more conservative health care providers and medical students, who are likely to be less internally motivated to engage in bias-reduction efforts than their more liberal counterparts. This has practical importance, particularly in light of a recent national survey of practicing physicians, in which 10% characterized themselves as “very conservative” and 28% characterized themselves as “somewhat conservative” (Antiel et al. 2013).

Our exploratory analysis suggests that political attitudes can become differentially associated with group attitudes over time. For example, during the period we studied, conservatism became a weaker predictor of attitudes toward gay and lesbian people but a stronger predictor of attitudes toward obese people and intravenous drug users. Our study design cannot distinguish between effects of medical education itself and overall changes in the groups associated with political advocacy in the United States, but our results do highlight the fact that associations between political identities and prejudices are dynamic and complex. More research is needed on how medical education might moderate the relationship between political ideology and attitudes about vulnerable patient groups.

At the most general level, these results argue for the importance of taking students, and providers’ political ideology into account when developing medical curricula on provider bias and cultural competence. One approach

would be to develop and test approaches that resonate with learners across the political spectrum (Burgess et al. 2017). Another approach might be to tailor strategies based on medical specialty, as clinicians in primary care and psychiatry are likely to be more liberal than those in non-primary-care specialties (Diehl et al. 2006; Frank, Carrera, and Dharamsi 2007; Merrill et al. 1995; Bonica et al. 2017). Clinicians in psychiatry or primary care, on average, may need less persuasion about the importance of improving the care of stigmatized patients and may have a greater readiness to engage in skills training and other behavioral change activities than clinicians in specialties that tend to be more conservative, who may require different strategies (Legault, Gutsell, and Inzlicht 2011). There is scant knowledge about how to leverage values and motives that conservatives hold to improve the care of vulnerable patient groups, and more research is needed in this area.

Although the focus of the present research was the role of political ideology in predicting medical students' attitudes toward traditionally stigmatized groups, which our findings revealed were generally more negative among more conservative students, we acknowledge that more politically conservative providers may bring other valuable qualities to health care. A limitation of the present study was a lack of measures that tap into positive attributes associated with political conservatism, such as conscientiousness (Carney et al. 2008), and moral values that are endorsed more strongly by conservatives, such as loyalty, self-control, and duty toward upholding the social norms of their group (Graham et al. 2012; Graham, Haidt, and Nosek 2009). These moral values have been described as "binding" moral foundations because they uphold group norms and values, in contrast to "individualizing" moral foundations, which emphasize fairness and prevention of harm. Individualizing moral values are more closely associated with traditional bias-reduction messages that emphasize inequity of outcomes that harm racial and ethnic minorities and members of other marginalized groups. Conservatives tend to rely more on binding moral foundations, whereas liberals rely more on individualizing foundations (Graham, Haidt, and Nosek 2009; Haidt and Graham 2007). Recent criticism has pointed out how conservatism historically has tended to be pathologized in the social sciences, with a focus on conservatives' moral deficits, with little attention paid to moral strengths (Graham et al. 2012). More recent scholarship has begun to explore these moral foundations of self-identified conservatives (Van Leeuwen and Park 2009; Graham, Haidt, and Nosek 2009; McAdams et al. 2008; Haidt, Graham, and Joseph 2009; Graham et al. 2012; Federico

et al. 2013) and to use these foundations as the basis for developing persuasive appeals to engage conservatives in prosocial activities (Kidwell, Farmer, and Hardesty 2013). An additional limitation is that this study did not examine whether conservative ideology affected students' treatment of vulnerable groups; rather, it examined attitudes associated with treatment of vulnerable groups, within and outside of health care (FitzGerald and Hurst 2017; Hall et al. 2015; Greenwald et al. 2009; Talaska, Fiske, and Chaiken 2008).

Theories of persuasion point to the importance of developing communication approaches that resonate with the core values and motives of the audience. To resonate with more conservative medical students, curricula to promote health and health care equity might tap into motives such as in-group loyalty and respect for authority, by appealing to the values of medicine, perhaps using important leaders in the medical profession as the source of the communication, and by focusing on the importance of upholding the highest values of medicine by making sure that they, as future physicians, are not being influenced by clinically irrelevant factors such as race or sexual orientation in their practice. Such communication might appeal to the moral values of medicine, such as taking the best care of every patient, going beyond personal and immediate negative reactions that conservatives might have to groups such as gay and lesbian patients. Such communication could also emphasize that unconscious biases can adversely affect care for a broad range of groups (e.g., women, the elderly), and that strategies to reduce the effects of bias (such as increasing empathy and partnership building) can improve quality of care for all patients.

It should be noted that, although the race and ethnicity of medical students in our sample were similar to the demographics of all students who enrolled in medical schools in 2010, as reported by the Association of American Medical Colleges (van Ryn et al. 2014), black and Hispanic students are underrepresented relative to the non-medical-school population. Although increasing the number of underrepresented minorities in the physician workforce has been a national priority for many years (Cohen, Gabriel, and Terrell 2002; Smedley, Butler, and Bristow 2004; Merchant and Omary 2010), progress has been slow (Smedley, Butler, and Bristow 2004). Moreover, although Asian Americans are overrepresented in medical education, there is evidence that medical trainees of Asian descent in the United States and the United Kingdom experience greater difficulties in medical school than their white counterparts (Woolf, Potts, and McManus 2011; Dawson et al. 1994; Case et al. 1996; Andriole and Jeffe 2010).

Our findings that political conservatism was associated with a number of characteristics shown to be detrimental to marginalized populations, and that ethnic and racial minority medical students are less likely to identify as conservative than their white counterparts provide additional reasons to increase diversity within medical schools and to ensure the success of individuals from marginalized populations.

Conservative political ideology may be associated with factors that have been shown to affect the expression of unconscious biases, beliefs regarding disparities, and attitudes toward marginalized populations. These attitudes may affect their care for vulnerable patients, their participation in bias reduction interventions, and the kind of intervention that is most likely to be effective. However, it is also the case that conservative ideology may be associated with factors that can be leveraged to benefit marginalized groups, such as conscientiousness, self-control, and duty. Research is needed to understand the most effective bias reduction interventions for medical students and health care providers, across the political spectrum.

■ ■ ■

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