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INTERPERSONAL RELATIONS AND GROUP PROCESSES

Why Do Interracial Interactions Impair Executive Function? A Resource Depletion Account

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Three studies investigated the veracity of a resource depletion account of the impairment of inhibitory task performance after interracial contact. White individuals engaged in either an interracial or same-race interaction, then completed an ostensibly unrelated Stroop color-naming test. In each study, the self-regulatory demands of the interaction were either increased (Study 1) or decreased (Studies 2 and 3). Results revealed that increasing the self-regulatory demands of an interracial interaction led to greater Stroop interference compared with control, whereas reducing self-regulatory demands led to less Stroop interference. Manipulating self-regulatory demands did not affect Stroop performance after same-race interactions. Taken together, the present studies point to resource depletion as the likely mechanism underlying the impairment of cognitive functioning after interracial dyadic interactions.

Keywords: interracial contact, self-regulation, executive control, resource depletion, prejudice concerns

Interracial interactions are becoming increasingly common in contemporary U.S. society. Opportunities to engage in contact with individuals from different racial groups present themselves in any number of arenas, including the workplace, schools, health clubs, and shopping centers. Research suggests, however, that interactions with individuals from different racial groups can be distressing (e.g., Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Devine & Vasquez, 1998; Ickes, 1984; Stephan & Stephan, 2001). For instance, several studies have shown that interracial interactions induce threat, as indexed cardiovascularly, in members of nonstigmatized groups (e.g., Blascovich et al., 2001; Mendes, Blascovich, Lickel, & Hunter, 2002). During interactions with Black confederates, White individuals revealed cardiac responses associated with threat (e.g., increased ventricular contractility, little change in cardiac output, and increased total peripheral resistance; Blascovich et al., 2001, Experiment 3; Mendes et al., 2002). By contrast, when communicating with a White confederate—a relatively nonthreatening situation—White individuals revealed the constellation of physiological responses indicative of feeling challenged, rather than threatened.

In addition to being distressing, interracial interactions have recently been found to impair performance on a task requiring response inhibition, especially for individuals who harbor relatively high levels of racial bias (Richeson & Shelton, 2003). Specifically, White individuals performed worse on the Stroop color-naming paradigm—a measure of response inhibition—after interacting with a Black confederate, compared with after interacting with a White confederate, and the extent of subsequent impairment was moderated by individuals' level of automatic racial bias. Richeson and Shelton (2003) hypothesized that the impact of interracial contact on cognitive functioning that emerged in their work could be attributable to resource depletion (Engle, Conway, Tuholski, & Shisler, 1995; Muraven & Baumeister, 2000). According to models of resource depletion, executive attention, including inhibitory ability, is a limited resource (Engle, 2002). Engagement in one task that requires executive attention (e.g., self-regulation) impairs performance on a subsequent task tapping the same resource (Baumeister, Muraven, & Tice, 2000; Engle et al., 1995). Considered in this vein, interracial contact impairs Stroop performance because individuals engage in self-

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regulation during the interaction, which leaves them temporarily depleted of executive attentional capacity.

There is some preliminary evidence in support of this resource depletion account. For instance, examination of the videotapes from Richeson and Shelton (2003) revealed that the extent to which individuals appeared to be controlling their behavior during interracial interactions (e.g., the absence of fluid movement) predicted their subsequent impairment on the Stroop task. Moreover, using functional magnetic resonance imaging technology, Richeson et al. (2003) found that the same White participants who were most disrupted on the Stroop task after an interaction with a Black individual also revealed heightened neural activity in brain regions thought to underlie executive control in response to faces of Black individuals. In other words, the individuals for whom cognitive control brain regions were most active during the presentation of Black faces were also most likely to be impaired on an inhibitory response task after an actual interracial interaction.

Although these data are compelling, the findings stem from correlational procedures (e.g., mediational analyses) and do not provide the most stringent test of the resource depletion mechanism. In other words, our previous studies did not directly examine the critical role of self-regulation in the manifestation of these postcontact inhibitory impairment effects. The primary aim of the present work was to provide such experimental evidence. To that end, in three studies, we manipulated the need for participants to engage in self-regulation during interracial interactions, and examined subsequent performance on an inhibitory response task. According to the resource depletion account, self-regulation is critical to the emergence of the inhibitory task performance impairment. Consequently, manipulating the self-regulatory demands of the interaction should directly impact subsequent inhibitory task performance. The three experiments reported herein were designed to examine this hypothesis.

Study 1

The primary purpose of Study 1 was to investigate whether increasing the self-regulatory demands of an interracial interaction would negatively impact inhibitory task performance after the interaction, consistent with the predictions of the resource depletion account. In order to increase the self-regulatory demands of the interaction, we drew on previous research examining the role of self-regulation in intergroup relations (e.g., Amodio et al., 2004; Monteith, 1993).

Self-Regulation in Intergroup Relations

There is mounting evidence to suggest that one primary reason individuals engage in self-regulation is to combat the expression of prejudice (e.g., Devine, 1989; Dovidio & Gaertner, 1998; Monteith, 1993; Monteith, Ashburn-Nardo, Voils, & Czopp, 2002; von Hippel, Silver, & Lynch, 2000; Vorauer, Hunter, Main, & Roy, 2000). Because there is a pervasive social norm in the U.S. that it is unacceptable to be prejudiced, most individuals are concerned about behaving in nonprejudiced ways, particularly in public settings (Crandall, Eshleman, & O'Brian, 2002; Dunton & Fazio, 1997; Gaertner & Dovidio, 1986; Monin & Miller, 2001; Plant & Devine, 1998; Shelton, 2003). In order to avoid being perceived as prejudiced, that is, individuals carefully monitor their thoughts, feelings, and behaviors (Devine & Monteith, 1993; Dovidio, Kawakami, & Gaertner, 2002; Gaertner & Dovidio, 1986). For instance, research suggests that for members of dominant racial groups, interracial interactions are especially likely to heighten concerns about appearing prejudiced (Vorauer et al., 2000) and to prompt efforts to reduce the likelihood of doing so (Plant, 2001).

Moreover, recent theoretical work by Devine, Monteith, and colleagues (e.g., Devine & Monteith, 1993) argues that the self-regulation of prejudice is critical to the prejudice reduction process. They find that confronting people who endorse egalitarian values with discrepancies between those values and their actual behavior leads to the reduction of bias in their subsequent behaviors (Monteith, 1993). Furthermore, building on Gray's neuropsychological model of motivation and learning (see, e.g., Gray, 1987), Monteith (1993) proposed that the critical link between prejudice discrepancies and the reduction of bias is the engagement of self-regulatory processes. Specifically, Monteith (1993) argued that prejudice-related discrepancies (e.g., mistaking a Black woman in a department store for a salesperson) lead individuals to direct greater attention to relevant stimuli (i.e., the Black woman, the context of a department store), as well as to monitor their current behaviors for the presence of bias, in order to avoid any potentially prejudiced behaviors in the future. In other words, this work suggests that prejudice-related discrepancies initiate self-regulation (see also Amodio et al., 2004; Monteith et al., 2002). Over time, these individual experiences with prejudice discrepancies and the resultant self-regulatory processes are thought to generate associations between cues to the potential for bias (e.g., the presence of a Black woman in a department store) and the need to monitor one's thoughts and behaviors—that is, the need to engage in self-regulation (Monteith et al., 2002). By extrapolation, therefore, this work suggests that on some occasions, the presence of a Black individual may be a sufficient cue to initiate the self-regulation of thoughts and behaviors.

On other occasions, however, research suggests that more explicit cues to the presence of prejudice may be necessary in order to lead to a reduction in bias. Similar to research examining the impact of prejudice-discrepancies on the subsequent expression of bias, research in which individuals are provided with feedback about their prejudice level also demonstrates that concerns about prejudice often result in the reduction of racial bias (Dutton & Lake, 1973; Dutton & Lennox, 1974). For instance, people who were led to believe that they responded in a racially biased way to a series of slides subsequently donated more money to a Black panhandler than individuals who were not led to believe that they responded to the slides with racial bias (Dutton & Lake, 1973). Considered in tandem with the work of Monteith, Devine, and colleagues, these studies suggest that prejudice feedback is likely to heighten concerns about appearing prejudiced during interracial interactions and, consequently, instigate the self-regulation of thoughts and behaviors during the interaction. Because regulating thoughts, feelings, and behavior depletes executive attentional resources, according to resource depletion theory, this work yields the prediction that individuals who harbor prejudice concerns during interracial interactions will underperform on tasks requiring executive attentional capacity (such as the Stroop color-naming task) after interracial interactions. The present study examined this prediction.

Study Overview and Predictions

In order to examine the effect of prejudice feedback on inhibitory task performance after interracial contact, we first brought White participants into the lab and had them complete a computer-based assessment of automatic racial bias (i.e., the Implicit Association Test [IAT]; Greenwald, McGhee, & Schwartz, 1998) that was described to them as a word categorization task. Afterward, participants were provided false feedback about their performance. For a subset of participants, the feedback was designed to lead them to believe that they might be "more prejudiced than they think they are" just prior to engaging in an interaction with either a Black or a White individual. A control group of participants, by contrast, was provided with similarly negative feedback about their performance that did not explicitly mention prejudice. Next, participants engaged in a brief interaction with either a Black or a White confederate, ostensibly as part of a separate study. After the interaction, participants completed a task that requires the inhibition of prepotent responses, namely, the Stroop color-naming task. On the basis of research reviewed previously, we formed the following predictions:

Hypothesis 1: In replication of Richeson and Shelton (2003), we predicted that participants would reveal greater impairment on the Stroop task after interracial, compared with same-race, dyadic interactions.

Hypothesis 2: Participants who received the prejudice feedback prior to an interracial interaction were expected to reveal greater impairment on the Stroop task, compared with participants who received the performance feedback. Prejudice feedback and performance feedback were not expected to generate differential Stroop performance after same-race interactions.

Method

Participants

Sixty White American undergraduates (40 female) consented to participate in this study for partial course credit. Participants were randomly assigned to interact with either a White or a Black confederate, in either the experimental (prejudice concerns) or control (performance concerns) feedback condition. Thus, the design was a 2 (confederate race: Black, White) × 2 (feedback: prejudice concerns, performance concerns) factorial.

Procedure

Participants were met by a White experimenter who took them to a laboratory testing room where they began a study presumably examining "serial cognition—the influence of one cognitive task on a subsequent task when there is a delay between the two." Similar to the procedures described in Richeson and Shelton (2003), the first cognitive task was the Implicit Association Test (IAT; Greenwald et al., 1998), which served to assess automatic racial bias, as well as to administer the experimental manipulation of prejudice concerns (described further in the next section). Immediately after delivering the feedback, the experimenter took participants to a second room where they engaged in an ostensibly unrelated session with either a Black experimenter or a White experimenter. Two Black and two White experimenters were used as confederates to ensure generalizability. During the delay task, participants were asked to provide their opinions on several topics, one of which was race-related (e.g., campus diversity), and were videotaped while doing so. The videotaping session lasted approximately 8 min. Afterward, participants were met by the original experimenter and taken back to the original testing room, where they performed a Stroop (1935) color-naming test that measured inhibitory performance.

After the Stroop task, participants completed a final questionnaire on which they reported, on a 7-point Likert-type scale, the extent to which they were distracted while taking the Stroop task. This item was included in order for us to ascertain whether our experimental manipulations might have led participants to pay less attention to the Stroop task because they were ruminating about the interaction. Evidence that participants were ruminating about the interaction during the Stroop task would undermine the resource depletion account because the effect of the interaction on Stroop interference might be due to divided attention rather than resource depletion. In other words, if attention during the Stroop is focused on the interaction, then the impairment of Stroop performance could be due to the fact that participants are involved in two tasks (thinking about the interaction and the Stroop), rather than resource depletion. In other words, engaging in a second task at the same time as the Stroop would also undermine performance in a manner similar to that predicted by resource depletion. After the final questionnaire, participants were thoroughly debriefed about the false feedback they received and the larger aims of the study, probed for suspicion, then released.

As mentioned previously, in order to manipulate prejudice concerns, participants were given false feedback about their performance on the IAT. Specifically, participants in the prejudice concern condition were told, "Several studies have used this task to study racial bias. These studies show that most people are more prejudiced than they think they are." By contrast, participants in the performance concerns, control condition were told, "Several studies have used this task to study category associations. These studies show that most people perform worse than they think they did." After the feedback, participants engaged in either an interracial or same-race interaction. Similar to the logic of the research reviewed previously, the prejudice feedback was expected to promote self-regulation during the subsequent interaction, particularly when the confederate was a Black individual. In accordance with resource depletion theory, consequently, this increase in self-regulatory effort was expected to undermine subsequent performance on the Stroop task.

Measures

IAT. The IAT measures automatic associations and has been used in numerous studies to assess automatic evaluations of social groups (see Greenwald et al., 1998 for details). The IAT used in the present study required participants to categorize "White" names, "Black" names, positive words, and negative words as quickly as possible by pressing one of two marked response keys. In one block of 40 trials, "White" names (e.g., Josh) and positive words shared a response key, and "Black" names (e.g., Jamal) and negative words shared a key (White+/Black− phase). In another block of 40 trials, the associations were reversed—White with negative, and Black with positive (White−/Black+ phase). These two critical blocks were presented to participants in counterbalanced order. The difference between response latencies during the White+/Black− phase and latencies during the White−/Black+ phase provided our index of automatic racial bias—the degree to which an individual tends to hold relatively negative associations regarding Blacks.

Stroop. The Stroop task in the present study was conducted with a color-coded four-button response box. Instructions explained that participants were to report, as quickly as they could, the correct color of a stimulus word that was itself the name of a color (e.g., *red*), or a string of *x*s, by pressing the appropriate key on the response box. Color names or control *x*s appeared on the screen one at a time, in one of the following four colors: yellow, red, green, or blue. Each word or control stimulus appeared for a maximum of 2,000 ms, preceded by a fixation cross (+). The intertrial interval was 1,500 ms. The task consisted of 32 practice trials followed by

10 blocks of 12 trials each, for a total of 120 experimental trials. *Incompatible* trials were those in which the color name appeared in a color other than its semantic meaning (e.g., *red* in blue type). *Control* trials, in contrast, were those in which the "xxxx" string appeared in blue type. Interference scores were calculated by subtracting latencies associated with control trials from latencies associated with incompatible trials.

Results and Discussion

Consistent with the procedures detailed in Richeson and Shelton (2003), all Stroop latencies greater than 2.5 standard deviations above the mean (i.e., times $>$ 2,000 ms) were recoded as 2,000 ms, and all latencies less than 200 ms were recoded as 200 ms. These trimmed reaction times (RTs) were then log-transformed in order to better approximate normality, prior to averaging according to type of trial (i.e., control, incompatible). For ease of presentation, however, the untransformed values are presented in the figures and main text. Stroop interference scores were calculated by subtracting mean transformed RTs for responses to control trials from mean transformed RTs for responses to incompatible trials. Greater values reflect greater Stroop interference, but worse task performance. In the present sample, Stroop interference scores ranged from -40.3 ms to $+376$ ms ($M = 109$). Similarly, following the scoring guidelines outlined in Greenwald et al. (1998), all IAT latencies under 300 ms and over 3,000 ms were recoded and transformed, and then mean latencies for the White+/Black− phase were subtracted from mean latencies for the White−/Black+ phase for each participant in order to index their automatic racial bias. Greater values reflect greater racial bias. IAT bias scores in the present sample ranged from -308 ms to $+695$ ms, and mean IAT bias was reliably greater than zero ($M = 236$), $t(59) = 11.7$, $p < .0001$.

Preliminary analyses revealed that participant sex did not influence any of the results; hence, it was not examined further. Next, we conducted an analysis in which IAT bias scores, confederate race, feedback condition, and their interactions were entered into the general linear model as predictors of Stroop interference. The condition means are presented in Figure 1. Consistent with Hypothesis 1, results revealed a significant effect of confederate race, $F(1, 52) = 9.36$, $p < .005$. Participants who engaged in interracial interactions revealed greater Stroop impairment than participants who engaged in same-race interactions. Furthermore, and consistent with Richeson and Shelton (2003), the interaction between IAT bias scores and confederate race approached conventional levels of statistical significance, $F(1, 52) = 2.85$, $p = .10$. Similar to this previous work, IAT bias scores predicted Stroop interference after interracial dyads, $r(28) = .35$, somewhat better than Stroop interference scores after same-race dyads, $r(28) = -.04$.

The main effect of feedback condition was also reliable, $F(1, 52) = 4.08$, $p < .05$. Participants in the prejudice feedback condition revealed greater Stroop impairment than participants in the performance feedback condition. Furthermore, there was a nonsignificant trend for IAT bias to predict the Stroop impairment of participants in the performance feedback condition, $r(28) = .32$, better than that of participants in the prejudice feedback condition, $r(28) = -.01$; $F(1, 52) = 2.25$, $p = .14$. No other effects approached statistical significance.

Although the interaction between confederate race and feedback condition was not reliable, $F(1, 52) = 1.51$, $p > .22$, we conducted direct comparisons of the condition means in order to examine our a priori hypotheses. We first examined IAT bias, feedback condition, and their interaction as predictors of Stroop interference in separate analyses for interracial and same-race dyads. Results of

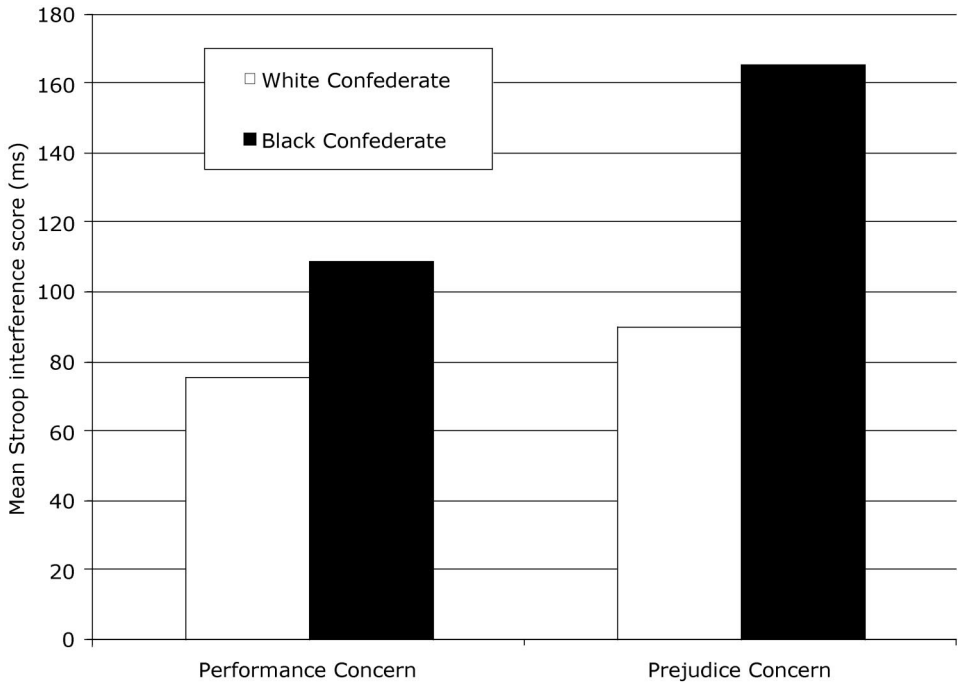

Figure 1. Mean Stroop inference by feedback condition and dyad racial composition.

the analysis of the interracial dyadic condition data revealed the aforementioned effect of IAT bias, $F(1, 26) = 4.16$, $p = .05$, as well as the main effect of feedback, $F(1, 26) = 5.33$, $p < .05$. As diagrammed in Figure 1 and consistent with Hypothesis 2, participants in the prejudice feedback condition for an interracial dyad revealed significantly greater Stroop interference than participants in the performance feedback condition for an interracial dyad. A similar analysis of the same-race dyadic condition data revealed that neither IAT bias, feedback condition, nor their interaction had any systematic impact on Stroop performance (all Fs < 1).

Furthermore, for each feedback condition, IAT bias scores, confederate race, and the interaction term were entered as predictors of Stroop interference in a general linear model analysis. Only the main effect of confederate race emerged in the prejudice feedback condition, $F(1, 26) = 7.07$, $p < .05$; Stroop interference was greater after interracial, compared with same-race, dyads. Analyses of the performance concerns condition revealed marginal effects of IAT bias, $F(1, 26) = 4.00$, $p = .055$; confederate race, $F(1, 26) = 2.43$, $p = .13$; and the interaction term, $F(1, 26) = 2.13$, $p = .16$. Albeit nonsignificant, the pattern of these results is consistent with the findings reported in Richeson and Shelton (2003). Specifically, Stroop interference tended to be greater after interactions with the Black confederate versus the White confederate, and IAT bias scores predicted the extent of impairment on the Stroop task after interracial, but not after same-race, dyads (see also the correlational analyses that follow). Considered as a whole, therefore, the results of Study 1 conform to predictions, suggesting that increasing the self-regulatory demands of an interracial interaction, through the heightening of prejudice concerns, negatively affects subsequent executive functioning.

Distraction Rather Than Depletion?

Recall that participants were asked to report the extent to which they were distracted on the Stroop task (on a 7-point scale), in order for us to ascertain whether distraction caused by our experimental manipulation might account for the results. We analyzed these ratings with the same analysis used for the Stroop interference scores. Only the main effect of feedback condition approached statistical significance, $F(1, 52) = 3.20$, $p = .08$, but the trend was in the opposite direction to that expected by a distraction account of these effects; participants in the performance feedback condition reported feeling more distracted during the Stroop task than participants in the prejudice feedback condition (Ms = 2.77 and 2.03). Moreover, the interaction between confederate race and feedback condition was far from reliable ($p > .80$), as was the main effect of IAT and all interactions between IAT bias and the experimental conditions. Thus, these data offer no reason to suspect that distraction during the Stroop task might be responsible for the present results. In other words, these distraction findings suggest that the primary results of Study 1 are unlikely to be the result of divided attention during the Stroop task rather than the depletion of executive attentional resources as a result of the regulation of thoughts, behavior, and/or anxiety during the interaction.

Correlations Between IAT Bias and Stroop Interference

Recall that in Richeson and Shelton (2003) and Richeson et al. (2003), IAT bias scores were positively correlated with Stroop interference scores after interracial, but not after same-race, dyadic interactions. In order to explore the extent to which this pattern also emerged in the present work, we calculated the Pearson product–moment correlations between IAT bias scores and Stroop interference within each of the four experimental conditions. Consistent with previous research, in the prejudice feedback condition, IAT bias and Stroop interference scores were significantly correlated for the interracial dyads, $r(13) = .51$, $p = .05$, but not for the same-race dyads, $r(13) = .12$, $p < .70$. In the prejudice-feedback condition, however, there was a small positive correlation between IAT bias and Stroop interference after interracial dyads, $r(13) = .19$, $p < .50$, but a small, negative correlation after same-race dyads, $r(13) = -.21$, $p \leq .50$.

Summary of Primary Results

Taken together, the results of Study 1 provide compelling experimental evidence in support of the resource depletion account of the effect of interracial contact on executive function. Specifically, increasing the self-regulatory demands of an interracial interaction through the activation of concerns about prejudice moderated the impact of the contact on subsequent task performance, even after controlling for the effects of racial bias. Previous research found that prejudice feedback heightens concerns about appearing prejudiced (e.g., Dutton & Lake, 1973), and that such concerns invoke self-regulatory effort (e.g., Monteith, 1993). Consistent with resource depletion theory finding that self-regulation impairs performance on subsequent tasks that require executive attentional resources, we found that prejudice feedback generated greater inhibitory impairment after interracial dyads than more neutral performance feedback. In Study 2, we examined the resource depletion mechanism further by investigating the impact of reducing the self-regulatory demands of an interracial interaction on subsequent inhibitory task performance.

Study 2

The results of Study 1 were supportive of a resource depletion account of the effect of interracial contact on executive function, revealing the critical role of self-regulation. The purpose of Study 2 was to investigate this mechanism further by reducing the self-regulatory demands of the interaction and observing the effect on subsequent executive dysfunction. Similar to the logic of Study 1, we expected that reducing the self-regulatory demands of an interracial interaction would attenuate the negative impact of the interaction on subsequent inhibitory task performance.

Reducing Self-Regulatory Demands

Similar to Study 1, one approach to reducing the self-regulatory demands of interracial contact used in the present study was through the alleviation of concerns about appearing prejudiced. Given that concerns about prejudice have been found to increase self-regulation (Monteith, 1993), it follows that reducing such concerns should similarly reduce the extent to which individuals engage in self-regulation. In addition, we also drew upon research highlighting aspects of intergroup interactions that promote self-regulation other than prejudice concerns, in order to devise a manipulation to reduce the self-regulatory demands of interracial

interactions. For instance, *intergroup anxiety theory* (IA: Stephan & Stephan, 1985) argues that intergroup interactions require self-regulation, in part, because of the uncertainty of the situation. Specifically, this work suggests that interactions with outgroup members tend to be relatively novel and unfamiliar, and therefore present uncertainty regarding how to negotiate them (Crocker, Major, & Steele, 1998; Hamilton & Bishop, 1976).

Similarly, *anxiety/uncertainty management theory* (Gudykunst, 1995; Gudykunst & Shapiro, 1996) asserts that interactions in which the behavioral expectancies of the interactants are ambiguous or hard to predict increase anxiety and uncertainty for participants. Gudykunst et al. argue, furthermore, that individuals are especially likely to feel uncertain about their behavior during initial interactions with members of a different sociocultural group—the very context of the interracial contact investigated in the present work. Such uncertainty often leads members of dominant social groups to fear that they will make inappropriate remarks (Hebl, Tickle, & Heatherton, 2000) or that they will reveal latent prejudice (Devine & Vasquez, 1998; Dovidio & Gaertner, 1998) during encounters with outgroup members. Taken together, this work suggests that reducing uncertainty regarding what to say or how to behave during interracial contact experiences should reduce the self-regulatory demands associated with those interactions (Olson, Roese, & Zanna, 1996). According to the resource depletion mechanism, therefore, reducing the uncertainty of interracial interactions should also reduce the extent to which performance on subsequent inhibitory response tasks is impaired.

Study Overview and Predictions

The present study examined the impact of reducing the self-regulatory demands of an interracial interaction on subsequent inhibitory task performance. To investigate this question, White participants came into the lab and engaged in a brief interaction with either a Black or a White confederate, during which they were asked to comment on racial profiling. In order to reduce the self-regulatory demands of the interaction, half of the participants were told that we wanted to standardize the responses and were therefore providing them with a scripted opinion about racial profiling.[1] The script was expected to reduce the self-regulatory demands of the interaction in several ways. First, participants' concerns about revealing prejudice during the interaction were allayed somewhat by allowing them to attribute any comments they made that could be construed as prejudiced to the script, rather than to their actual opinion. Furthermore, the confederate handed the script to participants in order to assure them, relatively subtly, that the confederate knew that their comments were not necessarily representative of their actual opinions. A script manipulation similar to the one used in the present study has been found to reduce the threat associated with potentially being perceived as prejudiced (Goff, Steele, & Davies, 2003). In addition, providing participants with a scripted response reduced both the uncertainty of the interaction as well as the cognitive effort associated with generating comments on one's own.

The second half of the participant sample was provided with a sheet of paper that simply informed them that they would be commenting on racial profiling and that they should take a few minutes to think about their opinions. Consequently, similar to participants in our previous research and in Study 1, participants in this condition were "at risk" for expressing opinions that could be perceived as being prejudiced, and were left to construct responses on their own, making the interaction less certain. Consequently, participants in the no-script, control condition needed to engage in self-regulation relatively more than participants in the script condition in order to navigate the interaction. After the interaction, participants' inhibitory performance was assessed with the Stroop color-naming task. We formed the following predictions for the effects of the experimental manipulations on Stroop performance:

> *Hypothesis 1:* In replication of Richeson and Shelton (2003), we predicted that participants in the no-script, control condition would reveal greater impairment on the Stroop task after an interracial, compared with a same-race, interaction. Participants in the script condition, however, were not expected to reveal differential Stroop impairment after interracial, compared with same-race, interactions.
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> *Hypothesis 2:* Participants with a script for the interracial dyad were expected to reveal less Stroop impairment after the interaction, compared with participants who negotiated the interracial interaction without the script.

Method

Pilot Work

We conducted a pilot study in order to be confident that individuals in our population would be likely to perceive a scripted interracial interaction to be less demanding of self-regulatory effort, compared with a similar interaction without a provided script. Fifteen White undergraduates were asked to imagine being videotaped making comments about racial profiling in front of a Black individual. Participants imagined this scenario once with a provided script on which to base their comments, and a second time without the script (the order randomized across participants). After imaging each scenario, participants were asked to assess how concerned they would be about appearing prejudiced and how difficult it would be to negotiate the interaction. Specifically, they were asked, "To what extent would you be concerned about appearing prejudiced during the interaction?", "To what extent would you attempt to control your thoughts in order to avoid saying something prejudiced?", and "To what extent would you attempt to control your behavior in order to avoid appearing prejudiced?". Participants recorded their responses on 7-point scales anchored by 1 (*not at all*) and 7 (*very much*).

Consistent with predictions, as well as with the previous research conducted by Goff et al. (2003), results revealed that compared with the no-script condition, the script condition was rated as triggering less concern about appearing prejudiced ($M_{diff} = -2.07$), $t(14) = 3.61$, $p < .005$; instigating less self-regulation of thoughts ($M_{diff} = -1.47$), $t(14) = 5.36$, $p < .0001$; and instigating less self-regulation of behavior ($M_{diff} = -1.0$), $t(14) = 3.24$, $p < .01$. These results suggest that the participants in the script condition should be relatively protected against the negative impact of interracial contact on Stroop performance.

Participants

Sixty-four White American undergraduates (41 female) consented to participate in this study for partial course credit. Participants were randomly assigned to interact with either a White or a Black confederate, in either the experimental (script) or control (no-script) condition.

[1] We thank P. Goff for helping with the creation of the script.

Procedure

The procedures were nearly identical to those described for Study 1. Specifically, participants were met by a White experimenter, who took them to a laboratory testing room, where they began a study presumably examining "serial cognition." Participants first took the racial attitude IAT (identical to that described in Study 1), then were taken to a second experimental room in order to help a second experimenter create stimulus materials for an ostensibly unrelated study. This videotaping session was described as a filler task between the two components of the serial cognition study.

The videotaping session constituted the interracial or same-race interaction. Specifically, either one of two Black or one of two White confederates served as the second experimenter during the videotaping session. This second experimenter (confederate) handed a closed folder to participants and asked them to read the information in preparation for the session, then left the room.[2] For half of the participants, the folder contained a scripted response entitled, "Perspectives on Racial Profiling." The sheet explained that participants were expected to use the script during the videotaping session, because it included the type of information that the experimenters needed for the study, but that they should not read the script verbatim. Recall that the script manipulation was intended to reduce participants' self-regulatory needs in three primary ways: (a) by allaying concerns about revealing prejudice during the interaction to either themselves or to the confederate, (b) by reducing the uncertainty of the interaction, and (c) by reducing the cognitive effort required to generate a response to the racial profiling question. By contrast, participants in the control condition simply received a blank sheet of paper with the same title, but without a prepared response. They were informed that they should take a minute or two to think of their opinions about racial profiling and that they should make some notes (a pen was provided in both conditions).

After a minute, the confederate returned to the room and asked participants if they were ready to begin the videotaping session. Next, participants were videotaped providing an opinion about racial profiling for the next 5 min. After the videotaping session, participants were retrieved by the original experimenter, then taken to the original testing room where they took the same Stroop task described in Study 1. Afterward, participants completed the same final questionnaire described for Study 1, then were debriefed and released.

Results

Both the IAT and Stroop data were trimmed and analyzed in the same manner reported for Study 1. Again, the values in the figures and main text are untransformed for ease of presentation. In the present study, Stroop interference scores ranged from −42.3 ms to +409 ms ($M = 103$), and IAT bias scores ranged from −44.3 ms to +764 ms ($M = 289$). Similar to Study 1, the mean IAT bias was statistically greater than zero, $t(63) = 17.6$, $p < .0001$.

Preliminary analyses revealed that participant sex did not influence the results, therefore, it was not considered further. Similar to the analyses outlined in Study 1, therefore, we first examined IAT bias scores, confederate race, script condition, and their interactions as predictors of Stroop interference, using a general linear model analysis. Unlike Study 1, there were no reliable effects of IAT bias. The only potential influence was a nonsignificant interaction with the script condition, $F(1, 56) = 2.50$, $p = .12$. Whereas IAT bias scores were positively related to Stroop interference for the no-script condition participants, $r(30) = .29$, they were negatively related to Stroop interference for the script condition participants, $r(30) = -.19$.

Consistent with predictions, the interaction between confederate race and script condition was statistically reliable, $F(1, 56) = 4.54$, $p < .05$, and not moderated by IAT bias ($F = 0$). The condition means are presented in Figure 2. In replication of Richeson and Shelton (2003) and consistent with Hypothesis 1, participants in the no-script, control condition revealed greater Stroop interference after interracial, compared with same-race, dyads, $F(1, 29) = 6.97$, $p = .01$. Participants in the script condition, however, revealed no differences in Stroop interference as a function of the race of the confederate, $F(1, 29) = 0.46$, *ns*. Consistent with Hypothesis 2, furthermore, participants in the script condition for an interracial dyad revealed less Stroop impairment than participants in the control condition for an interracial dyad, $F(1, 28) = 4.12$, $p = .05$. By contrast, providing a script for the interaction had no impact on the Stroop performance of participants who engaged in same-race interactions, $F(1, 30) = 0.40$, *ns*.

Distraction

Consistent with the results of Study 1, the experimental manipulations did not impact distraction during the Stroop task (all Fs < 1.7). Participants reported being no more distracted while taking the Stroop task in the control condition than in the script condition, irrespective of the race of the confederate. Similar to Study 1, this finding suggests that the present results are unlikely to be due to divided attention during this Stroop task, rather than resource depletion.

Correlations Between IAT Bias and Stroop Interference

Similar to Study 1, we calculated the correlation between IAT bias and Stroop interference in each experimental condition. Consistent with Richeson and Shelton (2003), the correlation between IAT bias scores and Stroop interference approached statistical significance in the no-script (control) condition for interracial dyads, $r(14) = .43$, $p = .10$, but not same-race dyads, $r(14) = .15$, $p < .60$. In the script condition, however, IAT bias scores were not particularly predictive of Stroop impairment for interracial dyads, $r(13) = -.07$, $p < .85$, but were modest predictors for same-race dyads, $r(15) = -.32$, $p < .25$. Specifically, the greater the IAT bias of participants in the script condition for a same-race dyad, the less impaired they were on the Stroop task afterward.

Discussion

The results of the present study suggest that reducing individuals' self-regulatory needs attenuated the extent to which they were impaired on a subsequent Stroop interference task. Specifically, providing individuals with a script for an interracial interaction reduced their subsequent impairment on the Stroop task. One alternative explanation for this finding, however, is the influence of the confederates' awareness of the participants' experimental conditions. Although we undertook efforts to keep the confederates blind to participant script condition, for instance, by

[2] We attempted to keep confederates blind to condition by having the script or blank page in a closed folder. Thus, participants believed that the confederates knew what condition they were in, but in reality, they did not. Over time, however, it is possible that confederates could guess which condition participants were in on the basis of their responses. Confederates were blind to the experimental hypotheses, however.

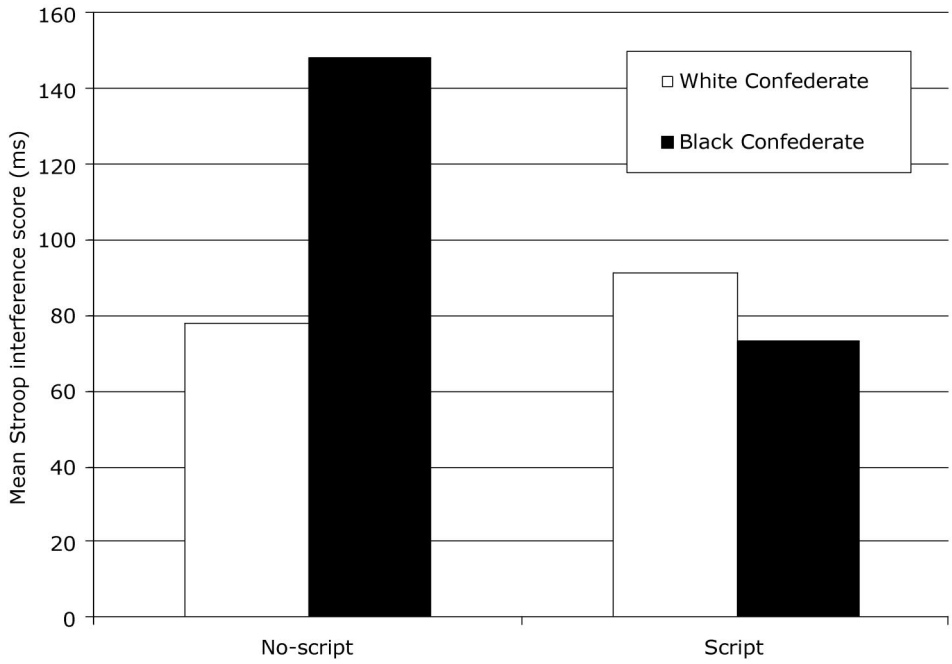

Figure 2. Mean Stroop inference by script condition and dyad racial composition.

keeping the script or blank page in a closed folder and by instructing participants to use the script as only a guide, after interacting with several participants it is possible that confederates became at least suspicious of each participant's condition. If confederates did become aware, it is possible that this awareness rather than participants' self-regulatory effort (or, more likely, some combination of the two) is responsible for the observed attenuation of Stroop impairment. Because we did not collect data on confederate awareness of condition, we simply do not know whether or not this is likely to be of any concern. Because of the rather limited and routine involvement of confederates in each condition, as well as their ignorance regarding the hypotheses of the study, however, we believe that confederate behavior is probably not the primary source of the observed effects.

Considered in tandem with the results of Study 1, the present findings provide additional evidence in support of the resource depletion account of the effect of interracial contact on subsequent cognitive functioning. In both studies, one route used to manipulate self-regulation was either to increase or decrease concerns about prejudice. We conducted Study 3 in order to examine the resource depletion mechanism further, using a different manipulation of self-regulatory demands. Specifically, Study 3 considered the effect of regulating anxiety on subsequent inhibitory task performance.

Study 3

Studies 1 and 2 offered convincing evidence to support the position that resource depletion underlies the impairment of inhibitory task performance after interracial interactions. These two studies relied on manipulations of prejudice concerns and interaction certainty to bolster or diminish self-regulatory demands. Study 3 sought to manipulate self-regulatory demands by reducing the need to regulate anxious arousal. Previous research has found that intergroup contact fosters physiological arousal, anxiety, and discomfort (e.g., Blascovich et al., 2001; Stephan & Stephan, 2001). Indeed, one aspect of successfully negotiating interracial interactions is controlling the expression of such anxious arousal. However, the regulation of emotion has been found to be cognitively demanding (e.g., Muraven & Baumeister, 2000; Richards & Gross, 1999, 2000). The more individuals attempt to suppress or regulate the expression of emotion during interracial interactions, in other words, the worse they should perform on a test of inhibitory task performance afterward. Consequently, undermining the need to regulate anxious arousal during interracial interactions should reduce postcontact executive depletion.

In order to examine this question, we relied on the classic literature on the misattribution of arousal paradigm (for a review, see Cotton, 1981). The misattribution paradigm involves the redirection of physiological arousal to a benign source, unrelated to factors thought to be critical to a psychological effect. It is important that, although the misattribution paradigm redirects arousal, it does not necessarily eliminate the arousal. Because of these facets, the paradigm has been used to clarify the role of arousal in various social psychological phenomena (e.g., Brodt & Zimbardo, 1981; Savitsky, Medvec, Charlton, & Gilovich, 1998; Zanna, & Cooper, 1974). For instance, research on cognitive dissonance has used the misattribution paradigm to show that anxious arousal is a necessary but insufficient factor to engender attitude change (Losch & Cacioppo, 1990; Pittman, 1975; Zanna & Cooper, 1974). Specifically, misattributing dissonance-related physiological arousal to an unrelated source, such as the anticipation of painful shocks (Pittman, 1975), a pill (Zanna & Cooper, 1974), or to a pair goggles (Losch & Cacioppo, 1990) failed to yield attitude change. Similarly, attributing social anxiety to a nonpsychological source

was found to successfully modify shy behavior (Brodt & Zimbardo, 1981).

Building on this tradition, Study 3 utilized the misattribution paradigm to reduce the need to regulate anxiety and examined the resultant effect on the impairment of inhibitory task performance following interracial contact. Specifically, White American participants were swayed to misattribute any anxiety they might feel during an interracial interaction to a benign, external source, for which there would be little reason to engage in self-regulation. Consistent with the resource depletion mechanism, we predicted that misattributing anxiety to an unrelated, benign source would buffer against the negative impact of interracial contact on inhibitory task performance. Specifically, we predicted that misattributing anxiety would alleviate the need to engage in self-regulation. Similar to the logic of Study 2, therefore, misattributing anxiety should attenuate the effect of interracial contact on inhibitory task performance. Thus, participants given the opportunity to misattribute anxiety prior to an interracial interaction were expected to perform no differently on a test of inhibitory functioning (i.e., the Stroop task) than participants who engaged in a same-race dyad. Participants who were not provided with the opportunity to misattribute their anxiety, however, were expected to perform worse on the Stroop task after interracial, compared with same-race, interactions.

Method

Participants

Sixty-eight White American undergraduates (47 female) consented to participate in this study for partial course credit. Participants were randomly assigned to interact with either a White or a Black confederate, in either the experimental (anxiety misattribution) or control (no-information) condition. Thus, the design was a 2 (confederate race: Black, White) × 2 (anxiety attribution condition: misattribution, control) between-subjects factorial.

Procedure

The procedure was nearly identical to Study 1. Thus, participants first took the racial attitude IAT[3], then were taken to a second experimental room in order to help a second experimenter create stimulus materials for an ostensibly unrelated study. Again, this videotaping session was described as a filler task. Similar to Study 1, participants were asked to provide their opinions on several topics for about 8 min. After the interaction, participants were met by the original experimenter, then performed a Stroop task identical to that described in the previous two studies. After the Stroop, participants completed a final questionnaire similar to the one described in Studies 1 and 2. Afterward, they were thoroughly debriefed about the aims of the study, probed for suspicion, and thanked for their time.

Manipulating Anxiety Attributions

Prior to the interaction, the confederate thanked participants for their help and informed them that the videotaping session would take only a few minutes. Participants in the misattribution condition were then provided with the additional information, "Several previous participants have found that this room makes them anxious because of the one-way mirror and the confined feel of the room." This information was expected to allow participants to misattribute any anxiety they felt about the interracial interaction to the room, thus reducing their need to suppress, regulate, or modulate its expression during the interaction. Participants in the control condition were given no additional information regarding previous participants' comfort or experiences. Participants then engaged in the interracial (Black confederate condition) or same-race (White confederate condition) interaction.[4]

Results

All Stroop latencies were trimmed and transformed as reported previously, and the means in the figures and main text are untransformed for ease of presentation. Again, Stroop interference scores were computed by subtracting mean transformed latencies for control trials from mean transformed latencies for incompatible trials for each participant. Stroop interference scores ranged from −26.0 ms to +352.9 ms ($M = 112$) in the present study. Preliminary analyses revealed that participant sex did not influence the results, thus it was not considered in the primary analyses. Furthermore, because of a programming error we were also unable to include the IAT bias scores in the primary analyses.[5] Thus, in order to examine our predictions, we conducted a 2 (confederate race: Black, White) × 2 (anxiety attribution condition: misattribution, control) analysis of variance on the transformed Stroop interference scores. The condition means have been plotted in Figure 3. In replication of Richeson and Shelton (2003), results revealed a main effect of confederate race, $F(1, 64) = 4.47$, $p < .05$. That is, participants who engaged in an interracial interaction revealed greater Stroop interference than participants who engaged in a same-race interaction.

Furthermore, the interaction between confederate race and attribution condition was also statistically reliable, $F(1, 64) = 4.34$, $p < .05$. Analyses of the simple effects revealed that whereas participants in the control condition performed worse on the Stroop task if they had engaged in an interracial, rather than a same-race, dyadic interaction $F(1, 32) = 7.10$, $p < .02$, participants in the misattribution condition performed no differently on the Stroop task after interracial and same-race dyads $F(1, 32) = 0.01$, *ns*. Moreover, results revealed that the interracial interaction negatively affected participants' Stroop performance unless they were allowed to attribute their anxiety, $F(1, 32) = 6.98$, $p < .02$. These results conform to hypotheses suggesting that reducing the self-regulatory demands of an interracial interaction reduces the subsequent impairment of executive attentional task performance. Considered in tandem with the findings of Studies 1 and 2, consequently, the present findings bolster the resource depletion account of the impairment of inhibitory task performance after interracial contact.

Similar to the previous two studies, we examined whether self-reported distraction during the Stroop might account for the observed performance effects. We conducted the same 2 × 2 analysis of variance of the distraction item. Again, there were no reliable effects (all Fs < 2). There was a nonsignificant trend for

[3] The IAT in Study 3 used photographs of Black and White individuals rather than names.

[4] Although confederates were not blind to condition, they were not aware of the hypotheses of the study.

[5] Because of a programming error in which IAT protocols were not counterbalanced across participants, the scores are unlikely to be reliable; thus, we did not use them in these analyses.

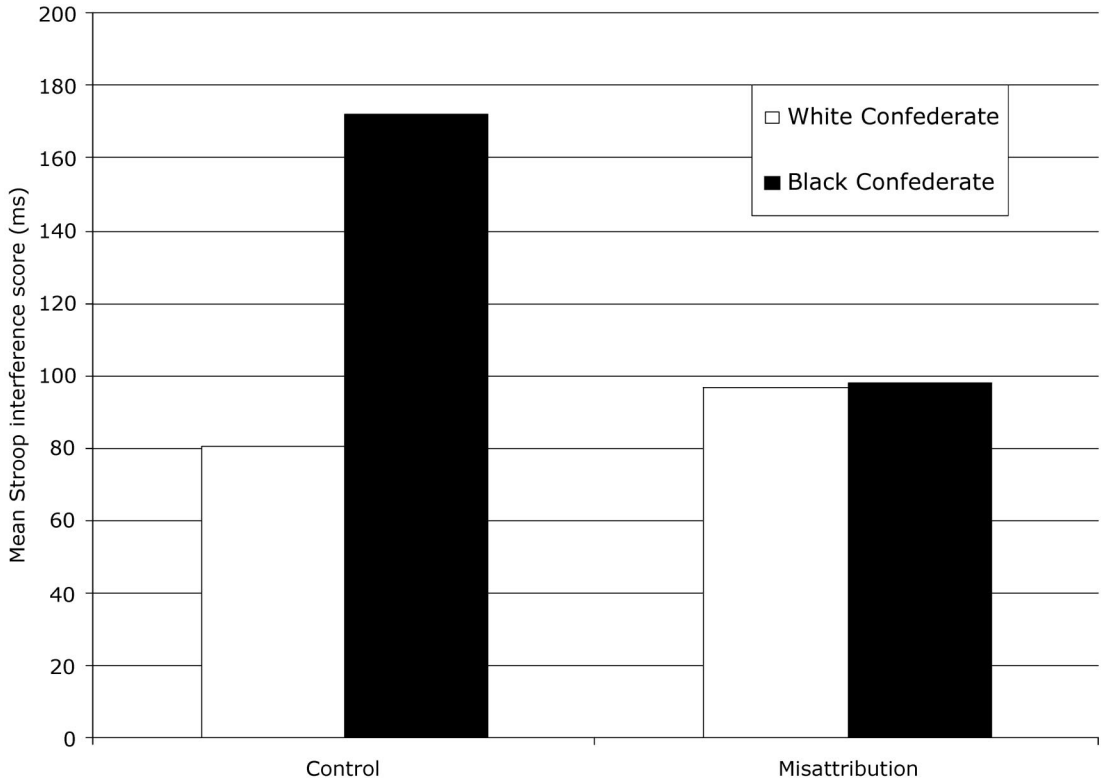

Figure 3. Mean Stroop inference by misattribution condition and confederate race.

participants to report greater distraction if they were in the control, rather than the misattribution, condition (respective *M*s = 2.65 and 2.15), $F(1, 64) = 1.79$, $p = .19$, but there was no evidence that this effect was differentially likely for participants of interracial dyads interaction ($F = 0.38$). Consequently, this finding suggests that the present results are unlikely to be due to divided attention during the Stroop task, rather than resource depletion.

Discussion

Similar to Study 2, the present findings suggest that reducing the self-regulatory demands of an interracial dyadic interaction undermines the temporary impairment of executive functioning. Specifically, reducing participants' need to regulate anxiety during an interracial interaction by providing them with an alternate attribution for the source of their anxiety resulted in less subsequent Stroop impairment than that generated by participants without the alternate attribution. Consequently, in addition to supporting the resource depletion mechanism, the findings of the present study also suggest that the impairment of executive function after interracial contact may be due, at least on some occasions, to anxiety individuals experience during the encounter. It is important to note, however, that although the misattribution paradigm implicates a role for anxiety in these processes, we did not measure anxiety during the interactions. Consequently, we do not know whether participants actually felt anxious during the interracial interactions as we suspect. Given the extant literature on intergroup anxiety (e.g., Stephan & Stephan, 1985), as well as research by Blascovich and colleagues finding physiological arousal during intergroup contact (e.g., Blascovich et al., 2001), however, it seems likely that participants did experience greater anxiety or some form of generalized negative affect during interracial, compared with same-race, interactions. Moreover, without actual measures of anxiety or arousal, it is unclear whether the misattribution opportunity reduced participants' anxious arousal or simply made it acceptable for them to reveal it during the interracial interactions. In either case, however, participants in the misattribution condition would need to suppress or otherwise regulate behavioral reactions to anxiety less than control participants. In other words, both the reduction of anxious arousal and the reduction of only the need to regulate the arousal because of a misattribution of its source support the resource depletion account of the effect of interracial contact on executive function. Future research, perhaps using physiological measures, is necessary to dissociate these alternatives, however.

General Discussion

Unlike any other social context, direct interpersonal contact with members of racial minority groups may encourage members of dominant racial groups to inhibit or even to actively suppress stereotypical beliefs, anxious reactions, or simply uncertainty regarding how to behave (Goff et al., 2003; Hebl et al., 2000; Plant, 2001; Vorauer & Kumhyr, 2001). Previous research suggests, however, that self-regulation can temporarily deplete cognitive resources, leading to an impairment of performance on a subsequent task requiring self-regulatory resources (e.g., Muraven & Baumeister, 2000). Taken together, this work suggests, and previ-

ous work has found, that interracial interactions impair performance on executive attentional tasks for members of dominant racial groups (Richeson & Shelton, 2003).

The present research sought to examine the veracity of the resource depletion account of the impairment of executive function by interracial contact. To that end, the present work directly tested the impact of manipulations of the self-regulatory demands of an interracial interaction on subsequent inhibitory task performance. Specifically, previous research suggests that individuals are especially likely to engage in self-regulation during interracial contact or judgment situations when they are concerned about their own prejudice level (Dutton & Lake, 1973; Monteith, 1993). When prejudice concerns are heightened, therefore, interracial contact should be especially depleting, and individuals should exit interracial interactions temporarily unable to perform optimally on tasks requiring executive attentional capacity. Consistent with this prediction, Study 1 found that participants who received prejudice-related feedback prior to an interracial interaction performed worse on the Stroop color-naming task than participants who received feedback about task performance, and compared with participants who engaged in same-race dyadic interactions.

By contrast, Study 2 sought to reduce the self-regulatory demands of an interracial dyadic interaction for White individuals by providing them with a prepared script by which to negotiate the interaction. The script was expected to reduce self-regulatory demands, as suggested by the pilot data, primarily by reducing concerns about appearing prejudiced and reducing uncertainty regarding the upcoming interaction. Compared with participants who were not provided with the script, scripted participants revealed less impairment on the Stroop task after interacting with a Black confederate, but not after interacting with a White confederate. Moreover, the script eliminated any difference in Stroop performance after interracial, compared with same-race, contact.

Study 3 also provided evidence that reducing the self-regulatory demands of interracial contact attenuates the depletion effect. Specifically, Study 3 manipulated the regulation of anxiety during interracial contact and examined subsequent inhibitory task performance. Considerable research suggests that intergroup interactions are often anxiety provoking for individuals (Stephan & Stephan, 1985), and, furthermore, that the suppression and regulation of emotions can impair subsequent performance on a variety of cognitive tasks, including those that draw on the common self-regulatory resource (Muraven & Baumeister, 2000; Richards & Gross, 2000). Making use of the misattribution of arousal paradigm (e.g., Brodt & Zimbardo, 1981), we found that misattributing anxiety during an interracial interaction, thereby reducing the need to engage in affect regulation (i.e., self-regulation), buffered against the inhibitory underperformance revealed by participants afterward. Taken together, these studies provide compelling evidence for resource depletion as the mechanism underlying the influence of interracial contact on subsequent executive functioning.

Consequences of Prejudice Concerns

One method by which we manipulated the self-regulatory demands of interracial interactions is through the heightening or diminishing of concerns about appearing prejudiced (see Studies 1 and 2). Consequently, one implication of the present work is that harboring concerns about prejudice will leave individuals especially vulnerable to inhibitory performance deficits after interracial interactions. This implication is particularly troubling because it suggests that being motivated to control prejudice during interracial interactions may come with negative consequences for individuals. But Devine, Monteith, and colleagues (e.g., Devine & Montieth, 1993; Montieth, 1993; Devine et al., 2003) have shown, quite convincingly, that regulating prejudiced responses is an integral step along the way toward the attenuation of prejudice. Considered in tandem with this work, the present research reveals a potential complication of the prejudice reduction process—harboring prejudice concerns is critical to prejudice reduction, but potentially detrimental to cognitive functioning.

Although this relation could be inferred from the present data, we believe that there are likely to be additional factors that contribute to the conditions under which concerns about prejudice will amplify the negative effect of interracial contact on executive function. First, there is likely to be a distinction between the impact of trait-level motivations to respond without prejudice (e.g., Dunton & Fazio, 1997; Plant & Devine, 1998) and situationally induced concerns and motives. For instance, chronic motivations to respond without prejudice and situationally induced motives may yield different levels of cognitive depletion because of differences in individuals' experience with the regulation of prejudice (see, Amodio, Harmon-Jones, & Devine, 2003). For instance, experience with modulating thoughts and behavior may develop the prejudice regulation metaphorical muscle, making it less susceptible to exhaustion. Thus, individuals who consistently engage in self-regulation during interracial interactions (e.g., individuals with chronic motives to do so) should be relatively less depleted by the interaction, compared with individuals who do not typically attempt to regulate their prejudiced responses (for a similar argument, see Gordijn, Hindriks, Koomen, Dijksterhuis, & van Knippenberg, 2004).

Furthermore, the ability to regulate affective reactions, thoughts, and behaviors successfully is likely to be due, at least in part, to the extent to which negative thoughts and behaviors come to mind. Previous research has found, for instance, that low-prejudice White individuals are less likely to activate negative stereotypes about Blacks, compared with high-prejudice White individuals (Lepore & Brown, 1997; Wittenbrink, Judd, & Park, 1997), and that the source of motivations to respond without prejudice predicts the expression of automatic racial bias (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002). Specifically, individuals with primarily internal, personal motives to avoid prejudice reveal less automatic racial bias, compared with participants with primarily external motives to respond without prejudice and unmotivated individuals. In other words, this study suggests that individuals who are motivated to respond without prejudice for primarily internal reasons may be less affected by interracial contact compared with other individuals. Future research is warranted, however, in order to investigate differences in the influence of state, compared with trait, concerns about prejudice on cognition after interracial contact.

Limitations

One important limitation of the present work is the fact that the interactions examined in the present work were quite struc-

tured, involved confederates rather than two naive participants, and introduced the confederate in the role of an experimenter. Future research is necessary to ascertain whether more natural interracial interactions would yield results similar to those found in our work. The extant research documenting intergroup anxiety in many different types of interactions leads us to believe that it is likely that one would find similar effects, but it remains an empirical question. Nevertheless, the present research suggests that the extent to which concerns about appearing prejudiced are activated in any context for any type of interaction should reveal similar results.

Consistent with this sentiment, it is important to acknowledge that participants completed the IAT—a measure of racial bias—prior to the interactions. It is possible that simply taking the IAT increased the salience of race and concerns about race bias in most, if not all, participants (see Frantz, Cuddy, Burnett, Ray, & Hart, 2004; Monteith, Viols, & Ashburn-Nardo, 2001). This general heightening of race-related concerns may have contributed to the magnitude of the observed race of confederate effects, and should be examined in future research. Last, the present studies, as well as previous work examining the effect of interracial contact on executive function, have only examined the effect for White individuals during contact experiences with Blacks (see, e.g., Richeson & Shelton, 2003). As the perspectives and experiences of both individuals influence the dynamics of interracial contact (e.g., Shelton, 2000), it is important to consider whether Blacks are also cognitively impaired after interracial, compared with same-race, dyadic interactions.

Implications

Despite these limitations, the present results offer several theoretical and practical implications. For example, this work contributes to recent research extending resource depletion theory into the realm of interpersonal and intergroup relations (see also Gordijn et al., 2004; Seeley & Gardner, 2003; Vohs & Heatherton, 2000). The present work also sheds light on the mechanisms underlying reactions to intergroup encounters more generally. Our results fit nicely with the "stigma-induced threat" hypothesis proposed by Blascovich et al. (2001). Specifically, intergroup encounters lead to anxiety because the demands of the situation are perceived to outweigh psychological resources. Building on this work, our research suggests that increasing self-regulatory demands during interracial interactions increases the subsequent impairment of inhibitory task performance, whereas decreasing self-regulatory demands reduces the subsequent impairment of inhibitory task performance.

The present work is also particularly important insofar as casual, interpersonal encounters between stigmatized and nonstigmatized individuals seem to be a promising source of long-term prejudice reduction (Allport, 1954; Pettigrew, 1998). In Pettigrew's review of the intergroup contact literature, he proposed that the opportunity for stigmatized and nonstigmatized individuals to become friends may be the primary route to the reduction of prejudice. Perhaps one part of the friendship process is the reduction of concerns about appearing prejudiced with another individual. Future research is needed, however, in order to discern whether prejudice concerns diminish over the course of the acquaintanceship process and, furthermore, whether such a reduction in prejudice concerns is associated with positive friendship experiences for both Whites and racial minorities.

Conclusion

In conclusion, the present study builds on recent research examining the mechanism underlying the effect of interracial interactions on executive function (Richeson et al., 2003). The present work offers compelling evidence in support of the resource depletion account. By specifying the mechanisms underlying this effect, this work provides an important stepping stone en route to the development of interventions that will make interracial contact rewarding, and perhaps even refreshing, rather than depleting.

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