RUNNING HEAD: Contact Benefits among Prejudice-Prone Individuals

Predisposed to Prejudice but Responsive to Intergroup Contact? Testing the Unique Benefits of Intergroup Contact Across Different Types of Individual Differences

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Abstract

Recent research demonstrates that intergroup contact effectively reduces prejudice even among prejudice-prone persons. But some assert that evidence regarding the benefits of contact among prejudice-prone individuals is "mixed", particularly for those higher in social dominance orientation (SDO), one of the field's most important individual differences. Problematically, person-variables are typically considered in isolation despite being inter-correlated, leaving the question of which unique psychological aspects of prejudice-proneness (e.g., authoritarianism, anti-egalitarianism, cognitive style) are responsive to intergroup contact unresolved. To address this shortcoming, in a large sample of White Americans ($N = 465$) we *simultaneously* examined the contact-attitude association at varying levels of ideological (SDO, right-wing authoritarianism), cognitive-style (need for closure), and identity-based (group identification) indicators of prejudice-proneness. Examining a broad range of intergroup criterion measures (e.g., racism, support for racial profiling) we reveal that greater contact quality is associated with lower levels of intergroup hostility for those both lower *and* higher on a variety of indicators of prejudice-proneness, simultaneously considered.

Keywords: intergroup contact, individual differences, prejudice, discrimination, social dominance

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According to the Contact Hypothesis (Allport, 1954), interactions with members of an outgroup can reduce prejudice toward that group, especially when these interactions occur under optimal conditions— including equal status, cooperation, common goals, and institutional support. A comprehensive meta-analysis of over 500 studies found solid support for the notion that contact reduces prejudice (Mean r = -.21; Pettigrew & Tropp, 2006). Moreover, although the positive effects of contact are strongest under optimal conditions that maximize the potential for positive outcomes, its effects are robust even in their absence.

One question that remains the subject of some disagreement, however, is whether—and to what extent— contact is beneficial among prejudice-prone individuals (i.e., individuals who tend to exhibit higher levels of individual difference constructs, such as social dominance orientation, reliably associated with prejudice towards outgroups). Early research on contact largely ignored the question of individual differences. When eventually considered, they were generally perceived to be likely *obstacles* to positive contact effects, with highly prejudiced persons (HPs) presumed to react negatively to intergroup contact settings because of their tendency to be threat-sensitive (see Hodson, Hogg, & MacInnis, 2009; Onraet, Dhont, & Van Hiel, 2014) and anxious around outgroups (Stephan, 2014). In contrast, others reasoned that HPs might in fact benefit from contact because it represents an intervention that can deescalate the threats and anxieties that contribute to HPs' outgroup negativity (e.g., Dhont & Van Hiel, 2009; Hodson,

Costello, & MacInnis, 2013), consistent with its effects on increasing empathy, perspective taking and outgroup knowledge (Pettigrew & Tropp, 2008; Swart, Turner, Hewstone, & Voci, 2011; for a more detailed discussion of these positions, see Hodson et al., 2013).

Several existing studies have found evidence for the notion that contact is effective among HPs, across a variety of indicators of prejudice-proneness. For example, in two studies Hodson (2008) found that White inmates higher on social dominance orientation (SDO)— the tendency to endorse intergroup hierarchies and group dominance generally (Ho et al., 2015; Sidanius & Pratto, 1999)— showed substantially less intergroup bias when having more positive intergroup contact. Moreover, among prisoners higher in SDO, greater contact predicted less bias in part through greater empathy for Black inmates. Dhont and Van Hiel (2009) also observed benefits of contact among those higher in SDO in Belgium, showing less anti-immigrant prejudice among those high in SDO as a function of more positive contact.

Research has also shown benefits of contact for those higher in RWA, an individual difference variable reflecting adherence to conventions, submission to recognized authorities, and aggression against norm violators (Altemeyer, 1996, 1998). For example, Dhont and Van Hiel (2009) found that those higher in RWA benefitted significantly from more frequent or more positive contact, and Hodson, Harry, and Mitchell (2009) similarly found that those higher in RWA expressed less anti-gay attitudes when reporting more positive contact with gay individuals, an effect explained in part by decreased value threat. The benefits of contact for individuals higher in RWA have been replicated with representative survey data for both direct and extended positive contact with immigrants in the Netherlands (Dhont & Van Hiel, 2011) and longitudinally for positive contact with

immigrants in Germany (Asbrock, Christ, Duckitt, & Sibley, 2012), an effect mediated by contact's link to lower social threat.

Some research has also investigated the effects of contact at varying levels of ingroup identification. Although identification is sometimes not considered conceptually as an individual difference, people do meaningfully differ from each other in the degree to which they identify with both real and *ad hoc* groups (see Hodson, Dovidio, & Esses, 2003; Spears, Doosje, & Ellemers, 1997; Stathi & Crisp, 2008), with greater ingroup identification at times associated with more intergroup bias (Gagnon & Bourhis, 1996). Consistent with the general observation that contact works well among HPs, Hodson, Harry, et al. (2009) found that highly identified heterosexual university students who had more contact or friendship with gay individuals showed significant positive contact-attitude effects (i.e., benefits from contact). Similarly, Voci, Hewstone, Swart, and Veneziani (2015) showed that both friendship contact and 'generic' outgroup contact were associated with higher intergroup forgiveness and less prejudice among Catholics and Protestants in Northern Ireland, even among high identifiers.

Finally, researchers have also examined need for closure (NFC; Kruglanski & Webster, 1996; Roets, Kruglanski, Kossowska, Pierro, & Hong, 2015). Whereas variables such as SDO and RWA reflect ideological motivations, need for closure is conceptualized as a cognitive style reflecting the preference for order and predictability, a need for decisiveness, discomfort with ambiguity, and close-mindedness in the consideration of contrary information (Kruglanski & Webster, 1996; Webster & Kruglanski, 1994). Thus, it is less specifically intergroup in nature and is more related to individuals' preferred means of processing information (arguably even information that is non-social in nature).

Nevertheless, NFC shows strong conceptual similarities with Allport's (1954) seminal ideas about the cognitive factors assumed to be responsible for prejudice (see Roets & Van Hiel, 2011) and empirical studies have consistently demonstrated the positive association between NFC and prejudice towards different outgroups (for reviews, see Roets et al., 2015; Roets & Van Hiel, 2011). Consistent with other evidence among HPs, Dhont, Roets, and Van Hiel (2011) observed strong correlational and experimental evidence across 5 studies that individuals higher in NFC show significant benefits from contact with outgroups, an effect theorized to occur because intergroup contact reduces feelings of uncertainty and anxiety, and increases familiarity with outgroups, thereby meeting high NFC individuals' motivational need for certainty and predictability (Dhont et al. 2011; Roets et al., 2015).

Some researchers, such as Hodson (2011, p. 154), have concluded on the basis of this line of research that "intergroup contact and friendships work well (and often best) among intolerant and cognitively rigid persons." However, others have been more hesitant to conclude that HPs benefit greatly from contact, particularly with respect to individuals higher in SDO. For example, Al Ramiah and Hewstone (2013, p. 530), concluded that "at present, the moderating role of intergroup ideology variables, such as SDO, on the contact effect, remains unclear." Others (e.g., Asbrock, Gutenbrunner, & Wagner, 2013; Schmid, Hewstone, Küpper, Zick, & Wagner, 2012) theorize that intergroup contact will be successful among certain *kinds* of HPs but not among others, calling the benefits of contact among those higher in SDO into particular question. Rooting their argument in Duckitt's (2001) dual process model, Asbrock and colleagues (2012; see also Asbrock et al., 2013) propose that because individuals high in RWA are motivated by a sense of threat, they will

benefit from positive contact because it reduces the perception that outgroups are threatening. In contrast, because those higher in SDO are primarily motivated by a perception of the world as a 'competitive jungle', they should be less likely to benefit from (threat-reducing) positive interactions with outgroup members, and may continue to employ prejudice strategically as a means to maintain hierarchy and intergroup differentiation. Following from this reasoning, Asbrock and colleagues (2012) argued that the previous findings of Hodson (2008) and Dhont and Van Hiel (2009) exhibiting strong contact benefits among higher SDO individuals "may be the result of the fact that they did not simultaneously test for the joint effects of RWA and SDO, even though both concepts share a substantial amount of variance" (p. 486).

Skepticism about the benefits of contact among those higher in SDO has been expressed in other investigations. For example, using survey data from nationally-representative samples in eight European countries, Schmid and colleagues (2012) tested the effects of friendship contact with immigrants at various levels of SDO on attitudes toward both the primary outgroup (immigrants), as well as two secondary outgroups (homosexuals and Jews). These authors found a significant SDO x contact interaction on attitudes towards the primary outgroup in five of eight countries, suggesting *weaker* contact effects among those higher (*vs.* lower) in SDO. Furthermore, whereas contact with immigrants was associated with more positive attitudes towards secondary outgroups for those low in SDO, no such "secondary transfer effect" was observed among those high in SDO.

Whereas Schmid and colleagues' work examined SDO in isolation, an important and unique pair of studies by Asbrock et al. (2012, 2013) examined the effects of contact

on those higher and lower in SDO while also controlling for RWA x contact effects, allowing for tests of *unique* contributions. Examining German adults in a longitudinal study, Asbrock et al. (2012) found that contact was beneficial (indeed *more* beneficial) among individuals higher (*vs.* lower) in RWA, but that this was not necessarily the case for SDO. When RWA was controlled for, only lower SDO individuals showed improved outgroup attitudes. A second (cross-sectional) study showed support for higher SDO individuals benefitting from contact, but this effect was significantly weaker than for lower SDO individuals. Asbrock et al. (2013) arrived at similar conclusions when extending their joint examination of SDO and RWA to the domain of imagined contact (i.e., mental simulation exercises). Concluding that high SDOs do not in fact benefit from contact, Asbrock and colleagues (2012, p. 486) stated "SDO prevents engagement in intergroup contact as well as shielding one from an improvement of outgroup attitudes after contact experiences."

Despite its strengths, some limitations of this previous work on SDO should be noted. First, Schmid and colleagues' (2012) SDO measure consisted of only two moderately correlated items, thus tempering confidence in the conclusions regarding its effects, given that most SDO research uses a 16-item scale. Similarly, Asbrock and colleagues (2012) employed very abbreviated scales of RWA and SDO, and used only items tapping the aggression component of RWA (i.e., arguably, those that overlap most with SDO), but not RWA's submission or conventionality aspects. Finally, although Asbrock and colleagues (2013) used fuller measures of SDO and RWA, their investigation examined imagined rather than actual contact (the focus of our research question).

The Current Research

Our review thus far has suggested that contact may be effective even among individuals who exhibit higher levels on a variety of variables— ideological variables (SDO, RWA), group identification, and cognitive-style variables (NFC)— typically associated with more prejudicial attitudes. At the same time, we sought to address a central shortcoming of this previous work, and in so doing, provide further evidence relating to the outstanding and important debate observed in the literature about benefits of contact among HPs, and especially the question about contact's effects among those higher in SDO.

In particular, we examine the effects of contact when examining a range of variables associated with prejudice-proneness *simultaneously*. The individual difference variables reviewed above are frequently observed to be inter-correlated. For example, SDO and RWA are typically modestly correlated with one another (e.g., Choma, Hanoch, Gummerum, & Hodson, 2013; Federico, Ergun, & Hunt, 2014; Kteily, Ho, & Sidanius, 2012), and each of these variables tends to be related to NFC (e.g., Dhont, Roets, & Van Hiel, 2013; Federico et al., 2014; Roets, Van Hiel, & Dhont, 2012). Similarly, identification with a high status ingroup is also related to SDO (Levin, Sidanius, Rabinowitz, & Federico, 1998). With very few exceptions (i.e., Asbrock et al., 2012, 2013), prior work has examined the effects of contact at varying levels of these constructs in isolation, making it difficult to determine their independent roles. To give a hypothetical example, a study finding that contact is effective for individuals higher on RWA, when examining RWA alone, could obscure the reality that the effect may be actually due to its inter-correlation with ingroup identification or SDO.

At the same time, despite their overlap, the constructs listed above also capture distinct person-based characteristics, rendering it plausible that contact could have separable effects at higher levels of each: Whereas SDO indexes concerns about group dominance, RWA reflects motivations for conventionality and submission to authority, NFC captures less complex thinking and desire for structure, and group identification reflects degree of investment in the ingroup. Here, we simultaneously examine the effects of contact at varying levels of a wider range of variables than previously considered (specifically, SDO, RWA, NFC, and identification— four variables that have been central to the debate about the benefits of contact among HPs; Hodson & Dhont, 2015), allowing for an especially rigorous test of their respective roles, and greater confidence that any significant benefits observed are truly due to the influence of positive contact on the distinct features (e.g., concerns about status differentiation; concerns about maintaining the integrity of the ingroup) of the individual difference variable under consideration.

We conducted our study looking at Whites' contact with Blacks in a US context, and assessing its effects (at various levels of the individual differences simultaneously considered) on a broad range of criterion measures (Dixon, Durrheim, Kerr, & Thomae, 2013; Wright & Lubensky, 2009). As primary criterion measures, we examined old-fashioned prejudice against Blacks (McConahay, 1986), symbolic anti-Black racism (Kinder & Sears, 1981), and zero-sum beliefs about Black-White relations (Bobo & Hutchings, 1996). We focused on these criterion measures as they directly assessed attitudes relevant to the outgroup about whom contact was assessed (i.e., Black Americans), and because these beliefs are widely recognized to importantly influence the prospects of intergroup harmony (e.g., Bobo, 1999; Sidanius & Pratto, 1999). As

secondary criterion measures, we examined endorsement of ethnic/racial stereotyping, as well as support for two policy measures: support for ethnic/racial profiling and support for affirmative action on behalf of ethnic and racial minorities. These criterion measures were considered to be secondary because none referred to the specific target group that was the focus of the contact encounter itself (i.e., Blacks). We nevertheless included these measures in our analyses because (a) high quality contact with one ethnic minority group could plausibly influence outcome variables relating to ethnic minority groups as an overall category and (b) because there has been little work to date examining the effects of contact quality among HPs on policy outcomes (Dixon et al., 2013).

Hypotheses of the Present Project

In examining Whites' contact with Blacks in a US context, we predicted that the person-based variables (RWA, SDO, NFC, ethnic identification) would demonstrate main effects on prejudice that are unique from contact, such that those higher (*vs*. lower) on these constructs would express more negative attitudes and more willingness to discriminate (H1). This is consistent with a broad range of research that has found these variables, on average, to be strongly and independently associated with negative outgroup attitudes (e.g., Altemeyer, 1996; Duckitt & Sibley, 2010; Hodson, 2008; Hodson, Harry, et al, 2009; Kteily et al., 2012; Meeusen & Dhont, 2015), consistent with the idea that being higher on each of these constructs is associated with related but distinct concerns associated with prejudice (e.g., value threats for RWA, competitive threats for SDO, concerns about predictability for NFC, and a desire to protect and promote the ingroup for ingroup identification; e.g., Dhont et al., 2009; Duckitt, 2001; Tajfel & Turner, 1979). Also in keeping with past research (e.g., Pettigrew & Tropp, 2006), we expected significant

effects for contact quality, such that more positive outgroup contact would be associated with more favorable attitudes toward that group (H2). By examining this hypothesis while controlling for a broad range of individual difference constructs known to be strongly related to intergroup attitudes, our work provides a particularly rigorous test of the benefits of positive contact. Furthermore, given the findings of the majority of research on this question, we predicted that any benefits of contact would generally extend even to prejudice-prone individuals (H3a). Although this was a more a tentative prediction given the relative lack of research on this question, we further reasoned (H3b) that contact might be beneficial *across* the various indicators of prejudice-proneness, seeing as—despite their intercorrelations— they each reflect different psychological motives and concerns that contact could help ameliorate. For example, by highlighting the potential for cross-group cooperation and collaboration, positive intergroup encounters might mitigate higher SDO individuals' concerns that the outgroup poses a competitive threat. In parallel, the increased experience with the outgroup that positive contact provides might help satisfy higher NFC individuals' epistemic concerns for certainty and familiarity, and the opportunity contact provides to learn about overlapping values could ameliorate the concerns of those higher in RWA.

Methods

Participants

We collected data from 630 participants residing in the United States on Amazon's Mechanical Turk platform, a reliable platform for the recruitment of diverse community samples (Buhrmester, Kwang, & Gosling, 2011). Given our interest in racial biases we focused on White participants (*N*= 480; *M* age= 35.32, *SD* =11.92; 58.3% female). The measures were included in a larger survey of psychological attitudes, which due to its

length, was assessed in two parts administered within one week of each other (the complete survey is available at https://osf.io/jxpa3/). Participants were paid $2 for successfully completing both parts of our study. Most participants who completed the first part of the study also completed the second part of the study (76.6%). Based on outlier analyses described below, fifteen participants were excluded from all analyses, leaving a sample size of n = 465. To account for missingness (the missing values of those who only completed the first part of the survey), we conducted our analyses using Mplus (Muthén & Muthén, 2012) with Full Information Maximum Likelihood (FIML), allowing us to retain all 465 participants (*M* age= 35.09, *SD* =11.93; 58.5% female). The FIML approach is preferable to conventional methods of dealing with missing data such as pairwise or listwise deletion, providing less biased estimates (Schafer & Graham, 2002; see e.g., Swart et al., 2011; We note that results were very similar when we dealt with missing data using listwise deletion). We also conducted Little's MCAR test using the scales computed from the variables that appear below to assess whether missingness (i.e., the fact that participants' responses on a given construct were missing) could be considered to be completely at random. Indeed, results confirmed that missingness could be considered completely at random, χ^2 = 102.77, *df* =88, p = .13, suggesting that respondents who completed the questionnaire at both time points did not significantly differ from the respondents who dropped out after time 1.

Measures

During the first part of the study, participants completed measures of SDO, RWA, intergroup contact quality, age, gender, political orientation, ethnic identification, income, and education, in fixed order. During the second party of the study, participants completed

measures of racial stereotyping, racial profiling, affirmative action, zero-sum beliefs, symbolic racism, old-fashioned anti-Black racism, and need for closure, in fixed order.

Predictors

Intergroup contact quality. Contact quality with Blacks was assessed using the following three items adapted from Voci and Hewstone (2003): "When you meet Black/African Americans, do you find the contact pleasant?", "When you meet Black/African Americans, do you find the contact cooperative", and "When you meet Black/African Americans, do you find the contact superficial or insincere?" (reverse-scored). These items were answered on a 1-7 scale where 1 indicated 'not at all' and 7 indicated 'very much so' (α= .83).

Social Dominance Orientation. SDO was assessed using the 16-item SDO-6 scale (Pratto, Sidanius, Stallworth, & Malle, 1994). Sample items include "Some groups of people are just more worthy than others", and "Superior groups should dominate inferior groups" Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' (α = .95).

Right-wing authoritarianism. RWA was assessed using a 12-item scale taken from Altemeyer (1996). Sample items include "In these troubled times, laws have to be enforced without mercy, especially when dealing with the agitators and revolutionaries who are stirring things up" and "Obedience and respect for authority are the most important virtues children should learn". Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' (α = .90).

Need for Closure. Due to restrictions on survey length, NFC was assessed using 5 items taken from a revised and shortened NFC scale (Federico, Deason, & Fisher, 2012;

Pierro & Kruglanski, 2008). Sample items include "In case of uncertainty, I prefer to make an immediate decision, whatever that may be", and "I get very upset when things around me aren't in their place". Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' ($\alpha = .56$)[1].

Ethnic Identification. To assess ethnic identification, participants were asked the following four questions: "How strongly do you identify with other members of your ethnic group?", "How important is your ethnicity to your identity?", "How often do you think of yourself as a member of your ethnic group?", and "How close do you feel to other members of your ethnic group?". Participants responded using 1-7 scales ranging from 'not at all' to 'very much so' ($\alpha = .85$).

Criterion Measures

Old-Fashioned Anti-Black Racism. Old-fashioned anti-Black racism was assessed using the following three items taken from Sidanius, Pratto and Bobo (1996): "Blacks are inherently inferior", "African Americans are less intellectually able than other groups", and "African Americans are lazier than other groups". Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' ($\alpha = .93$).

Symbolic Racism. We assessed symbolic racism using Henry and Sears' (2002) measure (sample items: "It's really a matter of some people not trying hard enough; if Blacks would only try harder they could be just as well off as Whites"; "Over the past few years, Blacks have gotten less than they deserve" (reverse-scored)). Responses to all items were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree', with the exception of two items scored on a 1-4 scale and one item scored

on a 1-3 scale (as is typical of the symbolic racism scale). Thus, responses to all items were standardized before being averaged ($\alpha = .88$)

Zero-Sum Competitive Beliefs. We assessed perceptions of zero-sum competition with Blacks using three items taken from Bobo and Hutchings (1996): "More good jobs for Blacks means fewer good jobs for members of other groups", "The more influence Blacks have in local politics, the less influence members of other groups will have in local politics", and "The more good housing and neighborhoods go to Blacks, the fewer good houses and neighborhoods there will be for members of other groups." Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree'.

Racial Stereotyping. Support for the principle of stereotyping others on the basis of statistics about their racial group was assessed with four items: "When the only thing you know about someone is their race, it makes sense to use your knowledge of their racial group to form an impression of them", "When forming an impression of someone, you should consider the general tendencies of the ethnic group to which they belong", "If you want to make accurate predictions, you should use information about a person's ethnic group when deciding if they will perform well", and "It's only rational to use a person's race as one basis for predicting what he or she will be like". Responses were provided on a 1-7 scale where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' ($\alpha = .93$).

Racial Profiling. Support for racial profiling was assessed using 4 items: "If I agreed with his or her other positions, I would seriously consider voting for a candidate who believes racial profiling by the police should be allowed", "I'd like to hear that government agencies are particularly monitoring people from groups that have been linked

to terrorism, like Muslims and Arabs", "It should be against airport policy to allow airport security to search passengers based on their ethnic group—for example, Arabs— more so than others" (reverse-coded), and "It should be illegal for drug agents to search Hispanics more often than whites for drugs" (reverse-coded). Responses were provided on 1-7 scales, where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' ($\alpha = .85$).

Affirmative Action. Support for ethnicity and race-based affirmative action policies was assessed asking participants to indicate how much they agreed with each of four policies, taken from Ho et al. (2012): "Quotas, that is, setting aside positions for minority ethnic groups", "Using membership in certain racial groups as a tie-break when applicants are equally qualified", "Making a special effort to find and train ethnic minorities for good jobs", and "Giving preference to minorities, even when they are less qualified than other candidates." Participants indicated their agreement on 1-7 scales, where 1 indicated 'Strongly disagree' and 7 indicated 'Strongly agree' ($\alpha = .82$).

Demographic and Control Variables

Finally, we included as control variables participants' age, gender, education, income level, and level of political conservatism. Education was assessed on a 1-8 scale (1=No formal education; 2= Elementary school; 3= Some high school; 4= Completed high school; 5= Some college; 6= BA or BS Degree; 7 = Some graduate or professional school; 8= Hold graduate or professional degree). Income level was assessed by asking participants to report their estimated annual household income after tax on a 1-9 scale (1=Less than $10,000; 2= Between $10,000 and $20,000; 3= Between $20,000 and $40,000; 4= Between $40,000 and $60,000; 5= Between $60,000 and $80,000; 6= Between $80,000, and $100,000; 7= Between $100,000 and $200,000; 8= Between

$200,000 and $500,000; 9 = Above $500,000). Political conservatism was assessed using a three-item measure: "How would you describe your political party preference", "In terms of economic issues, how would you describe your political attitudes and beliefs", and "In terms of social issues, how would you describe your political attitudes and beliefs". The first item was assessed on a 1-7 scale where 1 indicated 'Strong Democrat' and 7 indicated 'Strong Republican'. The last two items were assessed on a 1-7 scale where 1 indicated 'Very liberal' and 7 indicated 'Very conservative' ($\alpha = .88$).[2]

Results

As a first step, we sought to investigate the distribution of our central variables. We conducted a formal outlier analysis, identifying and removing fifteen cases that were three standard deviations (or more) above or below the mean on any of the central variables examined (Howell, 2012)[3]. We next examined variable normality. Analyses of variable skewness and kurtosis suggested that with one exception (Old-fashioned anti-Black racism: Skewness = 2.14; Kurtosis= 3.64), levels of skew and kurtosis were within an acceptable range of +2/-2 (Field, 2013).[4] At the same time, using the Kolmogorov-Smirnov test for normality, we observed that all of our variables were significantly non-normal (Kolmogorov-Smirnov statistics ranging from .05 to .41, with associated *p*-values ranging from .026 to < .001). Thus, because our analyses suggested that our data might violate some of the assumptions of parametric regression, we conducted all the analyses below using Mplus' robust maximum likelihood estimator (i.e., MLR), which is robust to violations of normality (Muthén & Muthén, 2012).

Descriptive statistics and variable intercorrelations can be found in Table 1. We investigated our hypotheses using hierarchical regression. In a first step, we entered contact

quality, the demographic control variables (i.e., age, gender, education, income, and political conservatism), and each of the individual difference variables as predictors of each of our criterion measures. At the second step, we simultaneously entered each of the two-way interaction terms between contact quality and each individual difference variable. Then, to generate the simple slopes for the effects of contact at levels of a given focal variable, we estimated a series of new parameters using the Mplus software's (Muthén & Muthén, 2012) model constraint command, giving us estimates of the effects of contact quality at low (-1 SD), mean, and high (+1 SD) levels of an individual difference construct, with all other main effects and two-way interaction terms controlled.[5] All variables were grand-mean centered.

Effects of Contact Quality

Our first hypothesis (H1) was that the various individual difference constructs (RWA, SDO, NFC, and ethnic identification) would demonstrate main effects on intergroup attitudes that were separable from any effects of contact quality.[6] We observed at Step 1 strong support for that prediction with respect to social dominance orientation: SDO was significantly associated with more negative intergroup attitudes across all three of our primary criterion measures (old-fashioned anti-Black racism, symbolic racism, and zero-sum competitive beliefs), and two of the three secondary criterion measures (i.e., racial stereotyping and racial profiling, but not affirmative action). We observed similar support for RWA, which predicted symbolic racism and zero-sum competitive beliefs (i.e., two of the three primary criterion measures) as well as support for racial profiling and affirmative action opposition. Ethnic identification was also uniquely associated with several criterion measures (i.e., old-fashioned anti-Black racism, racial stereotyping, and

racial profiling). On the other hand, NFC was uniquely associated only with higher levels of perceived zero-sum competition with Blacks.

Our second hypothesis (H2) was that positive contact quality would exert unique effects on more tolerant intergroup attitudes when controlling for all of the individual difference constructs. Here, too, we observed support for our hypotheses. Having more positive contact with Blacks was significantly associated with less old-fashioned anti-Black racism, less symbolic racism, lower zero-sum competitive beliefs, lower likelihood of racial stereotyping, and less support for racial profiling policies (i.e., all primary criterion measures, and all secondary criterion measures with the exception of affirmative action).

Taken together, then, we observed substantial support for our first two hypotheses. Consistent with both hypotheses, the set of individual difference constructs and contact quality were each uniquely associated with intergroup attitudes. Still, and even at the level of main effects only, the clarity provided by controlling for a host of related constructs was evident. Whereas each of the individual difference variables was significantly associated with all of the criterion variables in zero-order terms (with two exceptions: NFC was not associated with support for racial profiling, and ethnic identification was not associated with opposition to affirmative action; see Table 1), there was more consistent evidence for the unique effects of RWA, ethnic identification, and SDO, than for NFC. Relatedly, our finding that contact quality continued to be associated with unique beneficial effects on intergroup attitudes is important in its own right, given that this was a particularly rigorous test controlling for a host of individual difference predictors (and relevant covariates).

Our final hypothesis (H3) was that the positive benefits of high quality contact would extend not only to individuals low on prejudice-proneness (i.e., LPs), but also to those higher on prejudice-proneness (i.e., HPs). We broke this hypothesis down further into two parts: a first (H3a) examining whether the benefits of contact quality generally extended to HPs, and a second (H3b) testing whether this was true for each of four indicators of prejudice-proneness controlling for one another. In order to test H3, we examined results at the second step of our hierarchical regression (i.e., with all interaction terms entered; see Table 2), as well as investigating the simple slopes (i.e., the effects of contact quality at the various levels of the individual difference constructs; see Table 3). Consistent with H3a, we observed very little evidence that the beneficial effects of contact quality were any weaker at higher (*vs.* lower) levels of prejudice-proneness. By and large, our results suggested that contact quality operated similarly for HPs and LPs: of the 24 interaction effects tested, we observed that only 4 were significant. For three of these (each of SDO x contact quality and ethnic identification x contact quality on old-fashioned anti-Black racism, as well as NFC x contact quality on racial profiling), results suggested that the benefits of contact quality were *stronger* for HPs (*vs*. LPs).[7]

Indeed, and supporting H3b, when we examined the simple slopes, it was clear that contact quality had a broad range of unique beneficial effects for individuals higher on prejudice-proneness across each of the indicators we examined. Recall that contact quality had significant effects on all three of the primary criterion measures, and on two of the three secondary criterion measures (i.e., all except affirmative action). When we examined how these benefits of contact quality extended to HPs, we observed significant or (in one case) marginally significant effects for higher SDO individuals across four of the five

measures for which contact quality was a significant predictor (the exception being racial profiling). Controlling for SDO and all other constructs, higher RWA individuals with higher quality contact reported lower old-fashioned anti-Black racism, zero-sum competitive beliefs, and support for racial stereotyping. Similarly, those high on ethnic identification benefitted from contact quality across all five measures for which quality had unique benefits, and this was also true for those high on NFC with one exception (symbolic racism). In sum, then, and almost across the board, HPs benefitted significantly (and equally to LPs) from contact quality, even when we controlled for all of the other individual difference variables. These results provide strong support for both parts of H3.[8]

General Discussion

In this investigation we tested the effectiveness of contact quality with African Americans in promoting intergroup tolerance among White American individuals higher (*vs.* lower) on a broad range of indicators of prejudice-proneness in a large community sample. An important and novel feature of our approach is the simultaneous consideration of an array of individual differences (i.e., SDO and RWA: ideological/intergroup; NFC: cognitive; group identification: identity-based) that have most prominently figured in the debate on the effectiveness of contact among the prejudice-prone (Hodson & Dhont, 2015). By examining the effects of contact quality at higher levels of a particular indicator of prejudice-proneness while controlling for a variety of other indicators, we can have greater confidence that positive contact is able to target concerns rooted in the nature of the specific construct being examined. Indeed, this approach minimizes the risk of incorrectly interpreting an effect on one type of individual difference variable that is in fact due to its inter-correlation with another type— a concern that has raised questions about the

interpretation of some earlier research on the benefit of contact among HPs (e.g., Asbrock et al., 2012).

Beyond controlling for a broader swathe of individual differences than typically considered, we also examined a range of criterion measures. Our three primary criterion measures directly referred to the target of our contact quality measure, African Americans. Specifically, we focused on old-fashioned anti-Black racism, symbolic racism, and zero-sum competitive beliefs, three attitudes widely considered to play an important role in intergroup antagonism (Bobo, 1999; Kinder & Sears, 1981; Sidanius & Pratto, 1999). We expected that high contact quality with African Americans might be effective at reducing these hostile attitudes, given contact's ability to introduce individuals to information that could cause them to update negative stereotypes (e.g., about African Americans' aggressiveness, low intelligence, or laziness) central to both old-fashioned and symbolic racism (e.g., Dhont, Van Hiel, De Bolle, & Roets, 2012). We similarly reasoned that contact quality could reduce zero-sum competitive beliefs, insofar as positive contact could highlight the possibilities for cross-group collaboration (*vs.* competition).

We also included three further criterion measures. Specifically, we examined the general endorsement of racial stereotyping (beyond the Black-White context), as well as support for racial profiling of, and affirmative action for, minorities in general. We considered these criterion measures to be secondary, seeing as none of these centered on attitudes or policies relating to African Americans (i.e., the target of contact) in particular, but instead reflected beliefs relating to ethnic and racial minority groups in general. Nevertheless, we included these constructs given the possibility that high quality contact with one minority group might improve broader intergroup attitudes about (and policies

affecting) minorities in general (Tausch et al., 2010), and considering that research on the benefits of intergroup contact has not placed sufficient emphasis on policy outcomes (Dixon et al., 2013).

Summary of Findings and Implications

In one of the most comprehensive test of its kind, our results were clear in highlighting the wide-ranging effectiveness of high quality outgroup contact. Indeed, controlling for the group of individual difference measures indexing prejudice-proneness (i.e., SDO, RWA, NFC, and ethnic identification), higher contact quality with African Americans uniquely predicted more tolerant attitudes across all of the criterion measures except support for affirmative action. Thus, high quality contact with African Americans predicted lower old-fashioned anti-Black racism, lower symbolic racism, and less endorsement of the view that the relationship between Blacks and Whites is zero-sum in nature. Furthermore, beyond attitudes towards the specific target group, positive contact with Blacks was uniquely associated with less support for racial stereotyping and less support for the policy of profiling individuals on the basis of race or ethnicity. Documenting the effectiveness of contact quality using a broad range of control variables and criterion measures important in its own right, confirming and extending prior research on the utility of positive intergroup contact in promoting intergroup harmony using a particularly rigorous test (e.g., Christ et al., 2014; Pettigrew & Tropp, 2006; but see Saguy & Kteily, 2014).

Most importantly for our current purposes, however, was the finding that the benefits of contact quality were, by and large, just as strong among those higher (*vs.* lower) on prejudice-proneness. Consistent with those who have argued that the benefits of contact

extend to the prejudice-prone (e.g., Dhont & Van Hiel, 2009, 2011; Hodson, 2008, 2011; Hodson et al., 2013), we observed that contact quality was effective even among White Americans higher on SDO, RWA, NFC, or ethnic identification. Across the five criterion measures for which contact quality had main effects, there were very few exceptions to this overall pattern (those higher in RWA or NFC did not show significant benefits of contact quality on symbolic racism, for which contact quality had a relatively weaker main effect; and those higher in RWA or SDO did not show significant benefits of contact quality on racial profiling, a secondary criterion measure).

The present results thus emphasize the clear importance of contact for improving intergroup attitudes regardless of whether one's propensity toward bias stems from group dominance motives (SDO), concerns about conformity and norm-adherence (RWA), a cognitive preference for firm conclusions (NFC), or concerns about maintaining the positive standing of the ingroup (identification). Particularly given the fact that these constructs have historically been emphasized by different streams of psychology and prejudice researchers—at times in conceptual conflict with each other— the wide-ranging benefits of contact across a variety of sources of prejudice-proneness is impressive.

Our results are especially important with respect to SDO, a construct whose role has been subject of particular debate in discussions about the benefit of contact among the prejudice-prone (e.g., Al-Ramiah & Hewstone, 2013; Asbrock et al., 2012, 2013; Schmid et al., 2012). For example, examining RWA and SDO simultaneously, Asbrock and colleagues (2013) found, in contrast to our findings, that contact was effective among those higher in RWA but not among those higher in SDO, leading these authors to conclude that

contact might not be effective among individuals higher in the competitive motivation to maintain status differentiation between groups.

One possible explanation for the discrepancy between our results and these earlier results concerns the measurement of the relevant constructs. Specifically, we used fuller scales to measure SDO and RWA than the very brief measures employed by Asbrock and colleagues (2012), which might help explain why we found more effects among those higher in SDO. Another possible explanation has to do with differences in the features of the intergroup contexts considered. Whereas Asbrock and colleagues (2013) focused on majority Germans' contact with immigrants, we focused on White Americans' contact with African Americans. Seeing as much of the immigration into Germany (a majority Christian nation) comes from Muslim-majority foreign countries (e.g., Turkey), it is possible that perceived cultural value threat from outsiders—especially relevant to those higher in RWA— was particularly salient to the Asbrock and colleagues' (2012) participants. In contrast, given the history of group-based dominance and competition between Whites and Blacks in the U.S., it is likely that a sense of competitive threat from African Americans among Whites played a relatively larger role in our study than in Asbrock et al.'s (2012) work. This could help account for the different conclusions reached for SDO. Given the likely prominence of perceived cultural value threats posed by foreign immigrants in Germany, the most salient benefit of positive contact is likely to have been in mitigating fears about differences in these targets' values, concerns most central to those higher in RWA rather than SDO. On the other hand, to the extent that perceived competitive threat features prominently in White Americans' view of their intergroup relationship with African Americans, positive contact's effect in highlighting the potential

for cooperation (*vs.* competition) should weigh heavily, helping to alleviate concerns critical to individuals higher in SDO. More generally, this pattern of results highlights the importance of testing the effects of contact among prejudice-prone individuals using a variety of target groups in a range of different cultural contexts.

Notably, our work focused on contact quality rather than contact quantity, given that the majority of research suggests that it is positive contact in particular (rather than merely having frequent contact) that have the most beneficial effects (e.g., Brown & Hewstone, 2005). Nevertheless, it is worth noting that all our results held when we further controlled for contact quantity. In supplemental analyses, we examined results using contact quantity rather than contact quality (see Supplemental Tables 1 and 2). In our simultaneous regressions, we observed that contact quantity had significant positive effects only for old-fashioned anti-Black racism and zero-sum competitive beliefs, although, as with the results for contact quality, these effects generally extended to HPs (including, in both cases, those higher on SDO).

Limitations and Future Directions

Despite the contributions of our work, it is not without limitations. The first concerns our NFC measure. Need for closure represents a relatively broad construct, yet to keep the survey manageable, we employed only 5 items, somewhat compromising the measurement. Notably, the reliability obtained is comparable to some observations in broader personality domains (see footnote 1) and comparable to ideological measures (e.g. SDO) used in testing similar questions in some past research (Asbrock et al., 2012, Studies 1 & 2). Nevertheless, the patterns observed for this construct were likely attenuated (we observed that it uniquely predicted only higher zero-sum beliefs, although it was

significantly correlated with all criterion measures except racial profiling). Moreover, the solitary unusual pattern we observed for contact quality among HPs was a negative link between contact quality and affirmative action support among those higher in NFC (although, given the fact that contact quality had no unique effect on affirmative action and there was no link between contact quality and affirmative action among those higher or lower on prejudice-proneness for any of the other indicators, it is possible that this was a suppressor variable effect). Future research employing the full scale (Webster & Kruglanski, 1994; revised by Roets & Van Hiel, 2007) may reveal stronger unique effects and allow for a more complete examination of NFC's role.

One conclusion from the general absence of interactions between contact quality and the individual difference measures is that the benefits of contact are similar across levels of prejudice-proneness. One potential criticism when comparing effects of contact among those higher and lower in prejudice-proneness, however, is that LPs might have little "room to move", given that their outgroup attitudes are generally positive (Pettigrew & Tropp, 2011, p. 212). This is a reasonable observation worth taking into consideration. Indeed, the mean level of endorsement of old-fashioned anti-Black racism in our sample was very low, making it difficult to conclude much from the lack of effect of contact quality among LPs on this variable (see also footnote 7). Importantly, however, our central focus here was examining whether contact quality is effective among HPs (across a range of indicators), the group for which the benefits of contact have been the subject of more debate. Moreover, it is worth noting that comparisons between LPs and HPs on the remaining criterion measures are less susceptible to this concern than for old-fashioned racism given that mean levels tended to be low but not at floor. For example, the only

significant interaction between an individual difference and contact quality for racial profiling (whose mean was only slightly below the midpoint) suggested that the effect of contact quality among those higher in NFC was stronger than among those lower in NFC. Nevertheless, future work specifically interested in comparing effects of contact across HPs and LPs would do well to explore a still wider range of criterion measures, including a variety of measures unlikely to be subject to floor or ceiling effects.

A related question relates to levels of our indicators of prejudice-proneness. Consistent with typical samples drawing from participants on Mechanical Turk (e.g., Berinsky, Huber, & Lenz, 2012), our participants, on average, leaned liberal. Nevertheless, mean levels on our indicators of prejudice-proneness were not particularly low, and we observed substantial variation around these means. The means on ethnic identification and RWA were, respectively, at or just below the midpoint; the mean on NFC was slightly below the midpoint, and although below the midpoint, the mean on SDO in our sample was in line with the typical range observed across several large samples in the U.S., and we had similar variability around the mean (see Table 10 in Ho et al., 2015). Despite this, it would be worthwhile for future research examining the benefits of contact quality among HPs across a range of indicators of prejudice-proneness to seek out particularly intolerant individuals.

It would also be interesting for future work to separately examine the effects of positive and negative contact. In our work, we considered contact quality on a bipolar continuum from negative to positive, but recent research suggests that positive and negative contact can sometimes have asymmetric effects, with negative contact increasing prejudice at a stronger rate than positive contact reduces it (Hayward, Tropp, Hornsey, &

Barlow, 2017; but see Pettigrew & Hewstone, 2017). It would be informative to further examine whether the effects of positive and negative contact are differentially affected by individual differences in prejudice-proneness.

Another important avenue for future work is examining the mediating mechanisms for the distinct effects we observe. For example, whereas high quality contact may ameliorate prejudicial attitudes among individuals higher in RWA by addressing concerns that the outgroup's cultural practices are threatening and foreign (see e.g., Asbrock et al., 2012), it could contribute to improving attitudes among individuals higher in NFC because of its potential to reduce anxiety and provide greater perceived predictability in intergroup interactions. In parallel, by increasing interconnectedness with others, contact may contribute to more inclusive ingroup categorizations (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993), reducing prejudice among higher group identifiers. Finally, by highlighting opportunities for cooperation rather than competition, contact quality might mitigate the competitive threat central to the mindset of those higher in SDO (e.g., Duckitt, 2001). Additionally, given that high SDOs are known to have lower empathy for others (Sidanius et al., 2013), it is possible that contact improves attitudes among this group because of its ability to provoke empathy for others (Pettigrew & Tropp, 2008; see also Hodson, 2008). Providing evidence for these distinct mechanisms would further strengthen support for the idea that contact has simultaneous and unique benefits across dimensions of prejudice-proneness, and provide greater insight into why. Developing a deeper understanding of the unique pathways by which contact can be effective for individuals higher on different types of prejudice-proneness could help pave the way for targeted interventions tailored to the specific concerns that promote intergroup antipathy. For

example, to the extent that highly identified individuals benefit from high quality contact because it reduces their tendency to draw exclusive ingroup boundaries (Leyens & Yzerbyt, 1992), interventions targeting highly identified group members might focus specifically on activities that increase interconnectedness and prioritize the development of superordinate goals. In contrast, interventions with individuals higher on RWA might focus on activities that highlight overlapping values.

On a related note, although our inclusion of a range of criterion measures is one advantage of our work, examining the mechanisms by which contact quality is effective (in general, and among both HPs and LPs) might provide deeper insight than we are currently able to offer about any differences in patterns across them. For example, the benefits of contact quality with respect to racial stereotyping appeared (numerically) greater than for symbolic racism or for affirmative action. It is possible that contact quality effectively reduces support for racial stereotyping by providing concrete counter-examples to negative assumptions that individuals make about outgroups. Changing stereotypes, however, might have less of a beneficial effect on criterion measures like symbolic racism and opposition to affirmative action, the endorsement of which might be based on beliefs about equity and meritocracy.

It is also worth noting that several of our criterion measures (i.e., racial stereotyping, racial profiling, and affirmative action) related to minorities in general rather than African Americans (the targets of contact) specifically— the reason we considered them secondary rather than primary measures. Interestingly, we nevertheless observed that high quality contact with Blacks typically predicted less support for racial stereotyping and racial profiling among HPs and LPs alike (although, as noted above, not affirmative

action). Because we did not also assess individuals' contact with other minorities (or "minorities in general"), it is not currently clear whether the effects we did observe reflected generalization from quality contact with African Americans to attitudes about minorities overall (e.g., Tausch et al., 2010), or whether this result was due to the possibility that high contact quality with African Americans overlaps with the tendency to have high contact quality with other minorities. Examining the potential for such secondary transfer effects from contact with African Americans to broader attitudes and policies about minorities in general (while controlling for contact with other groups) among both HPs and LPs would significantly advance existing understanding (see also Schmid et al., 2012).

Finally, it is important to note that our research was cross-sectional in nature, limiting our ability to make causal claims (although it is worth noting that there is considerable evidence supporting the idea that contact reduces prejudice; see e.g., Pettigrew & Tropp, 2011). Future research should further these ideas with longitudinal and/or experimental designs. Indeed, examining the factors that influence whether HPs enter into contact with outgroups (and that predict the quality of those interactions) is a question of particular importance, and one well-suited for examination using longitudinal designs.

Conclusion

The present investigation clarifies not only that contact is effective among HPs, but also highlights that this is uniquely true across a range of indicators of prejudice-proneness, concluding that ideological/intergroup, cognitive, and identity-based concerns are each independently influenced by contact. Our results help clarify an ongoing debate in

the field about the extent to which individuals higher in SDO truly benefit from positive contract. Our analysis confirms that those higher in SDO express less intergroup bias when reporting more positive contact with the outgroup, even when controlling for a number of inter-related constructs. Contact, therefore, seems to be effective on the dominative aspects of prejudice-proneness, along with the more authoritarian aspects (e.g. RWA), as well as for those identifying with a high status ingroup, or inclined towards cognitive closure. Our work thus demonstrates the broad-ranging potential of contact to improve intergroup relations.

References

Al Ramiah, A., & Hewstone, M. (2013). Intergroup contact as a tool for reducing, resolving, and preventing intergroup conflict: Evidence, limitations, and potential. *American Psychologist*, *68*, 527-542. doi:10.1037/a0032603

Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

Altemeyer, B. (1996). *The authoritarian specter*. Cambridge, MA: Harvard University Press.

Altemeyer, B. (1998). The other "authoritarian personality." In M. P. Zanna (Ed.), *Advances in experimental social psychology*, (Vol. 30, pp. 47-92). San Diego, CA: Academic Press. doi:10.1016/S0065-2601(08)60382-2

Asbrock, F., Christ, O., Duckitt, J., & Sibley, C. G. (2012). Differential effects of intergroup contact for authoritarians and social dominators: A dual process model perspective. *Personality and Social Psychology Bulletin, 38*, 477-490. doi:10.1177/0146167211429747

Asbrock, F., Gutenbrunner, L., & Wager, U. (2013). Unwilling, but not unaffected: Imagined contact effects for authoritarians and social dominators. *European Journal of Social Psychology*, *43*, 404-412. doi:10.1002/ejsp.1956

Bobo, L., & Hutchings, V. L. (1996). Perceptions of racial group competition: Extending Blumer's theory of group position to a multiracial social context. *American Sociological Review*, 951-972. doi:10.2307/2096302

Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. *Advances in Experimental Social Psychology*, *37*, 255-343. doi:10.1016/S0065-2601(05)37005-5

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*, 3-5. doi:10.1177/1745691610393980

Choma, B. L., Hanoch, Y., Gummerum, M., & Hodson, G. (2013). Relations between risk perceptions and socio-political ideology are domain-and ideology-dependent. *Personality and Individual Differences*, *54*, 29-34. doi:10.1016/j.paid.2012.07.028

Christ, O., Schmid, K., Lolliot, S., Swart, H., Stolle, D., Tausch, N., ... & Hewstone, M. (2014). Contextual effect of positive intergroup contact on outgroup prejudice. *Proceedings of the National Academy of Sciences*, *111*, 3996-4000. doi:10.1073/pnas.1320901111

Costa, P. T., Jr., & McCrae, R. R. (1992). *NEO Personality Inventory–Revised (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

Dhont, K., Van Hiel, A., De Bolle, M., & Roets, A. (2012). Longitudinal intergroup contact effects on prejudice using self- and observer-reports. *British Journal of Social Psychology*, *51*, 221-238. doi:10.1111/j.2044-8309.2011.02039.x

Dhont, K., Roets, A., & Van Hiel, A. (2011). Opening closed minds: The combined effects of intergroup contact and need for closure on prejudice. *Personality and Social Psychology Bulletin*, *37*, 514-528. doi:10.1177/0146167211399101

Dhont, K., Roets, A., & Van Hiel, A. (2013). The intergenerational transmission of need for closure underlies the transmission of authoritarianism and anti-immigrant prejudice. *Personality and Individual Differences*, *54*, 779-784. doi:10.1016/j.paid.2012.12.016

Dhont, K., & Van Hiel, A. (2009). We must not be enemies: Interracial contact and the reduction of prejudice among authoritarians. *Personality and Individual Differences*, *46*, 172-177. doi:10.1016/j.paid.2008.09.022

Dhont, K., & Van Hiel, A. (2011). Direct contact and authoritarianism as moderators between extended contact and reduced prejudice: Lower threat and greater trust as mediators. *Group Processes & Intergroup Relations*, *14*, 223-237. doi:10.1177/1368430210391121

Dhont, K., Van Hiel, A., & Hewstone, M. (2014). Changing the ideological roots of prejudice: Longitudinal effects of ethnic intergroup contact on social dominance orientation. *Group Processes & Intergroup Relations*, *17*, 27-44. doi:10.1177/1368430213497064

Dixon, J., Durrheim, K., Kerr, P., Thomae, M. (2013). "What's so funny 'bout peace, love, and understanding?" Further reflections on the limits of prejudice reduction as a

model of social change. *Journal of Social and Political Psychology, 1,* 239-252. doi:10.1016/j.paid.2008.09.022

Duckitt, J. (2001). A dual-process cognitive-motivational theory of ideology and prejudice. *Advances in Experimental Social Psychology*, *33*, 41-113. doi:10.1016/S0065-2601(01)80004-6

Duckitt, J., & Sibley, C. G. (2010). Right-wing authoritarianism and social dominance orientation differentially moderate intergroup effects on prejudice. *European Journal of Personality, 24*, 583-601. doi:10.1002/per.772

Federico, C. M., Deason, G., & Fisher, E. L. (2012). Ideological asymmetry in the relationship between epistemic motivation and political attitudes. *Journal of Personality and Social Psychology*, *103*, 381-398. doi:10.1037/a0029063

Federico, C. M., Ergun, D., & Hunt, C. (2014). Opposition to equality and support for tradition as mediators of the relationship between epistemic motivation and system-justifying identifications. *Group Processes & Intergroup Relations*, *17*, 524-541. doi:10.1177/1368430213517273

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage.

Gaertner, S. L. , Dovidio, J. F., Anastasio, P. A., Bachman, B. A., & Rust, M. C. (1993). The common ingroup identity model: Recategorization and the reduction of intergroup bias. *European Review of Social Psychology*, *4*, 1-26. doi:10.1080/14792779343000004

Gagnon, A., & Bourhis, R. Y. (1996). Discrimination in the minimal group paradigm: Social identity or self-interest? *Personality and Social Psychology Bulletin*, *22*, 1289-1301. doi:10.1177/01461672962212009

Hayward, L. E., Tropp, L. R., Hornsey, M. J., & Barlow, F. K. (2017). Toward a Comprehensive Understanding of Intergroup Contact: Descriptions and Mediators of Positive and Negative Contact Among Majority and Minority Groups. *Personality and Social Psychology Bulletin*, *43*, 347-364. doi:10.1177/0146167216685291

Henry, P. J., & Sears, D. O. (2002). The symbolic racism 2000 scale. *Political Psychology*, *23*, 253-283. doi:10.1111/0162-895X.00281

Ho, A. K., Sidanius, J., Pratto, F., Levin, S., Thomsen, L., Kteily, N., & Sheehy-Skeffington, J. (2012). Social dominance orientation: Revisiting the structure and function of a variable predicting social and political attitudes. *Personality and Social Psychology Bulletin*, *38*, 583-606. doi:10.1177/0146167211432765

Ho., A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO_7 scale. *Journal of Personality and Social Psychology*, *109*, 1003-1028. doi:10.1037/pspi0000033

Hodson, G. (2008). Interracial prison contact: The pros for (socially dominant) cons. *British Journal of Social Psychology, 47*, 325-351. doi:10.1348/014466607X231109

Hodson, G. (2011). Do ideologically intolerant people benefit from intergroup contact? *Current Directions in Psychological Science, 20*, 154-159. doi:10.1177/0963721411409025

Hodson, G., & Dhont, K. (2015). The person-based nature of prejudice: Individual difference predictors of intergroup negativity. *European Review of Social Psychology*, *26*, 1-42. doi: 10.1080/10463283.2015.1070018

Hodson, G., Costello, K., & MacInnis, C. C. (2013). Is intergroup contact beneficial among intolerant people? Exploring individual differences in the benefits of contact on attitudes. In G. Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 49-80). London, UK: Psychology Press.

Hodson, G., Dovidio, J. F., & Esses, V. M. (2003). Ingroup identification as a moderator of positive-negative asymmetry in social discrimination. *European Journal of Social Psychology, 33*, 215-233. doi:10.1002/ejsp.141

Hodson, G., Harry, H., & Mitchell, A. (2009). Independent benefits of contact and friendship on attitudes toward homosexuals among authoritarians and highly identified heterosexuals. *European Journal of Social Psychology*, *39*, 509-525. doi:10.1002/ejsp.558

Hodson, G., Hogg, S. M., & MacInnis, C. C. (2009). The role of "dark personalities" (narcissism, Machiavellianism, psychopathy), Big Five personality factors, and ideology in explaining prejudice. *Journal of Research in Personality, 43*, 686-690. doi:10.1016/j.jrp.2009.02.005

Howell, D. C. (2012). *Statistical methods for psychology*. Cengage Learning.

Kinder, D. R., & Sears, D. O. (1981). Prejudice and politics: Symbolic racism versus racial threats to the good life. *Journal of Personality and Social Psychology*, *40*, 414. doi:10.1037/0022-3514.40.3.414

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, *103*, 263-283. doi:10.1037/0033-295X.103.2.263

Kteily, N., Ho, A. K., & Sidanius, J. (2012). Hierarchy in the mind: The predictive power of social dominance orientation across social contexts and domains. *Journal of Experimental Social Psychology*, *48*, 543-549. doi:10.1016/j.jesp.2011.11.007

Kutner, M. H., Nachtsheim, C., & Neter, J. (2004). *Applied linear regression models*. McGraw-Hill/Irwin.

Levin, S., Sidanius, J., Rabinowitz, J. L., & Federico, C. (1998). Ethnic identity, legitimizing ideologies, and social status: A matter of ideological asymmetry. *Political Psychology*, *19*, 373-404. doi:10.1111/0162-895X.00109

Leyens, J. P., & Yzerbyt, V. Y. (1992). The ingroup overexclusion effect: Impact of valence and confirmation on stereotypical information search. *European Journal of Social Psychology*, *22*, 549-569. doi:10.1002/ejsp.2420220604

McCrae, R. R., Kurtz, J. E., Yamagata, S., & Terracciano, A. (2011). Internal consistency, retest reliability, and their implications for personality scale validity. *Personality and Social Psychology Review, 15*, 28-50. doi:10.1177/1088868310366253

McConahay, J. B. (1986). Modern racism, ambivalence, and the Modern Racism Scale. In J. F.Dovidio & S. L.Gaertner (Eds.), *Prejudice, discrimination and racism* (pp. 91–126). New York, NY: Academic Press.

Meeusen, C., & Dhont, K. (2015). Parent–child similarity in common and specific components of prejudice: The role of ideological attitudes and political discussion. *European Journal of Personality*, *29*, 585-598. doi:10.1002/per.2011

Onraet, E., Dhont, K., & Van Hiel, A. (2014). The relationships between internal and external threats and right-wing attitudes: A three-wave longitudinal study. *Personality and Social Psychology Bulletin*, *40*, 712-725. doi:10.1177/0146167214524256

Pettigrew, T. F., & Hewstone, M. (2017). The single factor fallacy: Implications of missing critical variables from an analysis of intergroup contact theory. *Social Issues and Policy Review*, *11*, 8-37. doi:10.1111/sipr.12026

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90*, 751-783. doi:10.1037/0022-3514.90.5.751

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology, 38*, 922-934. doi:10.1002/ejsp.504

Pettigrew, T. F., & **Tropp, L. R.** (2011). *When groups meet: The dynamics of intergroup contact*. New York, NY: Psychology Press.

Pierro, A., & Kruglanski, A. W. (2008). "Seizing and freezing" on a significant-person schema: Need for closure and the transference effect in social judgment. *Personality and Social Psychology Bulletin*, *34*, 1492-1503. doi:10.1177/0146167208322865

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology, 67*, 741-763. doi:10.1037/0022-3514.67.4.741

Roets, A., Kruglanski, A. W., Kossowska, M., Pierro, A., & Hong, Y. Y. (2015). The motivated gatekeeper of our minds: New directions in need for closure theory and research. *Advances in Experimental Social Psychology*, *52*, 221-283. doi: doi:10.1016/bs.aesp.2015.01.001

Roets, A., & Van Hiel, A. (2007). Separating ability from need: Clarifying the dimensional structure of the need for closure scale. *Personality and Social Psychology Bulletin, 33,* 266-280. doi:10.1177/0146167206294744

Roets, A., Van Hiel, A., & Dhont, K. (2012). Is sexism a gender issue? A motivated social cognition perspective on men's and women's sexist attitudes toward own and other gender. *European Journal of Personality*, *26*, 350-359. doi:10.1002/per.843

Saguy, T., & Kteily, N. (2014). Power, negotiations, and the anticipation of intergroup encounters. *European Review of Social Psychology*, *25*, 107-141. doi:10.1080/10463283.2014.957579

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, *7*, 147-177. doi:10.1037/1082-989X.7.2.147

Schmid, K., Hewstone, M., Küpper, B., Zick, A., & Wagner, U. (2012). Secondary transfer effects of intergroup contact: A cross-national comparison in Europe. *Social Psychology Quarterly*, *75*, 28-51. doi:10.1177/0190272511430235

Sidanius, J., Kteily, N. S., Sheehy-Skeffington, J., Ho, A. K., Sibley, C., & Duriez, B. (2013). You're inferior and not worth our concern: The interface between social dominance orientation and empathy. *Journal of Personality, 81*, 313-323. doi:10.1111/jopy.12008

Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. Cambridge: Cambridge University Press.

Sidanius, J., Pratto, F., & Bobo, L. (1996). Racism, conservatism, affirmative action, and intellectual sophistication: A matter of principled conservatism or group dominance? *Journal of Personality and Social Psychology*, *70*, 476-490. doi:10.1037/0022-3514.70.3.476

Spears, R., Doosje, B., & Ellemers, N. (1997). Self-stereotyping in the face of threats to group status and distinctiveness: The role of group identification. *Personality and Social Psychology Bulletin*, *23*, 538-553. doi:10.1177/0146167297235009

Stathi, S., & Crisp, R. J. (2008). Imagining intergroup contact promotes projection to outgroups. *Journal of Experimental Social Psychology*, *44*, 943-957. doi:10.1016/j.jesp.2008.02.003

Stephan, W. G. (2014). Intergroup anxiety: Theory, research, and practice. *Personality and Social Psychology Review, 18*, 239-255. doi:10.1177/1088868314530518

Swart, H., Turner, R., Hewstone, M., & Voci, A. (2011). Achieving forgiveness and trust in postconflict societies: The importance of self-disclosure and empathy. In L. R. Tropp & R. K. Mallett (Eds.), *Moving beyond prejudice reduction: Pathways to positive intergroup relations* (pp. 181-200). New York, NY: Oxford University Press. doi:10.1037/12319-009

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations*, (pp. 33-47). Monterey, CA: Brooks/Cole.

Voci, A., & Hewstone, M. (2003). Intergroup contact and prejudice toward immigrants in Italy: The mediational role of anxiety and the moderational role of group salience. *Group Processes & Intergroup Relations*, *6*, 37-54. doi:10.1177/1368430203006001011

Voci, A., Hewstone, M., Swart, H., & Veneziani, C. A. (2015). Refining the association between intergroup contact and intergroup forgiveness in Northern Ireland: Type of contact, prior conflict experience, and group identification. *Group Processes & Intergroup Relations*, *18*, 589-608. doi:10.1177/1368430215577001

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, *67*, 1049-1062. doi:10.1037/0022-3514.67.6.1049

Wright, S. C., & Lubensky, M. E. (2009). The struggle for social equality: Collective action versus prejudice reduction. In S. Demoulin, J. Leyens, & J. F. Dovidio (Eds.), *Intergroup misunderstandings: Impact of divergent social realities* (pp. 291-310). New York, NY: Psychology Press.

Table 1. Descriptive Statistics and Variable Intercorrelations.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Contact Quality	-										
2. SDO	-.43***	-									
3. RWA	-.06	.36***	-								
4. NFC	-.11*	.22***	.24***	-							
5. Ethnic Identification	-.00	.12**	.44***	.16**	-						
6. Old-fashioned Anti-Black Racism	-.46***	.51***	.24***	.18**	.22***	-					
7. Symbolic Racism	-.27***	.52***	.56***	.21***	.24***	.44***	-				
8. Racial Stereotyping	-.46***	.45***	.17***	.14*	.16**	.48***	.35***	-			
9. Zero-Sum Competitive Beliefs	-.33***	.38***	.28***	.24***	.19**	.47***	.38***	.42***	-		
10. Racial Profiling	-.22***	.43***	.55***	.08	.29***	.28***	.48***	.37***	.34***	-	
11. Affirmative Action Support	.10†	-.25***	-.31***	-.12*	-.05	-.11*	-.53***	.03	-.04	-.25***	-
M	5.58	2.24	3.69	3.29	4.09	1.45	-0.05	2.31	2.45	3.36	2.69
SD	1.18	1.08	1.25	0.98	1.40	0.90	0.72	1.27	1.50	1.64	1.28

Note. SDO = social dominance orientation; RWA = right-wing authoritarianism; NFC = need for closure. Contact quality is assessed with respect to contact with Black Americans. *** $p < .001$ ** $p < .01$ * $p < .05$ † $p < .10$

Table 2. Interactions between Contact Quality and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Predicting Outgroup Attitudes and Support for Racial Policies Controlling for all Other Interaction Effects

	Old Fashioned Anti-Black Racism			*Symbolic Racism*			*Zero-Sum Competitive Beliefs*			*Racial Stereotyping*		
	b	*b**	95% CI	*b*	*b**	95% CI	*b*	*b**	95% CI	*b*	*b**	95% CI
Step 1												
Contact Quality	-.23***	-.29	-.30, -.15	-.07*	-.11	-.12, -.02	-.29***	-.22	-.42, -.15	-.33***	-.31	-.33, -.24
SDO	.33***	.39	.21 .45	.16***	.24	.09, .23	.31**	.22	.11, .51	.36***	.30	.23, .49
RWA	.03	.04	-.05, .11	.18***	.31	.11, .25	.18*	.15	.02, .34	.06	.05	-.08, .21
NFC	.03	.03	-.06, .11	.02	.03	-.03, .08	.18*	.12	.04, .33	.02	.01	-.11, .15
Ethnic Identification	.10**	.15	.04, .15	.01	.02	-.04, .06	.08	.08	-.04, .20	.10*	.11	.02, .19
R^2		.39			.47			.24			.32	
Step 2												
Contact Quality	-.21***	-.27	-.28, -.14	-.07*	-.11	-.12, -.01	-.29***	-.23	-.42, -.16	-.33***	-.31	-.43, -.24
SDO	.29***	.34	.17, .41	.17***	.25	.10, .24	.34***	.24	.15, .53	.33***	.28	.20, . 46
RWA	.04	.05	-.04, .12	.18***	.30	.11,. 25	.17*	.13	.00, .34	.07	.07	-.08 .22,
NFC	.02	.02	-.06,.10	.03	.03	-.03,. 08	.19*	.12	.04, .33	.01	.01	-.12, .14
Ethnic Identification	.10**	.15	.04, .16	.01	.02	-.04, .06	.08	.08	-.04, .20	.10*	.11	.01, .20
SDO x Contact Quality	-.13**	-.18	-.22, -.03	.00	.00	-.05, .05	.08	.07	-.06, .22	-.05	-.06	-.15, .04
RWA x Contact Quality	.02	.03	-.05, .08	.02	.04	-.03, .07	-.03	-.03	-.16, .10	.01	.01	-.09, .10
NFC x Contact Quality	-.02	-.02	-.11, .08	.04	.06	-.01, .08	.01	.01	-.13, .14	-.09	-.08	-.20, .02
Ethnic ID x Contact Quality	-.07*	-.13	-.14, -.01	-.02	-.03	-.06, .03	-.01	-.01	-.12, .10	-.03	-.04	-.11, .05
R^2		.44			.48			.24			.34	
$R^{2\ change}$		.05			.01			.00			.02	

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification. Analyses control for age, gender, income, education, and political conservatism
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Table 2 Ctd. Interactions between Contact Quality and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Predicting Outgroup Attitudes and Support for Racial Policies Controlling for all Other Interaction Effects

	Racial Profiling			*Affirmative Action Support*		
	b	*b**	95% CI	*b*	*b**	95% CI
Step 1						
Contact Quality	-.16*	-.12	-.29, -.04	.02	.02	-.10, .14
SDO	.30**	.20	.12, .47	-.08	-.07	-.23, .06
RWA	.49***	.37	.33, .65	-.20**	-.20	-.34, -.06
NFC	-.13	-.08	-.29, .03	-.06	-.04	-.19, .08
Ethnic Identification	.12*	.10	.01, .23	.10†	.10	-.01, .20
R^2		.41			.16	
Step 2						
Contact Quality	-.17**	-.12	-.29, -.05	.00	.00	-.11, .12
SDO	.30**	.20	.12, .47	-.09	-.07	-.23, .06
RWA	.48***	.37	.32, .64	-.29**	-.20	-.34, -.06
NFC	-.14	-.08	-.30, .02	-.06	-.05	-.19, .07
Ethnic Identification	.13*	.11	.02, .24	.10	.11	-.00, .20
SDO x Contact Quality	.04	.03	-.06, .14	.10†	.10	-.01, .21
RWA x Contact Quality	.06	.05	-.06, .18	-.03	-.03	-.12, .07
NFC x Contact Quality	-.15*	-.11	-.27, -.03	-.22***	-.20	-.35, -.10
Ethnic ID x Contact Quality	-.04	-.04	-.13, .06	.00	.00	-.08, .08
R^2		.42			.20	
$R^{2\ change}$		.01			.04	

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification.
Analyses control for age, gender, income, education, and political conservatism.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Table 3. Simple slopes for Significant Interactions Between Contact Quality and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Controlling for all Other Interaction Effects

	Old-Fashioned Anti-Black Racism		*Symbolic Racism*		*Zero-Sum Competitive Beliefs*		*Racial Stereotyping*		*Racial Profiling*		*Affirmative Action Support*	
Social Dominance Orientation	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI
Low SDO	-.08	-.19, .04	-.07	-.15, .02	-.38***	-.58, -.17	-.28***	-.46, -.14	-.21*	-.39, -.04	-.11	-.27, .06
Mean SDO	-.21***	-.28, -.14	-.07*	-.12, -.01	-.29***	-.42, -.16	-.33***	-.46, -.24	-.17**	-.29, -.05	.00	-.11, .12
High SDO	-.35***	-.48, -.22	-.06†	-.14, .01	-.20*	-.40, -.01	-.39***	-.57, -.26	-.13	-.28, .03	.11	-.05, .27
Right-Wing Authoritarianism												
Low RWA	-.24***	-.35, -.12	-.09*	-.17, -.01	-.25*	-.45, -.05	-.34***	-.49, -.20	-.25**	-.42, -.07	.04	-.14, .21
Mean RWA	-.21***	-.28, -.14	-.07*	-.12, -.01	-.29***	-.42, -.16	-.33***	-.43, -.24	-.17**	-.29, -.05	.00	-.11, .12
High RWA	-.19**	-.30, -.07	-.04	-.13. .05	-.33**	-.55, -.10	-.33***	-.49, -.17	-.09	-.30, .12	-.03	-.18, .12
Need for Closure												
Low NFC	-.20***	-.30, -.09	-.10**	-.17, -.04	-.30**	-.47, -.12	-.24**	-.39, -.10	-.02	-.20, .15	.22*	.05, 38
Mean NFC	-.21***	-.28, -.14	-.07*	-.12, -.01	-.29***	-.42, -.16	-.33***	-.43, -.24	-.17**	-.29, -.05	.00	-.11, .12
High NFC	-.23***	- .35, -.10	-.03	-.10, .05	-.28**	-.49, -.08	-.42***	-.57, -.28	-.32***	-.48, -.15	-.22*	-.38, -.05
Ethnic Identification												
Low Ethnic ID	-.11*	-.22, -.00	-.04	-.13, .04	-.28*	-.50, -.06	-.29***	-.44, -.14	-.12	-.32, .08	-.00	-.17, .17
Mean Ethnic ID	-.21***	-.28, -.14	-.07*	-.12, -.01	-.29***	-.42, -.16	-.33***	-.43, -.24	-.17**	-.29, -.05	.00	-.11, .12
High Ethnic ID	-.31***	-.43, -.20	-.09*	-.16, -.01	-.30**	-.48, -.11	-.38***	-.57, -.24	-.22**	-.39, -.06	.00	-.15, .16

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification. Analyses control for age, gender, income, education, and political conservatism.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Supplemental Table 1. Interactions between Contact Quantity and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Predicting Outgroup Attitudes and Support for Racial Policies Controlling for all Other Interaction Effects

	Old Fashioned Anti-Black Racism			*Symbolic Racism*			*Zero-Sum Competitive Beliefs*			*Racial Stereotyping*		
	b	*b**	95% CI	*b*	*b**	95% CI	*b*	*b**	95% CI	*b*	*b**	95% CI
Step 1												
Contact Quantity	-.07**	-.13	-.12, -.02	.02	.06	-.01, .06	-.12*	-.13	-.21, -.02	-.04	-.05	-.11, .03
SDO	.42***	.51	.31, .54	.19***	.29	.13, .26	.43***	.31	.24, .61	.51***	.43	.37, .64
RWA	.03	.04	-.05, .11	.17***	.30	.10, .25	.18*	.15	.01, .34	.05	.05	-.10, .19
NFC	.03	.03	-.05, .11	.03	.04	-.03, .08	.18*	.12	.03, .33	.02	.02	-.11, .15
Ethnic Identification	.10**	.15	.04, .15	.00	.01	-.05, .05	.08	.08	-.03, .20	.10*	.11	.01, .19
R^2		.32			.46			.21			.24	
Step 2												
Contact Quantity	-.07**	-.13	-.12, -.03	.03	.06	-.01, .06	-.12*	-.13	-.21, -.03	-.04	-.05	-.11, .03
SDO	.42***	.50	.32, .52	.20***	.30	.14, .26	.40***	.29	.24, .56	.51***	.43	.37, .64
RWA	.01	.02	-.07, .09	.18***	.30	.10,.25	.16†	.13	-.00, .31	.05	.05	-.01, .19
NFC	.05	.05	-.03, .13	.02	.03	-.03, .08	.21**	.14	.07, .35	.03	.02	-.11, .16
Ethnic Identification	.10**	.15	.04, .16	.00	.01	-.04, .05	.07	.07	-.04, .19	.10*	.11	.01, .19
SDO x Contact Quantity	-.09**	-.18	-.14, -.04	.02	.06	-.01, .05	-.14**	-.17	-.10, .06	-.01	-.01	-.08, .06
RWA x Contact Quantity	.01	.01	-.02, .04	.01	.04	-.02, .05	-.02	-.03	-.22, -.05	.01	.02	-.05, .07
NFC x Contact Quantity	-.03	-.06	-.08, .01	-.00	-.00	-.04, .04	.07	.08	-.03, .17	-.01	-.01	-.09, .07
Ethnic ID x Contact Quantity	-.03*	-.09	-.06, -.00	.00	.00	-.03, .03	-.04	-.06	-.10, .03	-.02	-.04	-.07, .04
R^2		.37			.47			.24			.24	
R^2 change		.05			.01			.23			.00	

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification. Analyses control for age, gender, income, education, and political conservatism
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Supplemental Table 1 Ctd. Interactions between Contact Quantity and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Predicting Outgroup Attitudes and Support for Racial Policies Controlling for all Other Interaction Effects

	Racial Profiling			*Affirmative Action Support*		
	b	*b**	95% CI	*b*	*b**	95% CI
Step 1						
Contact Quantity	-.06	-.06	-.15, .02	-.03	-.04	-.10, .05
SDO	.36***	.24	.19, .53	-.10	-.08	-.23, -.06
RWA	.49***	.38	.33, .65	-.19**	-.19	-.33, .04
NFC	-.14	-.08	-.30, .03	-.06	-.05	-.19, .07
Ethnic Identification	.12*	.11	.01, .24	.10†	.11	-.00, .20
R^2		.40			.16	
Step 2						
Contact Quantity	-.06	-.06	-.15, .02	-.03	-.04	-.10, .05
SDO	.37***	.24	.21, .53	-.09	-.08	-.22, .04
RWA	.48***	.37	.32, .64	-.20**	-.20	-.34, -.07
NFC	-.13	-.08	-.29, .03	-.05	-.04	-.19, .08
Ethnic Identification	.12*	.10	.00, .23	.11*	.12	.00, .21
SDO x Contact Quantity	-.02	-.03	-.10, .06	-.05†	-.08	-.11, .01
RWA x Contact Quantity	.05	.06	-.04, .13	.01	.01	-.06, .07
NFC x Contact Quantity	.04	.04	-.05, .14	-.06	-.08	-.14, .02
Ethnic ID x Contact Quantity	-.01	-.02	-.08, .06	-.01	-.01	-.06, .05
R^2		.41			.18	
$R^{2\ change}$		.01			.02	

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification.
Analyses control for age, gender, income, education, and political conservatism.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Supplemental Table 2. Simple slopes for Significant Interactions Between Contact Quantity and Identity-based, Ideological, and Cognitive Style Individual Difference Variables Controlling for all Other Interaction Effects

	Old-Fashioned Anti-Black Racism		*Symbolic Racism*		*Zero-Sum Competitive Beliefs*		*Racial Stereotyping*		*Racial Profiling*		*Affirmative Action*	
Social Dominance Orientation	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI	*b*	95% CI
Low SDO	.02	-.03, .07	.00	-.05, .05	.03	-.23, .03	-.03	-.13, .06	-.04	-.17, .09	.03	-.08, .13
Mean SDO	-.07**	-.12, -.03	.03	-.01, .06	-.12*	-.21, -.03	-.04	-.11, .03	-.06	-.15, .02	-.03	-.10, .05
High SDO	-.17***	-.26, -.08	.05*	.00, .10	-.27***	-.28, -.00	-.05	-.16, .07	-.09	-.21, .03	-.09†	-.18, .01
Right-Wing Authoritarianism												
Low RWA	-.08**	-.14, -.02	.01	-.04, .06	-.10	-.11, .16	-.05	-.16, .05	-.12*	-.24, -.00	-.04	-.16, .09
Mean RWA	-.08**	-.12, -.03	.03	-.01, .06	-.12*	-.21, -.03	-.04	-.11, .03	-.06	-.15, .02	-.03	-.10, .05
High RWA	-.07*	-.12, -.01	.04	-.02, .11	-.14*	-.40, -.13	-.03	-.14, .08	-.00	-.15, .14	-.02	-.12, .07
Need for Closure												
Low NFC	-.04	-.10, .02	.03	-.02, .07	-.19**	-.31, -.07	-.03	-.14, .07	-.11†	-.23, .02	.03	-.08, .15
Mean NFC	-.07**	-.12, -.03	.03	-.01, .06	-.12*	-.21, -.03	-.04	-.11, .03	-.06	-.15, .02	-.03	-.10, .05
High NFC	-.10**	-.17, -.04	.02	-.03, .07	-.05	-.20, .10	-.05	-.16, .06	-.02	-.15, .11	-.09†	-.19, .01
Ethnic Identification												
Low Ethnic ID	-.03	-.08, .03	.03	-.03, .08	-.07	-.21, .07	-.02	-.12, .09	-.05	-.18, .08	-.02	-.12, .08
Mean Ethnic ID	-.07**	-.12, -.03	.03	-.01, .06	-.12*	-.21, -.04	-.04	-.11, .03	-.06	-.15, .02	-.03	-.10, .05
High Ethnic ID	-.12**	-.19, -.05	.03	-.02, .07	-.17**	-.29, -.05	-.07	-.17, .04	-.08	-.20, .04	-.04	-.16, .08

Note. 95% Confidence Intervals refer to unstandardized coefficients. SDO = Social Dominance Orientation; RWA= Right-Wing Authoritarianism; NFC= Need for closure; Ethnic ID= Ethnic Identification. Analyses control for age, gender, income, education, and political conservatism.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Footnotes

[1] This lower reliability will attenuate relations somewhat, but falls within the range for self-report personality scales of similar brevity (cf. Costa & McCrae, 1992, Table 5), especially for openness-relevant facet scales related to actions (e.g., McCrae, Kurtz, Yamagata, & Terracciano, 2011, Table 2), relevant to NFC.

[2] The pattern of results was highly similar when these covariates were not included in our analyses.

[3] Conclusions did not differ when we kept these cases in the main analyses.

[4] Results yielded the same conclusions when we log-transformed Old-fashioned anti-Black racism to account for its non-normality.

[5] We also conducted these analyses for each individual difference variable alone, without including controls for any of the other variables (approximating past approaches). We observed several differences compared to the main analyses. Specifically, with respect to our interaction effects, RWA and NFC each interacted significantly with contact quality to predict anti-Black racism when examined alone. Similarly, SDO and NFC each interacted significantly with contact quality to predict racial stereotyping when examined alone. This highlights the importance of controlling for inter-related individual difference variables as per our main analyses.

[6] Multicollinearity is a potential concern when conducting regression analyses with a set of inter-correlated predictors. However, our analyses revealed that this was not a concern here, with the variance inflation factor for all predictors under 2, well beneath the recommended cut-off of 10 (Kutner, Nachtsheim, & Neter, 2004).

[7] For old-fashioned anti-Black racism, an argument could be made that the results for LPs reflect a floor effect, in that LPs high on contact exhibit very low levels on these old-fashioned racism items. Thus, for this variable, the interaction effects should be interpreted with some caution. This potential does not, however, negate the main point that HPs, across a number of individual difference variables, show improved attitudes on this and other variables as a function of positive contact.

[8] We focused in this work on contact quality given prior work suggesting that contact quality (*vs.* quantity) has a bigger impact on outgroup attitudes (e.g., Brown & Hewstone, 2005). We note, however, that our conclusions hold when controlling for contact quantity (assessed by asking participants two items adapted from Voci and Hewstone, 2003: "Please indicate the amount of contact you have with Black/African Americans", and "How frequently do you have contact with Black/African Americans?" These items were answered on 1-7 scales, the endpoints for which were 'No contact at all'/ 'A great deal of contact' for the first item and 'Never'/'Very often' for the second item (α= .95). Results examining all of our hypotheses using contact quantity rather than quality can be found in the supplemental materials. Contact quantity was uniquely associated only with lower old-fashioned anti-Black racism and lower zero-sum competitive beliefs. These benefits were observed among HPs across all indicators (with that contact quantity was not significantly associated with lower zero-sum competitive beliefs among those higher in NFC).