

The Joint Effect of Bias Awareness and Self-Reported Prejudice on Intergroup Anxiety and Intentions for Intergroup Contact

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Two correlational studies investigated the joint effect of bias awareness—a new individual difference measure that assesses Whites’ awareness and concern about their propensity to be biased—and prejudice on Whites’ intergroup anxiety and intended intergroup contact. Using a community sample (Study 1), we found the predicted Bias Awareness \times Prejudice interaction. Prejudice was more strongly related to interracial anxiety among those high (vs. low) in bias awareness. Study 2 investigated potential behavioral consequences in an important real world context: medical students’ intentions for working primarily with minority patients. Study 2 replicated the Bias Awareness \times Prejudice interaction and further demonstrated that interracial anxiety mediated medical students’ intentions to work with minority populations.

Keywords: bias awareness, self-knowledge, interracial contact, intergroup anxiety

Intergroup contact is one of the most effective ways for reducing intergroup bias and improving intergroup relations (Pettigrew & Tropp, 2011), yet Whites typically avoid intergroup contact both personally (Dovidio & Gaertner, 2004) and structurally (e.g., in terms of residential segregation; Massey & Denton, 1993). One reason for Whites’ avoidance is the anxiety they typically experience in interracial interactions (Stephan & Stephan, 2000). Anxiety leads Whites to socially distance themselves from Blacks (Goff, Steele, & Davies, 2008; Richeson & Shelton, 2003) and to avoid intergroup contact (Plant, 2004; Plant & Butz, 2006). The present research, consisting of two studies, investigated the psychological factors that predict greater interracial anxiety among Whites, which in turn is hypothesized to relate to lower intentions for intergroup contact.

Concerns about being seen as prejudiced contribute directly to the anxiety that Whites experience not only during interracial interaction (Goff et al., 2008; Richeson & Shelton, 2003) but also

in anticipation of interracial contact (West & Dovidio, 2013). Because of both personal standards and normative pressures (Plant & Devine, 1998), most White Americans are concerned about their potential to behave in way that is, or is perceived by others to be, inappropriate in interracial interactions and could be attributed to being racially biased (see Dovidio & Gaertner, 2004, for a review). Thus, Whites often choose to avoid interracial interactions and, in interracial interactions in which they do engage, demonstrate increased cognitive demand associated with not wanting to appear biased (Richeson & Shelton, 2003; Richeson & Trawalter, 2005; Shelton, 2003). In the present research, we considered two factors that may combine to influence the amount of intergroup anxiety that Whites experience in anticipation of interracial interaction and ultimately their willingness to engage in this interaction: (a) individual differences in the extent to which people are aware that they may display cues of bias (i.e., bias awareness) and (b) level of prejudice.

Although Whites may be generally aware of their propensity to behave in a biased manner against Blacks (Monteith, Mark, & Ashburn-Nardo, 2010), recently we have developed an individual difference measure of bias awareness, defined as Whites’ awareness and concern about their expressing bias, even unintentionally, against Blacks (see Perry, Murphy, & Dovidio, 2014). In a series of studies, Perry et al. (2014) demonstrated that the Bias Awareness Scale is internally consistent and has good convergent and discriminant validity. Scores on bias awareness are only modestly correlated with external motivation to respond without prejudice (Plant & Devine, 1998), $r_s = .36$ to $.40$, Motivations to control prejudice (Dunton & Fazio, 1997), $r = .37$, and discrepancies between what one should and would do in intergroup circumstances (Monteith & Voils, 1998), $r = .39$. In addition, it is not associated with Whites’ internal motivations to respond without prejudice (Plant & Devine, 1998), $r_s = .02$ to $-.12$, or established

This article was published Online First August 11, 2014.

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This research and preparation of this article were facilitated by grant support from the National Heart Lung and Blood Institute (5R01HL085631-03 and 3R01HL085631-02S1). We thank Diana Burgess, Deborah Finstad, Rachel Hardeman, Kara Johnson, David Nelson, Sean Phelan, and Mark Yeazel for their assistance with data collection in Study 2 and for comments on previous drafts of this article.

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measures of self-reported prejudice, as assessed by the Modern Racism Scale (McConahay, 1986), $r_s = .03$ to $.08$, or implicit racial prejudice, as measured by the Implicit Association Test (Greenwald, Nosek, & Banaji, 2003), $r = .02$. Bias awareness is also only moderately associated with measures of need for approval and sensitivity to social appropriateness: social desirability (Crowne & Marlowe, 1960), $r_s = -.30$ to $-.38$, and self-monitoring (Snyder, 1974) $r = .41$. Moreover, bias awareness predicts Whites' attitudes and behaviors above and beyond these preexisting measures (Perry et al., 2014).

The present work represents a new test of the validity of the Bias Awareness Scale for predicting interracial anxiety and its relation to intentions for intergroup contact. In general, to the extent that people are aware of and concerned about their propensity to display bias against Blacks, we expected that people higher in bias awareness would experience higher levels of interracial anxiety and thus have weaker intentions to engage in intergroup contact.

In the present research, we further hypothesized that the relationship of bias awareness with interracial anxiety and avoidance of interracial contact would vary as a function of Whites' explicit racial prejudice. In general, concerns about being seen as prejudiced lead Whites to have greater anxiety as they approach or engage in intergroup contact. For example, the more Whites expected that a minority-group interaction partner would view them as prejudiced, the more they anticipated negative feelings during the interaction (Vorauer, Main, & O'Connell, 1998). In addition, Whites higher in prejudice exert more effort to suppress cues of negativity (Shelton, Richeson, Salvatore, & Trawalter, 2005), particularly when they anticipate a negative response from a minority-group member (Vorauer, Martens, & Sasaki, 2009). Thus, people who report being more prejudiced *and* who are more aware that they may inadvertently display their bias in interracial interactions are likely to be particularly anxious about interracial interaction and thus be more motivated to avoid intergroup contact.

Therefore, we hypothesized that bias awareness and expressed level of racial prejudice would statistically interact to predict interracial anxiety, which was expected to mediate weaker interest in contact (i.e., greater avoidance of interracial contact). When Whites are relatively high in bias awareness, those who report being more prejudiced are likely to be highly anxious and thus reluctant to engage in interracial contact. Specifically, with two correlation studies, the present research investigated the joint relationship of individual differences in prejudice and people's personal awareness of bias on their interracial anxiety (Study 1 and 2), and examined the effect of these factors on medical students' subsequent career plans (Study 2).

Study 1

The goal of Study 1 was to assess relationships among self-reported prejudice, bias awareness, and Whites' interracial anxiety toward Blacks. In a survey ostensibly meant to assess people's attitudes about current events, we measured participants' bias awareness, attitudes toward Blacks, and interracial anxiety (Plant & Devine, 2003). Although we expected that greater bias awareness and prejudice would each predict higher levels of interracial anxiety (Stephan & Stephan, 2000), our primary prediction was that these two factors would have an interactive effect. In particular, we hypothesized that the relationship between prejudice and

interracial anxiety would be stronger among participants relatively high in prejudice, and high in bias awareness.

Method

Participants. There were 171 White (age $M = 38$; 63% women) participants recruited from an online community sample completed, among other filler items, the Bias Awareness Scale, a measure of interracial anxiety, and a feeling thermometer assessing attitudes toward Blacks in exchange for a \$25 Amazon.com gift card lottery entry.

Procedure. Participants completed a brief questionnaire containing a number of attitude measures about themselves and others. Among these measures, participants completed the Bias Awareness Scale (Perry et al., 2014) to assess their level of awareness and concern about their biases against Blacks. The Bias Awareness Scale was designed to assess the degree to which people are aware of and concerned by the expression and consequences of their racial bias. The scale consists of four items: "Even though I know it's not appropriate, I sometimes feel that I hold unconscious negative attitudes toward Blacks"; "When talking to Black people, I sometimes worry that I am unintentionally acting in a prejudiced way"; "Even though I like Black people, I still worry that I have unconscious biases toward Blacks"; and "I never worry that I may be acting in a subtly prejudiced way toward Blacks" (reverse-scored). Participants responded on 7-point scales anchored with *strongly agree* and *strongly disagree*; higher scores indicate higher levels of bias awareness ($\alpha = .78$, $M = 3.69$, $SD = 1.30$).

Participants also completed several *feeling thermometer* measures toward a number of groups, including Blacks, to indicate their levels of cold or warm feelings toward Blacks. While a single-item measure, feeling thermometers have been shown to be a reliable and precise way to assess feelings toward different groups (Alwin, 1997; Kinder & Drake, 2009). Consistent with previous research, participants responded on a "temperature" scale ranging from 0 degrees (*very cold*) to 100 degrees (*very warm*); higher scores indicated less prejudice toward Blacks. Sample statistics ($M = 70.06$, $SD = 20.12$) were consistent with those representative samples obtained in the American National Election Surveys from 2000 to 2008 ($M = 73.77$, $SD = 21.01$).

Finally, participants completed a measure of interracial anxiety (Plant & Devine, 2003) to assess their general discomfort with interacting with Black people. The scale consists of four items such as, "When interacting with a Black person, I would feel nervous." Participants responded on 7-point scales anchored with *strongly agree* and *strongly disagree*; higher scores indicate higher levels of intergroup anxiety ($\alpha = .83$, $M = 3.31$, $SD = 1.33$). This study was approved by the Yale University Institutional Review Board (IRB), and it was conducted in compliance with Yale's IRB. Informed consent was obtained for all participants.

Results

We tested our primary hypothesis regarding the relation between bias awareness, self-reported prejudice, and interracial anxiety using hierarchical moderated regression. Following the procedures recommended by Aiken and West (1991) participants' bias awareness scores and prejudice scores were entered into the first block, and the Prejudice \times Bias Awareness interaction term

was entered in the second block. In general, participants higher in bias awareness, $b = 0.79$, $t(118) = 9.31$, $p < .001$, and higher in self-reported prejudice, $b = -0.48$, $t(118) = -5.68$, $p < .001$, indicated higher levels of interracial anxiety, and a significant proportion of the variance in interracial anxiety was explained $R^2 = .52$, $F(2, 118) = 64.19$, $p < .001$ by the first block of the model. More importantly, and consistent with our hypothesis, bias awareness moderated the effect of prejudice on interracial anxiety; that is, the predicted Prejudice \times Bias Awareness interaction was significant, $b = -0.21$, $t(117) = -2.31$, $p = .023$ (see Figure 1), and significant additional variance in interracial anxiety was explained by the second block of the model, $R^2_{\text{change}} = .02$, $F(1, 117) = 5.32$, $p = .023$.

Among participants low in bias awareness (-1 SD), greater prejudice predicted greater interracial anxiety, $b = -0.28$, $t(117) = -2.41$, $p = .018$. However, consistent with our predictions, this relationship was stronger (and, as indicated by the interaction, significantly stronger) for Whites high in bias awareness (1 SD), $b = -0.69$, $t(117) = -5.31$, $p < .001$. As illustrated in Figure 1, greater prejudice predicted distinctively high levels of interracial anxiety among Whites high in bias awareness.

Discussion

Previous work has shown that heightened interracial anxiety can lead Whites to have negative expectations about future interracial interactions (Plant & Devine, 2003; Stephan & Stephan, 2000). Study 1 offers evidence that Whites' awareness and concerns about expressing their bias—assessed with a new measure of bias awareness—relates to this interracial anxiety, particularly for individuals higher in prejudice against Blacks. The pattern of findings that we obtained in Study 1 is thus consistent with our hypotheses. However, we acknowledge that causal inferences are limited by the cross-sectional nature of the design. That is, bias awareness, prejudice, and interracial anxiety were all measured—none were manipulated—at the same time. Thus, other explanations for the observed relationships among these measures are possible. For instance, it is possible that people who are highly prejudiced may be more sensitized by feelings of interracial anxiety to recognize their biases and be concerned about them (bias awareness). Although noting that the exact causal nature of the

variables explored in Study 1 needs to be interpreted cautiously, Study 2 investigate an additional implication of our hypothesized processes.

Given that Whites' interracial anxiety can suppress their willingness to engage in intergroup contact generally (Plant, 2004), Study 2 investigated whether bias awareness and prejudice would predict Whites' willingness to have contact with Blacks professionally, and whether Whites' interracial anxiety would explain this effect. We sought to investigate this question in an important but understudied population—White medical students.

Study 2

Pervasive disparities exist in the health of Black and White Americans. Blacks not only have higher incidences of many diseases and conditions (such as diabetes, hypertension, and several different forms of cancer) but also tend to have these conditions diagnosed later than Whites, and suffer more severe consequences after being diagnosed (Penner, Albrecht, Orom, Coleman, & Underwood, 2010). One contributor to these disparities is that Blacks tend to have less access to health services, including physicians, than Whites (Smedley, Stith, & Nelson, 2003). Thus, increasing the number of physicians who work with traditionally underserved populations can help reduce disparities in health and health care that adversely affect the quality of life—and life itself—for Blacks. Study 2 has three primary aims. First, we replicated and extended Study 1 by investigating whether similar relationships existed between bias awareness, self-reported prejudice, and interracial anxiety regarding interacting with Black patients among White medical students. Second, we investigated whether their bias awareness and self-reported prejudice were related to their intentions to work primarily with minority patients. Third, we examined whether this relationship was mediated by the students' interracial anxiety. Understanding whether and how subtle racial biases may operate—often without direct antipathy (Dovidio et al., 2008)—is particularly important because of its potential contribution to racial and ethnic disparities in health and health care (Smedley et al., 2003).

In Study 2, recently accepted White medical school students, who were recruited as part of a larger project of first-year medical students from a stratified random sample of 50 medical schools (van Ryn et al., 2011), completed the Bias Awareness Scale, a measure of interracial anxiety toward Black patients, and a feeling thermometer. Participants also completed a question asking about their intention to practice medicine to serve primarily minority populations either in a separate survey sponsored by the Association of American Medical Colleges (AAMC) or, if that information was not accessible, in the same survey in which the other measures were assessed.

Building on our reasoning in Study 1, we anticipated that when Whites are relatively high in bias awareness, those who report being more prejudiced would be more highly anxious and thus more reluctant to engage in interracial contact. Specifically, in Study 2 we expected that, within this sample of first-year medical students, we would replicate the finding of Study 1 that participants higher in bias awareness would report greater interracial anxiety, particularly when they were also relatively high in prejudice. Moreover, we predicted a similar pattern of results for responses indicating that participants would not (vs. would) plan to work primarily with minority populations. We further hypothesized that student differences in willingness to serve minority

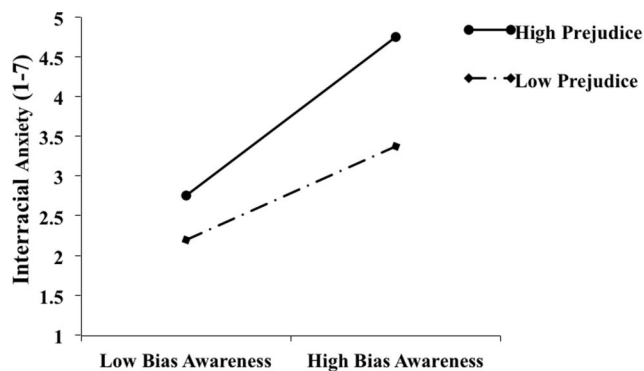


Figure 1. Interracial anxiety as a function of bias awareness and prejudice. High bias awareness is 1 SD above the mean, and low bias awareness is 1 SD below the mean (Study 1).

populations during their medical careers would be explained (i.e., mediated) by their levels of interracial anxiety.

Method

Participants. Participants were 3,034 White first-year medical students (age $M = 24$; 48% women). Participants gave their permission to link their survey responses, which were part of a larger National Institutes of Health (NIH) funded project that provided data for the present study (van Ryn & Dovidio, 2012), with their data from the AAMC Matriculating Student Questionnaire (<https://www.aamc.org/download/161128/data/Table1.pdf>), with all identifying information removed. Participants received \$50 for participating in the main survey; those who completed the AAMC questionnaire did so with no financial incentive.

Procedure. Participants completed the same 4-item Bias Awareness Scale ($\alpha = .83$, $M = 3.69$, $SD = 1.54$) that was used in Study 1 and a Black patient-specific measure of interracial anxiety ($\alpha = .87$), adapted from Plant and Devine (2003). The measure of interracial anxiety with Black patients consisted of three items: "I will get anxious when interacting with Black patients," "I will be more nervous interacting with Black patients than White patients," and "I will be as comfortable with Black patients as I am with White patients" (reverse-coded). Both measures were on 7-point scales anchored with *strongly agree* and *strongly disagree*; higher scores indicated higher levels of bias awareness and interracial anxiety toward Blacks ($\alpha = .87$, $M = 2.52$, $SD = 1.38$), respectively. Participants also completed the same feeling thermometer assessing attitudes toward Blacks as in Study 1 ($M = 82.76$, $SD = 19.22$); again, higher scores indicated lower prejudice toward Blacks.

Participants were asked on the AAMC Matriculating Student Questionnaire or, if those data were not available for the participant, on the main survey to respond to *Yes*, *No*, or *Undecided* to the question, "Regardless of location, do you plan to work primarily with minority patients?" Because we were primarily interested in predictors of medical students' willingness (vs. not) to work with minority patients, we restricted our primary analyses to only those participants who indicated clear intentions, answering either *Yes* or *No*. There were 1,406 respondents (46% of the sample) who indicated a clear preference, with 27% of these participants stating that they intended to work primarily with minority patients and 73% reporting that they would not. There were 666 of these participants who indicated their preference on the AAMC Matriculating Student Questionnaire; 740 responded with a preference on the main survey. No statistical differences were observed as a function of whether participants completed the survey through the AAMC or the NIH-funded project, thus we present the results for the entire sample. This study was approved by the Yale University IRB, and it was conducted in compliance with Yale's IRB. Informed consent was obtained for all participants.

Preliminary Analyses

The substantial sample size of Study 2 allowed us to further examine whether bias awareness and interracial anxiety, which are moderately correlated ($r = .53$, $p < .001$), are separate constructs (see Table 1). We submitted the scale items to a principal components analysis with direct oblimin rotation. An oblique rotation

Table 1
Intercorrelations of Measures of Racial Attitudes and Bias Awareness (Studies 1 and 2)

Measure	<i>r</i> (<i>p</i>)		
	1	2	3
Study 1 $N = 121$			
1. Bias awareness		-.62** (<.001)	-.17 (.06)
2. Interracial anxiety		—	-.63** (<.001)
3. Feeling thermometer		—	—
Study 2 $N = 1,406$			
1. Bias awareness		.53** (<.001)	-.26** (<.001)
2. Interracial anxiety		—	-.37** (<.001)
3. Feeling thermometer		—	—

was employed to provide a more conservative test of whether bias awareness is a distinct construct (by not forcing the factors to be orthogonal; Tabachnick & Fidell, 2000). Two distinct factors emerged with eigenvalues greater than one. The first factor included the bias awareness items and accounted for 55.95% of the variance (eigenvalue = 3.92; with factor loadings ranging from .91 to .65) and the second factor included the interracial anxiety items and accounted for 16.60% of the variance (eigenvalue = 1.16; with factor loadings ranging from $-.90$ to $-.86$). Cross-loadings were less than .19, and the factors were correlated at $-.50$, indicating that, indeed, bias awareness was distinct from interracial anxiety.

Results

We conducted a hierarchical moderated regression analysis. Bias awareness scores and prejudice scores were entered into the first block, and the Prejudice \times Bias Awareness interaction term was entered in the second block. As expected, White participants who had higher levels of self-reported prejudice, $b = -0.32$, $t(1,392) = -10.23$, $p < .001$, and higher levels of bias awareness, $b = 0.69$, $t(1,392) = 21.16$, $p < .001$, anticipated greater interracial anxiety with Black patients, and a significant proportion of the variance in interracial anxiety was explained by the first block of the model, $R^2 = .37$, $F(2, 1,392) = 205.65$, $p < .001$. Consistent with Study 1, a significant interaction between their levels of prejudice toward Blacks and bias awareness predicted medical students' interracial anxiety, $b = -0.12$, $t(1,391) = -4.00$, $p < .001$, and significant additional variance in interracial anxiety was explained by the second block of the model, $R^2_{\text{change}} = .01$, $F(1, 1,391) = 16.00$, $p < .001$. For White medical school students low in bias awareness ($-1 SD$), there was a marginal relation between greater prejudice and greater anticipated anxiety with Black patients, $b = -0.08$, $t(1,392) = -1.65$, $p = .09$. Furthermore, replicating Study 1 with a medical student population, the relationship between prejudice and interracial anxiety was significantly stronger (as indicated by the interaction term) for students high in bias awareness ($1 SD$), $b = -0.35$, $t(1,392) = -8.45$, $p < .001$ (see Figure 2).

The behavioral intention measure showed a similar pattern of results. A moderated logistic regression analysis revealed that White medical students higher in prejudice $b = -0.45$, Wald's $\chi^2(1) = 38.16$, $p < .001$, $e^B = 0.64$, reported less interest in serving primarily minority populations after medical school, and

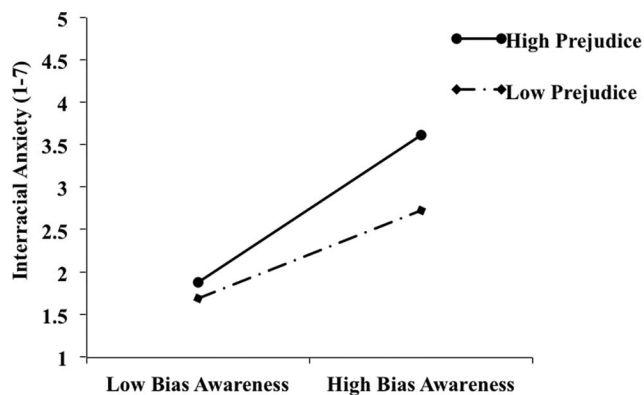


Figure 2. Interracial anxiety as a function of bias awareness and prejudice. High bias awareness is 1 *SD* above the mean, and low bias awareness is 1 *SD* below the mean (Study 2).

students higher in bias awareness reported less interest in working primarily with minority populations, $b = 0.15$, Wald's $\chi^2(1) = 5.16$, $p = .023$, $e^B = 1.17$ (see Figure 3).

Consistent with our main prediction, we also found a significant interaction between participants' levels of prejudice toward Blacks and bias awareness predicting their intentions to work primarily with minority patients, $b = -0.19$, Wald's $\chi^2(1) = 6.94$, $p = .008$, $e^B = 0.82$. Greater prejudice predicted a lower likelihood of interest in working with minority populations for White medical students low in bias awareness (-1 *SD*), $b = -0.25$, Wald's $\chi^2(1) = 6.59$, $p = .010$, $e^B = 0.78$. However, greater prejudice was more strongly and significantly predictive of intentions not to work primarily with minority patients for White students who were high in bias awareness (1 *SD*), $b = -0.64$, Wald's $\chi^2(1) = 35.52$, $p < .001$, $e^B = 0.53$ (Cox and Snell pseudo $R^2 = .05$ for the full model).

Next we investigated whether students' interracial anxiety explained their behavioral intentions to work primarily with minority populations after medical school. To examine whether interracial anxiety mediated the relationship between our individual difference variables and students' intentions to work primarily with minorities, we used Model 8 of the Hayes (2013) PROCESS method. This model allowed us to test the conditional indirect effect of self-reported prejudice (at high and low levels of bias awareness) on students' behavioral intentions through interracial anxiety. That is, this analysis allowed us to investigate whether interracial anxiety mediated the effect of the Bias Awareness \times Self-Reported Prejudice interaction on intentions to work primarily with minorities. Analyses based on the 5,000 bootstraps revealed that, for those low in bias awareness (-1 *SD*) the indirect effect of self-reported prejudice through interracial anxiety was significant, $b = -0.04$, 95% CI (-0.0801 , -0.0164). For those high in bias awareness (1 *SD*) the indirect effect of prejudice was also significant, $b = -0.09$, 95% CI (-0.1495 and $-.0412$). The confidence intervals for both bias awareness groups did not include zero, indicating significant mediation by interracial anxiety for both groups. Additionally, the Index of Moderated Mediation did not include zero, confirming a significant mediation, $b = -0.025$, 95% CI (-0.0465 and $-.0100$). As predicted, the mediational model between prejudice and interracial anxiety pre-

dicting students' intentions to work with minorities was particularly strong for students high, compared with low in bias awareness.

Supplementary Analyses

We also performed a supplementary multinomial analysis included medical students who indicated that they were undecided about working primarily with minority populations in their medical practice. This analysis involved two contrasts: The first contrast compared students who stated *Yes* to those who indicated that they were *Undecided*; the second compared those who stated *Yes* to the combination of medical students who reported *No* and those *Undecided*.

The inclusion of students who were undecided about their interest working primarily with minority populations weakened the results. The only significant effect for the contrast between students responding *Yes* and those indicating *Undecided* was for prejudice: Higher prejudiced students were more likely to select *Undecided* over *Yes* to working primarily with minorities, $b = -0.24$, Wald's $\chi^2(1) = 5.80$, $p = .016$, $e^B = 0.79$. The Bias Awareness \times Prejudice interaction was nonsignificant, $b = -0.13$, Wald's $\chi^2(1) = 1.52$, $p = .217$, $e^B = 0.89$.

The contrast between medical students who indicated an interest in working primarily with minority populations (*Yes*) to those who did not (*No* and *Undecided*) also yielded an effect for prejudice: Higher prejudiced individuals were more likely to select *Undecided* or *No* over *Yes* to working primarily with minorities, minorities $b = -0.33$, Wald's $\chi^2(1) = 10.97$, $p < .001$, $e^B = 0.72$. Both effect for bias awareness ($p = .100$) and the Bias Awareness \times Prejudice interaction ($p = .103$) approached but did not attain statistical significance.

Discussion

In general, first-year medical school students appeared much lower in prejudice ($M = 83.15$, $SD = 18.80$, on the feeling thermometer measure, for which higher scores indicate more positive attitudes) than the general public: The general population sample from Study 1 and representative samples in the American

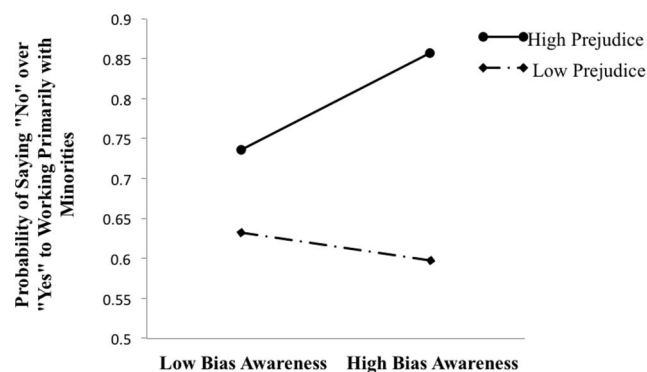


Figure 3. White medical students' probability of saying *No* over *Yes* to primarily working with minority patients as a function of bias awareness and prejudice. High bias awareness is 1 *SD* above the mean, and low bias awareness is 1 *SD* below the mean (Study 2).

National Election Surveys had means of 70.06 ($SD = 20.12$) and 73.77 ($SD = 21.01$), respectively. Despite relatively low levels of prejudice overall, however, prejudice still mattered for medical students' psychological outcomes and behavioral intentions. Those higher in prejudice reported greater anticipated anxiety with Black patients and indicated less willingness to serve minority populations in their practice.

Of primary relevance to our hypotheses, Study 2's findings further demonstrate that the effect of prejudice should be considered together with students' levels of bias awareness. These findings extend those from Study 1 by showing that (a) the previously observed relation between bias awareness, prejudice, and interracial anxiety is replicated among a population of medical students, and (b) that interracial anxiety plays an important role in medical students' intended behaviors toward patients of color. Unlike those who were low in bias awareness and low in prejudice, medical students who were particularly high both in bias awareness and self-reported prejudice were more likely to say *No* compared to *Yes* to intentions to work primarily with minority patients. Importantly, this relationship was explained by students' levels of interracial anxiety, indicating that avoidant behavior anticipated among the high Bias-Aware, high prejudice group was related to their particularly heightened levels of nervousness.

It is important to note that the individual difference and attitudinal data (i.e., bias awareness, feeling thermometer, and interracial anxiety) were measured separately from the behavioral intentions for about half of the sample, who reported their intentions to work with minority populations on the AAMC survey. The fact that we obtained similar results for participants who indicated their intentions to work with minority populations and those who responded on the separate AAMC survey reduces the likelihood that participants' awareness of the hypotheses or common method variance substantially explain our findings.

General Discussion

Interracial anxiety plays a major role in the dynamics and outcomes of intergroup encounters between Whites and Blacks (Stephan & Stephan, 2000). In two studies, the present research illuminates antecedents (the joint effects of prejudice and bias awareness) and consequences (the relationship with medical students' interests in working with underserved minority populations). Moreover, this work demonstrates the value, above and beyond traditional measures such as prejudice, of considering the recently developed measure of bias awareness in the study of race relations. We acknowledge that because bias awareness involves both awareness of and concern about personal prejudice, it is likely to be associated with intergroup anxiety generally. However, we proposed that bias awareness is conceptually and empirically distinct from intergroup anxiety. Consistent with this reasoning, in Study 2 we found that bias awareness and intergroup anxiety items loaded on different dimensions in a principal component analysis, and across both studies bias awareness was hypothesized to and did systematically interact with Whites' level of prejudice to predict intergroup anxiety (Studies 1 and 2) and medical students' intentions to work with minority populations (Study 2). Thus, although bias awareness has some direct association with inter-

group anxiety, we believe that this overall pattern of results suggests the novel and distinctive properties of bias awareness.

Besides the conceptual implications of our findings, the present research may have timely practical implications. Substantial resources are currently being devoted to programs designed to reduce intergroup prejudice and discrimination (Stephan & Stephan, 2001). However, the effectiveness of antibias interventions generally has been questioned. For example, Kalev, Dobbin, and Kelly (2006) found that antibias education interventions had little impact on the representation of women and racial/ethnic minorities in leadership positions in subsequent years. Our research further suggests that some forms of antibias education may also have some detrimental effects, if the interventions increase bias awareness without also providing skills for managing anxiety (van Ryn & Saha, 2011). It is also possible that interventions that increase self-efficacy regarding ability to overcome bias in encounters will reduce or eliminate any unintended impact of bias awareness. This hypothesis has yet to be tested. However, if recognized and managed appropriately, increasing bias awareness may be a valuable element in diversity programs to motivate people to internalize the new standards and develop self-regulatory mechanisms to produce more harmonious and productive intergroup relations.

While the findings of these studies are correlational, illuminating the effects of racial prejudice in combination with other factors, such as people's motivation to respond without prejudice (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002) or (as in this case) bias awareness, provides valuable insight into when and how racial bias is expressed. Contemporary bias is more complex and subtle than "old-fashioned" racism (Dovidio & Gaertner, 2004), and assessing individual differences in prejudice in conjunction with other individual differences (e.g., bias awareness) provides deeper theoretical understanding of the complexity of interracial orientations, and greater predictive power for understanding intergroup emotions and behavior, as the moderation findings reported here demonstrate. Nevertheless, future research might further investigate the theoretical and practical implications of bias awareness in intergroup relations, perhaps incorporating ways of manipulating an individual's level of bias awareness through false feedback or direct training or experience.

To more fully understand the role of bias awareness in interracial interaction, and better inform bias reduction interventions, future studies might investigate the circumstances under which bias awareness has positive instead of negative implications for intergroup contact. Consistent with previous literature (Dovidio, Kawakami, & Gaertner, 2002; Goff et al., 2008; Richeson & Shelton, 2003), our data suggest that, when people are motivated to avoid appearing prejudiced they may avoid intergroup contact. However, future work might also investigate the effects of bias awareness when interracial interactions do occur. Although Whites higher in prejudice may be more likely to avoid interracial interactions, Shelton et al. (2005) found that Blacks perceived White interaction partners higher in prejudice as more friendly, because Whites higher in bias engage more in the interaction in an attempt to control their bias. Based on the effect Shelton et al.'s (2005) interpretation, our findings suggest that that Blacks would likely perceive high prejudiced Whites who are high in bias awareness to appear particularly friendly, because they would be most likely to engage in compensatory behavior in the interaction, but high prejudiced Whites low bias awareness may appear to be less

friendly because they would not perceive the a need to adjust their behavior (that may reflect their negative attitudes) in the interaction.

In addition, under some circumstances, such as those that encourage a promotion focus (Trawalter & Richeson, 2006), Whites high in bias awareness may be more motivated to engage in meaningful intergroup contact. For example, Whites high in bias awareness but low in prejudice may be particularly likely to seek intergroup interaction when such interaction is framed as a learning opportunity. Neel and Shapiro (2012) found that when Whites were led to believe that racial bias was malleable (vs. fixed), they were more likely to adopt learning oriented approaches to interracial interaction to understand better the challenges of these interactions and how to behave more effectively in them. Also, Plant and Devine (2009) have shown that, when properly motivated, people will spend more time participating in an activity that will, ostensibly, help them reduce their prejudice. We would hypothesize that people high in bias awareness but low in prejudice would be particularly interested in engaging in such learning-oriented activities. Thus bias awareness can offer novel insights into understanding both positive and negative responses in intergroup relations—that not only have broad conceptual implications but also direct practical application.

In conclusion, intergroup relations in contemporary society are complex, and understanding the dynamics requires assessing more than simple positive or negative intergroup attitudes. Bias awareness represents an additional individual difference dimension that significantly moderates the relationship between prejudice and intergroup emotions and intentions. Although the present research focused on the negative effects of bias awareness, further research can help illuminate the potential positive implications and applications of this individual difference.

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