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Both bias against disconfirmatory evidence and political orientation partially explain the relationship between dogmatism and racial prejudice

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ABSTRACT

Background: Dogmatism and prejudice are strongly related. We hypothesized that bias against disconfirmatory evidence (BADE) might explain a portion of this relationship unique from that explained by constructs including Political Orientation. BADE (measured by the BADE task) comprises two facets, Evidence Integration Impairment and Positive Response Bias. Only Evidence Integration Impairment was expected to partially explain the prejudice-dogmatism relationship because in prior research it alone was associated with group differences in inflexible beliefs.
Method: 254 MTurk participants completed measures of dogmatism, racial prejudice, BADE (Evidence Integration Impairment and Positive Response Bias), and Political Orientation. The hypothesized mediation effect was examined using a bootstrapping procedure.
Results: Dogmatism predicted racial prejudice [$b = 0.24$, $t(249) = 4.92$, $p < .001$]; this relationship weakened in the presence of the above measures [$b = 0.05$, $t(246) = 0.91$, $p = .363$]. The 95% confidence interval for the size of the indirect effect of dogmatism on racial prejudice via Evidence Integration Impairment did not include zero [0.151, 0.331], confirming the hypothesized mediation effect.
Conclusions: Evidence Integration Impairment accounts for a unique portion of the relationship between dogmatism and racial prejudice, suggesting that belief revision failures in ambiguous social situations may support prejudice in dogmatic individuals.

1. Introduction

Dogmatism, which is defined as "relatively unchangeable, unjustified certainty" (Altemeyer, 2002a), has theoretical and empirical connections to prejudice (e.g., Corlett, 2003; Foley & Chamblin, 1982; Rokeach, 1960). Because dogmatism can account for almost 40% of the variance in prejudice toward Blacks ($r = 0.63$; Strickland & Weddell, 1972), elucidating the mechanisms underlying these connections has the potential to produce insights into the relationship between individual differences and the fundamental dynamics of prejudice. We therefore examined a novel, cognitively-based explanation for the relationship between dogmatism and prejudice.

In his seminal work, *The Open and Closed Mind*, Rokeach (1960) suggested that dogmatism reflects a deficit in integrating information that threatens multiple prior beliefs into a new belief system. Recent research has demonstrated that more dogmatic individuals show greater persistence of a belief after the evidence that begot that belief has been discredited (Davies, 1993), and often ignore information that does not support their prior beliefs (Davies, 1998). Thus, dogmatic individuals appear biased against revising their beliefs in response to disconfirmatory evidence.

Prejudiced individuals may also exhibit bias against disconfirmatory evidence, as implied by the "rigid, inflexible belief system" that Allport (1954) attributes to prejudiced individuals. Consistent with this notion, in ambiguous situations prejudice is associated with the systematic discounting of evidence inconsistent with biased beliefs. For example, more prejudiced individuals more often perceive hostility in faces produced by blending those typical of happy and angry target group members (Hugenberg & Bodenhausen, 2003). Additionally, more prejudiced individuals judge Black job candidates less favorably than comparable White candidates when the adequacy of candidates' qualifications is ambiguous (Hodson, Dovidio, & Gaertner, 2002).

The mutual association of dogmatism and prejudice with belief-revision deficits is consistent with the notion that these deficits may partially account for the relationship between dogmatism and prejudice. Recent research suggests that bias against disconfirmatory evidence (BADE) consists of two facets, Evidence Integration Impairment and Positive Response Bias (Speechley, Moritz, Ngan, & Woodward, 2012). Evidence Integration Impairment reflects the degree to which people are willing to *change* their beliefs in the face of potentially valid disambiguating evidence. Positive Response Bias represents the degree to which people endorse beliefs that they perceive as justified;

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Positive Response Bias is a form of general response bias reflecting variation in one's willingness to rate an explanation as highly plausible when justified (Speechley et al., 2012). Moreover, clinical populations with inflexible beliefs (delusions) exhibit greater Evidence Integration Impairment than non-clinical populations or clinical populations with other disorders, but they have comparable levels of Positive Response Bias (Sanford, Veckenstedt, Moritz, Balzan, & Woodward, 2014; Speechley et al., 2012).

Given this evidence from clinical populations, we expected that Evidence Integration Impairment would be the primary facet of BADE relevant to the relationship between inflexible beliefs in the general population, including dogmatism and prejudice. This expectation was reinforced by the absence (to our knowledge) of research suggesting that more prejudiced individuals display a larger positive response bias in domains not relevant to prejudice. We therefore sought to test the hypothesis that Evidence Integration Impairment, but not Positive Response Bias, mediates the relationship between dogmatism and prejudice. To this end, we recruited 271 volunteers to complete a survey containing a reliable measure of Evidence Integration Impairment (the bias against disconfirmatory evidence [BADE] task; Woodward, Buchy, Moritz, & Liotti, 2007) along with measures of prejudice (the Attitudes Toward Blacks scale; Brigham, 1993) and Political Orientation (a modified Wilson-Patterson Inventory; Smith, Oxley, Hibbing, Alford, & Hibbing, 2011).

We measured Political Orientation because it is a well-documented social factor that might also mediate the relationship between dogmatism and prejudice. Political Orientation (along the dimension of political conservatism-liberalism) could partially account for the relationship between dogmatism and prejudice because more politically conservative people tend to display greater prejudice toward Black individuals and demonstrate higher levels of dogmatism (Jost, Glaser, Kruglanski, & Sulloway, 2003a; Prezza, Zampatti, Pacilli, & Paoliello, 2008). Although we expected that Evidence Integration Impairment and Political Orientation would both mediate the relationship between dogmatism and prejudice, we hypothesized that Evidence Integration Impairment would mediate this relationship beyond any effects of Political Orientation.

2. Method

2.1. Participants

Using a $1.00 incentive, we recruited 271 participants through Amazon's Mechanical Turk (MTurk) who were considered reliable respondents (>95% MTurk approval rating). MTurk data collected in this way are comparable to data collected in the laboratory (Johnson & Borden, 2012). We restricted participation to individuals who identified their race as White and lived in the United States because of research suggesting that the association between dogmatism and prejudice varies by race in the United States (Foley & Chamblin, 1982).

Participants were excluded from all analyses if they completed this study faster than 95% of the other participants (i.e., faster than 27:48; average completion time = 59:00). Applying this exclusion criterion reduced the sample to 258 individuals. Potential outliers were detected in these individuals' data using studentized residuals with Bonferroni corrected p-values < .05. After list-wise exclusion of 4 individuals whose data may have included outliers, 254 individuals' data remained. Demographic information regarding this final sample can be seen in Table 1.

Table 1
Participants after removal of outlier cases.

Age	N
18–29	71
30–39	89
40–49	33
50+	61
Sex	
Male	87
Female	167
Education	
Some high school	2
High school	41
Some college	61
2 year college	38
4 year college	76
Some graduate or professional school	2
Graduate or professional school	34
Total	254

2.2. Measures

Our central measure was an adapted version of the bias against disconfirmatory evidence (BADE) task (see Woodward et al., 2007; Appendix A of Speechley et al., 2012). In each trial of this general cognitive task, participants viewed three statements about a different fictional individual. For each individual, participants evaluated the plausibility of four explanations for the first of these statements. They repeated this process with the same four explanations after each statement pertaining to that individual was revealed. These explanations could be grouped across trials into four categories (True, Absurd, Lure-A, Lure-B). Absurd explanations remained implausible throughout each trial. Lure-A/Lure-B explanations were the most plausible options initially but became less plausible when the latter two statements were presented to participants. True explanations became the most plausible option by the end of each trial.

Each trial of this task begins with multiple equally plausible explanations (the Lure-A 1/Lure-B 1 explanations) for the initial statement but by its end a single explanation (the True explanation) becomes the most plausible. This pattern suggests that the information participants encounter during a trial disambiguates it. The most parsimonious explanation for this disambiguation is that participants revise beliefs about the plausibility of each explanation according to the final two statements they encounter. Thus, it appears likely that behavior changes during the BADE task must at least partially reflect the incorporation of disambiguating information into belief structures.

According to the scoring procedure for this task recommended by Sanford et al. (2014), two BADE sub-scores, Evidence Integration Impairment and Positive Response Bias (also known as "Evidence Integration" and "Conservatism," respectively), derive from the twelve average plausibility ratings given to explanations of each category after each statement was revealed. Evidence Integration Impairment scores depend upon a combination of one's ability to reject implausible response options (the Absurd items on the BADE task) and to change one's plausibility ratings (for True and Lure items) in response to new information. Higher Evidence Integration Impairment scores are indicative of poorer integration ability; these scores can range from negative 10, indicating optimal integration ability, to 50, representing the poorest possible integration ability. Positive Response Bias scores depend upon one's ratings of plausible explanations (Lure and True items) in the first two stages of each trial of the BADE task. Higher Positive Response Bias scores indicate greater willingness to give these explanations high plausibility ratings; these scores can range from zero, indicating an individual's tendency to display a negative response bias, to 60, reflecting the individual's tendency to display the largest possible positive response bias.

Our survey also employed three measures not previously used in studies of BADE. The first of these measured dogmatism (the DOG scale; Altemeyer, 2002a). Participants respond to the 20 items in this measure by rating their agreement with a statement on a one to nine scale (1 = strongly disagree, 9 = strongly agree). Dogmatism scores are computed as the sum of the ratings on each item. This measure has high internal consistency ($\alpha \approx 0.90$ in Altemeyer, 2002a; in our