Implicit Motivation to Control Prejudice Moderates the Effect of Cognitive Depletion on Unintended Discrimination

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Abstract

The role of Implicit Motivation to Control Prejudice (IMCP) in moderating the effect of resource depletion on spontaneous discriminatory behavior was examined. Cognitive resource depletion was manipulated by having participants solve either difficult or easy anagrams. A "Shooter Task" measuring unintended racial discriminatory behavior followed. Participants then reported their subjective experiences in the task. Finally, IMCP and an implicit race-weapons stereotype were measured, both using Go/No-go Association Tasks (GNATs). IMCP moderated the effect of depletion on discriminatory behavior: Depletion resulted in more racial bias in the Shooter Task only for those who scored low in our measure of IMCP, while high IMCP participants performed comparably in both the low and high depletion conditions.

Implicit Motivation to Control Prejudice

Moderates the Effect of Cognitive Depletion on Unintended Discrimination

Biases toward various social groups affect our thoughts, feelings, and behaviors, whether or not we consciously endorse or want to reveal them (Devine, 1989). Intergroup biases can influence us against our volition because, like other mental constructs, they can be activated and applied automatically and implicitly (i.e., outside of conscious control and awareness; Blair & Banaji, 1996; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Greenwald & Banaji, 1995; Kawakami, Young, & Dovidio, 2002). Because society generally condemns group-based discrimination, individuals may attempt to prevent such spontaneous reactions from playing out in behavior. Yet such acts of conscious control require effort that, in view of the realities of daily life, people are often unable to exert (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998; Muraven & Baumeister, 2000).

If intergroup biases give rise to discriminatory behavior despite individuals' best intentions, then the prospects for achieving a truly egalitarian society would appear bleak. However, if the motivation to control bias could itself operate spontaneously and with little or no conscious effort, individuals might be able to preempt discriminatory behavior without tapping their limited and taxed reservoirs of conscious cognitive resources. The present study explores the possibility that the "Implicit Motivation to Control Prejudice" (Glaser & Knowles, in press) enables individuals to prevent implicit biases from causing unintended discriminatory behavior, even when one's regulatory resources are depleted.

Motivation to Control Prejudice

People's implicit and explicit biases against outgroups do not always predict actual behavior toward outgroup members (e.g., Devine, 1989; Fazio, et al, 1995; Dovidio et al, 1997; Dovidio, Kawakami, & Gaertner, 2002). One explanation for this discrepancy holds that egalitarian goals moderate the attitude-behavior relationship: Individuals who are both biased and high in egalitarian motivation deliberately prevent their biases from resulting in overt manifestations (Dunton & Fazio, 1997; Fazio et al., 1995; Plant & Devine, 1998).

Importantly, the goal of controlling prejudice can stem from intrinsic and extrinsic sources. Whereas some individuals genuinely subscribe to an egalitarian belief system, others avoid discriminating merely to evade social sanctions. Two instruments measuring motivation to control prejudice have been developed that distinguish between its intrinsic and extrinsic forms. Dunton and Fazio (1997) found that their measure of Motivation to Control Prejudiced Reactions (MCPR) moderated the relation between implicit and explicit racial attitudes such that those low in MCPR showed a positive relation between an implicit attitude measure and explicit questionnaire measures of attitudes toward Blacks, whereas those high in MCPR showed a negative relation (see Fazio et al., 1995, for a similar demonstration). Dunton and Fazio identified two subscales having to do with a more intrinsic "concern with acting prejudiced" and a more extrinsic "restraint to avoid dispute."[1] Similarly, Plant and Devine's (1998) Internal and External Motivation to Respond without Prejudice Scales (IMS and EMS) distinguish the desire to act in accordance with one's own egalitarian values and the desire to avoid being judged negatively by others, respectively. Likewise, Monteith (1993; Monteith, Ashburn-Nardo, Voils, & Czopp, 2002) has provided a compelling model of prejudice control wherein perceived discrepancies between the self-image of being low in prejudice and behaving in a biased manner

trigger feelings of compunction and subsequent regulatory processes that may become automatized through repeated responses to "cues for control" (Monteith et al., 2002).

Work by Devine, Plant, Amodio, Harmon-Jones, and Vance (2002) suggests that certain individuals are able to mitigate not only their explicit attitudes or behaviors toward outgroup members but also processes that are not typically considered under conscious control. These researchers found that self-reported bias varied as a function of internal motivation to control prejudice, whereas implicit bias was moderated by the interaction of internal and external motivation (as assessed by their questionnaire measures). Specifically, individuals high in internal but low in external motivation — whom the researchers reasoned had the most highly internalized egalitarian goals — showed the lowest levels of implicit anti-Black attitude. While these results suggest the operation of implicit egalitarian motives, it remains possible that those high in internal and low in external motivation simply possess lower levels of nonconscious bias. Other research (Amodio, Devine, & Harmon-Jones, in press; Amodio, Harmon-Jones, & Devine, 2003; Amodio, Harmon-Jones, Devine, Curtin, Hartley, & Covert, 2004) strongly suggests that those who score high in IMS and low in EMS exert control over spontaneous biased responses.

It may be the case that those high in IMS and low in EMS are sufficiently intrinsically motivated to control prejudice that they have automatized their control to the extent that lower bias on implicit measures reflects some degree of nonconscious control, and studies by Devine and colleagues provide evidence consistent with this possibility. Nevertheless, an implicit (i.e., reaction time) measure of motivation to control prejudice could hold promise to even more directly moderate implicit bias. Just as Dovidio, Kawakami, Johnson, Johnson, and Howard (1997) showed that implicit measures of attitudes better predict spontaneous behavior than explicit (self-report) measures of attitudes do (though the latter are better at predicting

controllable, deliberative responses), implicit measures of motivation to control prejudice may be more effective in explaining variance in the influence of implicit biases on more spontaneous (i.e., less controllable) discriminatory behavior. Therefore, the concept of *implicit* motivation to control prejudice is called for (Glaser & Knowles, in press).

Motivation without Awareness

Although the concept of implicit motivation may sound counterintuitive to some, there is compelling evidence of its existence. For example, Bargh and colleagues have argued that intentions and goals, like other mental constructs, may operate nonconsciously (Bargh, 1990; Chartrand & Bargh, 1996). Research by Kruglanski, Shah, and colleagues suggests that nonconscious goals behave according to the familiar rules of construct activation (Higgins, 1996). For example, subliminally primed goals can influence a focal goal currently being pursued (Shah & Kruglanski, 2002), representations of significant others can act as goal primes (Shah, 2003), specific attainment means can activate relevant goals (Shah & Kruglanski, 2003), and environmental lures can activate an overriding goal (Fishbach, Friedman, & Kruglanski, 2003). Moreover, evidence indicates that nonconscious goals have properties similar to their conscious counterparts, such as persistence in the presence of more intrinsically attractive alternatives (Chartrand & Bargh, 1996).

Glaser and Banaji (1999) observed "reverse priming" (i.e., slower responding to congruent prime-target pairs) in automatic evaluation using a non-reactive word pronunciation paradigm. Specifically, after being primed with words possessing extreme negative or positive valence, participants were slower to say target words that were evaluatively congruent with the primes, the opposite of the usual automatic evaluation result. Glaser and Banaji argued that participants possessed a nonconscious accuracy goal, which in turn enabled them to correct

automatically for the influence of extremely valenced stimuli on subsequent judgments (see also Glaser, 2003; Glaser & Kihlstrom, 2005). This pattern of results suggests that people possess implicit goals that, after activation by relevant cues, influence behavior with little or no conscious awareness.

More directly relevant to the regulation of intergroup bias, Moskowitz, Gollwitzer, Wasel, and Schaal (1999) showed, using an indirect measure of egalitarian goals (observing compensatory behaviors after participants were forced to give stereotype-laden answers)[2], that people with chronic egalitarian goals exhibit less automatic gender stereotyping than do those with weaker egalitarian goals — despite the fact that participants had comparable knowledge of gender stereotypes. Thus, high "chronic egalitarians" appeared to inhibit the automatic activation of stereotypes.

Implicit Motivation to Control Prejudice (IMCP)

Implicit Motivation to Control Prejudice (IMCP) is conceptualized as the internalized, largely nonconscious goal to be egalitarian (Glaser & Knowles, in press). By virtue of its implicit nature, IMCP can be activated and operate with little or no subjective awareness. While the term "implicit" typically indicates a preclusion of conscious awareness, we favor a more pragmatic use of the term advocated by Sherman (in press; Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005), recognizing that few mental processes are either purely conscious or nonconscious. "Implicit" here is meant to indicate that the measure is indirect and the construct being assessed is largely nonconscious. We do not assume that all variance in reaction time or error rate differences in measures like sequential priming tasks, the Implicit Association Test, or the Shooter Task reflect solely processes that operate outside conscious awareness or

control. They do, however, likely reflect far greater nonconscious influence than measures like questionnaires that allow ample time for controlled influences.

Questionnaire measures of motivations to control prejudice (Plant & Devine, 1998; Dunton & Fazio, 1997) have been shown to moderate the link between implicit stereotypes/attitudes and explicit attitudes (Fazio et al., 2005). Correspondingly, IMCP is expected to mitigate the effect of implicit attitudes on spontaneous manifestations of prejudice. Specifically, those who are high in IMCP are expected to exhibit a relatively weak association between implicit stereotypes and unintended discriminatory behavior. Even though these individuals may have implicit knowledge of the stereotypes of a target group (Devine, 1989), their implicit egalitarian motivation will help prevent the stereotype from influencing behavior that is largely beyond conscious control.

Because IMCP is an implicit construct, it can be operationalized using established methods for measuring implicit associations, such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). However, unlike implicit attitudes and cognitions, implicit goals cannot be easily represented as the association between two concepts.[3] Instead, Glaser and Knowles (in press) developed a procedure to measure two logical antecedents of IMCP: (1) an implicit Negative Attitude toward Prejudice (NAP), and an implicit Belief that Oneself is Prejudiced (BOP). People who meet these two conditions (being high in NAP and high in BOP) should be relatively high in the implicit motivation to inhibit the expression of prejudice. NAP and BOP are operationalized as the strength of association between the concepts *prejudice* and *bad* and between *prejudiced* and *me*, respectively. The logic behind this approach holds that those who feel that prejudice is bad should be motivated to control it in themselves (i.e., prevent themselves from behaving in a biased manner), but perhaps only, or especially, to

the extent that they perceive themselves as being prone to it. If one believes oneself immune to being prejudiced, controlling it may be moot. Conversely, those who believe themselves prone to being prejudiced should be motivated to control it, but only to the extent that they feel prejudice is bad.

Using Implicit Association Test (IAT) measures of NAP and BOP, Glaser and Knowles (in press) found that, compared to those low in either NAP or BOP or both, high-IMCP individuals exhibited a weaker association between an implicit race-weapons stereotype and the propensity to commit the "Shooter Bias" (i.e., to shoot armed African Americans more quickly than armed European Americans in a computerized policing simulation; Correll, Park, Judd, & Wittenbrink, 2002). Specifically, the NAP IAT, measuring differential response speeds to word categorization pairings of prejudice+bad and tolerance+good vs. prejudice+good and tolerance+bad moderated the relation between a race-weapons stereotype (an IAT measuring associations between Blacks vs. Whites and weapons vs. tools; RWS) and the Shooter Bias. Those high in NAP exhibited no relation between the RWS and the Shooter Bias; those low in NAP showed a strong, positive relation. However, when the effect of implicit belief that oneself is prejudiced (BOP) was considered, it was evident that this pattern was observed only among those high in BOP. Those low in BOP showed a positive relation between RWS and Shooter Bias regardless of their level of NAP.

Self-Control and the Inhibition of Prejudiced Behaviors

One possible consequence of IMCP is that those who possess it will handle tasks involving the inhibition of racial bias with relative ease, since the implicit motivation may activate and implement corrective processing without requiring conscious effort. This could be seen as a form of self-control, or "the exertion of control over the self by the self" (Muraven &

Baumeister, 2000). Research indicates that tasks requiring this sort of executive control tap a single, finite attentional resource (Baumeister et al., 1998; Muraven et al., 1998; Muraven & Baumeister, 2000; Muraven & Slessareva, 2003). Therefore, after engaging in one task requiring executive attention, an individual's cognitive resources will be partially depleted, degrading performance on a subsequent task. In the realm of prejudice control, Richeson et al. (2003) have shown that interracial interactions result in executive resource depletion for those with racial bias. Because stereotypes are more likely to influence judgments when mental resources are depleted (e.g., Bodenhausen, 1990), nonconscious control of stereotype application would be potentially important.

We expected that individuals high in IMCP, although they may harbor normal levels of implicit stereotypes about African Americans, would require fewer resources to inhibit stereotype-based responses. The logic behind this prediction is that because IMCP operates implicitly for these people, they will inhibit their discriminatory behaviors efficiently and without much effort. Thus, they will perform relatively well in inhibiting unintended biased behavior, even in circumstances where their cognitive resources have been depleted. In this sense, IMCP would meet one of the criteria for an automatic process, being relatively resource-independent and therefore efficient (Bargh, 1990).

Consistent with this reasoning, we hypothesized that unintended discriminatory behavior will be less affected by resource depletion for those high in IMCP relative to those low in IMCP; the latter individuals' control of biased behavior will be resource-dependent. In the present study, this hypothesis was tested by examining the effect of resource depletion, manipulated by a cognitively-taxing task, on unintended discriminatory behavior (Shooter Bias) among those high and low in IMCP. Recent work by Gordijn, Hindriks, Koomen, Dijksterhuis, and Van

Knippenberg (2004) supports this expectation. These researchers found that individuals with an internalized egalitarian goal were less cognitively depleted after suppressing stereotype use, as compared to those without the egalitarian goal. However, because these studies employed explicit measures of both egalitarian motivation and stereotype suppression, it remains to be seen whether implicit motives behave in a similar fashion. It also remains to be seen if those high in implicit motivation to control prejudice can effectively mitigate *spontaneous* discrimination of the sort exhibited in the Shooter Task, despite cognitive depletion. This is the primary goal of the present study.

Subjective Experience of Controlling Prejudiced Behavior

Because people high in IMCP should require fewer resources for, and have greater success in suppressing automatic biased behaviors, they will likely experience the Shooter Task to be less challenging. In contrast, those low in IMCP should experience greater difficulty and mental effort, especially when their resources are depleted. Accordingly, the present study also explores whether and how people subjectively experience their own inhibition of unintended, prejudiced responses.

Overview of Experiment

The current study examines whether Implicit Motivation to Control Prejudice (IMCP) enables individuals to more efficiently and less effortfully modulate their intergroup behavior. In order to determine this, we tested whether our operationalization of IMCP moderates the effect of cognitive resource depletion on spontaneous discriminatory behavior towards African American targets. More specifically, the present research posed two questions: (1) Compared to those low in IMCP, will high-IMCP individuals exhibit a smaller increase in unintended prejudiced behavior after depletion? And (2) Compared to those low in IMCP, would high-IMCP

individuals subjectively experience the inhibition of prejudiced responses as less cognitively taxing?

To address these questions, half of the participants had their cognitive resources depleted with a difficult task (solving anagrams), while the other half completed an easier version of the task and thus were not subject to as much depletion. Subsequently, each participant's unintentional discriminatory behavior was measured using an adaptation of a paradigm developed by Correll et al. (2002), called the "Shooter Task," which involves measuring the relative speed to "shoot" African American and European American "suspects" in a computer simulation. While performance on the Shooter Task, even with respect to differential speed to shoot or indicate safety to Black versus White target, does not preclude conscious, intentional processes, the strong stigmatization of exhibiting racial bias in the use of lethal force makes it very unlikely that any shooter bias exhibited is intentional. Furthermore, because it is a speeded task and emphasis is placed on making the correct response, reaction time differences likely reflect largely unintended, implicit bias. In these respects, the Shooter Task affords an effective dependent measure of an undesirable discriminatory behavior that most people would control if they could.

The two antecedents of IMCP (the implicit negative attitude toward prejudice, NAP, and implicit belief that oneself is prejudiced, BOP), as well as an implicit stereotype associating African Americans (vs. European Americans) with weapons, were measured using a series of Go/No-go Association Tasks (GNATs; Nosek & Banaji, 2001). We then tested whether IMCP moderated the effect of cognitive depletion on unintended discriminatory behavior in the Shooter Task. In order to test the notion that only *implicit* egalitarian goals enable individuals to regulate

their spontaneous behavior, we also measured explicit motivations to control prejudice using Plant and Devine's IMS and EMS (1998) scales.

Lastly, we assessed the subjective experience of performing the Shooter Task — specifically, participants' impressions of difficulty and mental effort. We predicted that those high in IMCP would find the task to be less difficult and requiring less effort than would those low in IMCP, and that this difference would be especially pronounced among those whose cognitive resources had been depleted.

Method

Participants and Design

One-hundred and twenty-four undergraduates (72 women) at the University of California, Berkeley participated in the experiment in return for partial credit toward course requirements. Sixty-five participants were Asian American, 37 were European American, seven were Latina/Latino, three were African American, and eleven participants did not indicate their ethnicity. One participant terminated the procedure prematurely for unknown reasons. Because no directional differences were observed between ethnic groups or genders, we collapsed across these variables in all reported analyses.

Materials and Procedure

The entire procedure was carried out on computers, using Inquisit software (Draine, 2004). Measures and tasks were administered in the order in which they are described below.

Internal and External Motivation to Respond without Prejudice Scales (IMS and EMS). The IMS and EMS (Plant & Devine, 1998) each contain five items. Example items include "I am personally motivated by my beliefs to be nonprejudiced toward Black people" (IMS) and "I try to hide any negative thoughts about Black people in order to avoid negative reactions from

others" (EMS). Participants responded to each question on a nine-point Likert scale anchored by 1 ("Strongly disagree") and 9 ("Strongly agree") (IMS: $M = 4.85$, $SD = 1.82$, $\alpha = .74$; EMS: $M = 6.91$, $SD = 1.39$, $\alpha = .82$).

Depletion of Cognitive Resources. The manipulation of cognitive-resource depletion was achieved using an anagram task. This task has been shown to require executive control, and thus to exhaust regulatory resources (Baumeister et al., 1998, Muraven et al., 1998, Gordijn et al., 2004). Although the task has frequently been used as a dependent measure of participants' available cognitive resources, in the present experiment it afforded a manipulation of resource depletion. The task required participants to solve ten anagrams in a maximum of three minutes. The Depleted and Control conditions differed only in the difficulty of the anagrams: In the Depleted condition, anagrams consisted of six or seven letters (e.g., 'trmaial,' which can be rearranged to spell 'martial' or 'marital'), whereas in the Control condition anagrams consisted of four letters (e.g., 'erso,' which can be rearranged to spell 'sore,' 'ores,' 'roes,' and 'rose'). Participants in the long anagram condition, having attempted a more cognitively challenging task, were expected to be more depleted than those in the short anagram condition. After three minutes, the program automatically proceeded to the next task, thus ensuring that all participants spent equal time on the anagram task.[4]

Shooter Task. The depletion manipulation was followed by the Shooter Task (Correll et al., 2002). In this computer simulation, participants take on the role of a police officer who must decide rapidly whether to shoot targets or to hold fire. The required response was to either squeeze the trigger or pull back on a computer gamestick to shoot or hold fire, respectively. Targets were armed or unarmed African American or European American men. Participants were instructed to shoot if the target was holding a gun and hold fire if he was holding a benign object,

such as a mobile phone. Each trial was structured as follows: (1) the message "Get Ready!" appeared in the center of the screen and remained for 1500 ms, (2) a background image of a randomly selected setting (e.g., train station, park, or plaza) appeared and remained for the duration of the trial, and (3) the target appeared after a randomly-selected pause of either 1, 2, 3, or 4 seconds, and remained until the participant responded by either shooting or holding fire. Participants were administered a total of 56 trials each, presenting, in random order, all combinations of target race (European American vs. African American) and object type (gun vs. nonweapon).[5]

Subjective experience questionnaire. The next measure probed participants' subjective experiences of the Shooter Task. The questions assessed (1) the difficulty of the Shooter task, (2) the amount of self-control expended, (3) feelings of discomfort during the task, and (4) the extent to which participants felt they exhibited racial bias. Participants were asked to rate their experiences on nine-point Likert scales. The items are shown in Appendix A.

IMCP and implicit racial stereotypes. Following the subjective experience questionnaire, participants performed a series of tasks measuring various implicit associations, including the two antecedents of IMCP (i.e., implicit Negative Attitude toward Prejudice, or NAP, and implicit Belief that Oneself is Prejudiced, or BOP) and the implicit Race-Weapons Stereotype (RWS). We administered these implicit measures after the explicit questionnaires in light of the fact that reaction time measures are less subject to conscious control and are therefore less likely to be influenced by explicit measures than vice versa. The Go/No-go Association Task (Nosek & Banaji, 2001) was used to measure implicit associations. The GNAT is conceptually and methodologically similar to the Implicit Association Test (IAT; Greenwald et al., 1998), with four major differences. First, unlike the IAT, which uses two sets of mutually

contrasting category pairs (e.g., *flowers–insects*, *good–bad*), the GNAT requires participants to respond to words from only two categories at a time (e.g., *flowers* and *good*) and ignore all other stimuli ("distracters"). In this manner, associations involving categories without any clear contrasting categories can be measured. Moreover, even for categories with clear contrasts, the GNAT allows the measurement of associations between category pairs (e.g., *African American* and *weapons*) without confounding them with the contrasting association (e.g., *European American* and *non-weapons*). Second, responses are required only for items in the focal category and not for distracter items. Accordingly, only one computer key (the space bar) is used for responding. Third, a response deadline is set for each trial, such that only sufficiently fast responses are counted. Fourth, because a challenging time limit is imposed, bias is assessed using error rates rather than reaction latencies. In accordance with the signal detection approach adopted by Nosek and Banaji (2001), we gauged each participants' ability to distinguish targets from distracters using the "sensitivity" index (d'), which is computed based on the difference between the rates of "hits" (correct responses for target items) and "false alarms" (incorrect responses for distracter items). Thus, the GNAT measures associations between categories by gauging how readily target exemplars from the two categories can be distinguished from distracters.

The first two constructs measured using GNATs were Belief that Oneself is Prejudiced (BOP) and Negative Attitude toward Prejudice (NAP) — the hypothesized antecedents of IMCP. BOP was measured as the implicit association between *Me* and *Prejudice* (compared with the *Me–Tolerance* association) and NAP as the implicit association between *Prejudice* and *Bad* (versus *Good*). After the BOP and NAP assessments, the GNAT was used to assess a Race-Weapons Stereotype (RWS). Specifically, the implicit association of words relating to weapons

(e.g., gun, knife) with African American names (e.g., Malik, Tyrone), as opposed to with European American names (e.g., Brad, Roger), was measured. The stimuli used in each of the three GNATs are listed in Appendix B**.**

The tasks were described as being about category judgment, and participants were asked to decide quickly whether each word appearing on the screen belonged to the given categories. In each block, names of the target categories were given at the top of the screen, and stimulus items appeared at the center. Each task started with instructions and practice blocks, in which participants familiarized themselves with each of the three focal target categories (e.g., for BOP: *Prejudice*, *Tolerance*, and *Me*). In the practice blocks, each item was presented for 1,000 ms.

For each data collection block, two focal categories were paired. For example, for the BOP GNAT, participants were first asked to hit the spacebar as quickly as possible whenever they saw a word that was associated with *either* prejudice *or* the self (labeled the "me" category), and to refrain from responding if the word fell into neither category (distracter words). In the second block of test trials, participants were asked to hit the spacebar whenever a target word belonged to *either* the tolerance *or* the self (me) category. The order of the blocks was held constant across participants because we were interested in examining relative strengths of associations and how they related to the other constructs being measured, as opposed to estimating absolute, aggregate levels of associations, in which case we would have counterbalanced the order of the blocks.

Participants first did the two blocks with a 750 ms response deadline, and then again with a 600 ms deadline. Each data collection block consisted of 16 practice trials and 60 test trials. In all trials, participants received response feedback, specifically, "O" and "X" for correct and incorrect responses, respectively.

BOP, NAP, and RWS scores were computed from differences in the sensitivity scores (d') for the opposite conceptual pairs in each construct (Nosek & Banaji, 2001). First, for each concept pair, d' was calculated as the difference between the z-transformed proportions of hits and false alarms. To illustrate, for BOP, d' for the *prejudice–me* pairing was calculated as follows: (1) the proportions of hits (i.e., responses to *prejudice* or *me* words) and false alarms (i.e., responses to distracters) were z-transformed, and (2) the z-transformed false alarm proportion was subtracted from the z-transformed hit proportion. The d' score for *tolerance–me* pairing was calculated in the same manner, after which d' for *tolerance–me* was subtracted from d' for *prejudice–me* to yield the final BOP score. The larger the value, the more the person implicitly associates himself or herself with prejudice. NAP and RWS were calculated using the same procedure.

Predictions

We theorize that IMCP reflects a largely nonconscious, perhaps automatized goal to behave in a nonprejudiced manner. Those high in IMCP, therefore, should require fewer cognitive resources to inhibit discriminatory responses (Shooter Bias) in the Shooter Task. Accordingly, we made two predictions. First, in the Depleted (hard anagrams) condition, high-IMCP participants will inhibit discriminatory responses more effectively than will low-IMCP participants. As a result, high-IMCP participants' Shooter Task performance will resemble that of high-IMCP individuals in the Control (easy anagrams) condition, while low-IMCP individuals who are depleted will show higher rates of shooter bias than those who are less depleted. Second, high-IMCP participants in either condition should report being less challenged by the Shooter Task than should low-IMCP individuals. In addition, the depletion manipulation should have a

greater effect on the subjective experiences of low-IMCP participants than on those of high-IMCP individuals.

Results

Shooter Bias

Three participants who exhibited unusually long reaction latencies (greater than 2,000 ms) in more than 15% of trials were omitted from the analysis. (The removal of these participants did not alter the overall pattern of results.) In calculating spontaneous racial bias in the Shooter Task, we first excluded responses too fast to reliably reflect meaningful responding (less than 300 ms) or too slow to reliably reflect automatic processes (greater than 1,000 ms). As a result, 10.8% of all trials were excluded. Removing these outliers also has the effect of normalizing the reaction time data distribution. Next, latencies for correct responses (shooting an armed target or holding fire for an unarmed target) were log-transformed in order to further normalize the otherwise positively skewed distribution. Then, latencies were averaged within subject to create four scores corresponding to each combination of the target characteristics—that is, unarmed African Americans, armed African Americans, unarmed European Americans, and armed European Americans. Finally, Shooter Bias was calculated by averaging the latency differences between pulling back for European American targets versus African American targets (subtracting the latter from the former, so that people faster in not shooting European American targets get positive values), and between shooting African American targets versus European American targets (subtracting the former from the latter, so that people faster in shooting African American targets get positive values).

Consistent with Correll et al. (2002), participants tended to shoot armed African American targets faster than they did armed European American targets and to hold fire faster for

unarmed European American targets than they did for unarmed African American targets. The mean Shooter Bias score was positive and significantly different from zero, $t(114) = 5.09$, $p < .01$. Means and standard deviations (converted back into milliseconds) for each of the four combinations of target ethnicity and object type are shown in Table 1.

Moderation Analyses for Shooter Bias

To examine whether IMCP moderated the effect of depletion on Shooter Bias, Shooter Bias scores were regressed on effects-coded depletion condition (-1 = Control, 1 = Depleted), BOP, NAP, RWS, and their interaction terms. Table 2 reports standardized coefficients for the regression. Testing a multifactorial model of this sort involves a great many lower-order interactions, but only those subsidiary interactions worthy of comment are shown. First, there was a nonsignificant positive effect of Depletion condition ($\beta = .11$, $p = .27$), providing some suggestion that, overall, participants in the Depleted condition showed stronger Shooter Bias. Second, BOP, NAP, and RWS did not independently moderate the Shooter Bias, although the nonsignificant effects are all directionally consistent with those obtained by Glaser and Knowles (in press). The nonsignificant ($\beta = -.14$, $p = .26$) direct effect of IMCP (BOP $\times$ NAP) suggests that those higher in IMCP exhibit lower Shooter Bias overall. The interaction of IMCP with RWS, while also not attaining conventional levels of statistical significant ($\beta = -.18$, $p = .12$), is also consistent with Glaser and Knowles's (in press) finding that IMCP moderates the effect of the implicit race-weapons stereotype on Shooter Bias.

Most important, the primary prediction of the experiment was borne out, as evidenced by the significant Depletion condition by IMCP interaction indicating that the effect of cognitive resource depletion on Shooter Bias is greater for those low in implicit motivation to control prejudice ($\beta = -.28$, $p < .05$). In order to illustrate this interaction, we calculated a single IMCP

index for each participant and plotted the interaction in accordance with procedures articulated by Aiken and West (1995). IMCP was calculated for each participant by multiplying the Belief that Oneself is Prejudiced (BOP) score by the Negative Attitude toward Prejudice (NAP) score; the larger the multiplied value, the stronger the participant's inferred level of motivation.[6] IMCP scores were then z-transformed for the purposes of regression analysis. IMCP scores did not differ across the two conditions, $t(113) = 1.08$, $p = .29$. As can be seen in Figure 1, cognitive depletion led to greater Shooter Bias only among participants low (one *SD* below the mean) in IMCP.[7]

As a follow-up analysis, we ran regressions separately for high- and low-IMCP groups (based on a median split), with Condition, RWS, and their product as predictors. For the high-IMCP group, none of the predictors had a significant effect on Shooter Bias; but for the low-IMCP group, Condition significantly predicted Shooter Bias ($\beta = -.32$, $p < .05$). No other significant effects were found.

We also examined the effect of IMCP for Depleted and Control conditions separately, to test whether there was a significant effect of IMCP on Shooter Bias in the Control condition, as seems possible based on the pattern of results in Figure 1. In the Control condition, the positive effect of IMCP on Shooter Bias was nonsignificant ($p = .15$). In the Depleted condition, there was a significant negative effect of IMCP ($p < .05$) on Shooter Bias, as expected.

Effects of Explicit Motivations

In order to examine the possible influence of explicit egalitarian motivation on behavior in the Shooter Task, we re-ran the above regression analyses entering Plant and Devine's (1998) IMS and EMS instead of IMCP. As expected, there were no significant main effects or

interactions involving these variables (*p*s > .10). Nor were IMCP scores significantly correlated with IMS (r = -.03), EMS (r = .04), or the interaction of the two (r = -.07).

Subjective Experience

Subjective experience items were selected and grouped to form two variables tapping the constructs of "mental effort" and "difficulty, frustration, and exhaustion." Items 4 and 5 (see Appendix A) were averaged to form a single Effort score (alpha = .90) and items 2, 6, 7, and 8 were aggregated into a single Difficulty score (alpha = .75). The remaining two items, 1 and 3, were dropped from the analysis because they were not significantly correlated with any of the other items. When Difficulty was regressed on RWS, IMCP, and their interaction, only IMCP had a marginally significant negative effect (β = -.21, p = .08), indicating that individuals high in IMCP reported finding the Shooter Task less difficult than did those low in IMCP. When depletion condition was included in this analyses, we observed a marginally significant Condition × IMCP × RWS interaction (β = .17, p = .08). Figure 2 depicts these effects. As can be seen, those high in IMCP generally reported finding the Shooter Task less difficult than did those low in IMCP: Among those high in IMCP, only those who were depleted of cognitive resources and had a strong race-weapons stereotype reported difficulty comparable to that of most people low in IMCP. On the other hand, among those with low IMCP, only those who were not cognitively depleted and did not have a strong stereotype felt less difficulty than others. This pattern of results is consistent with our predictions; people high in IMCP would be more successful in controlling racial bias without much mental effort, to a point. Interestingly, no significant effects were observed in the regression of Effort on the same factors (all *p*s >.10). In summary, the results suggest that IMCP negatively influences the subjective experience of difficulty, but does not necessarily influence the experience of effort.[8]

Discussion

The present experiment demonstrates that people who are likely to be implicitly motivated to control prejudice, because they have an implicit negative attitude toward prejudice and implicitly associate themselves with prejudice, can inhibit subtle, spontaneous discriminatory behavior even when they are depleted of cognitive resources. In contrast, the regulatory efforts of low-IMCP individuals appear to have been compromised by depletion. For these participants, depletion of resources resulted in an increase in Shooter Bias; for those scoring relatively high in IMCP it did not. We conclude from this that IMCP enables individuals to mitigate biased responses, and thus to act in a less prejudiced fashion without having to deploy as much conscious volition and effort. Consistent with this interpretation, participants high in IMCP generally reported experiencing less difficulty in the Shooter Task than did low-IMCP participants; moreover, this subjective experience is not affected by the amount of available cognitive resources unless participants' implicit race-weapons stereotypes are particularly strong. Individuals low in IMCP, on the other hand, reported more difficulty with the task, except when their resources were undepleted and race-weapons stereotypes weak (in which case, the task ought to not be particularly difficult, at least not with regard to behaving in an unbiased manner). These results are consistent with the proposition that IMCP, as measured, reflects nonconscious control of prejudice; high IMCP participants appear to be controlling their performance on the Shooter Task without expenditure of extra effort, or awareness of any such effort.

As to the exact nature of the processes studied in the present experiment, we cannot state for certain that our measure of IMCP reflects a purely nonconscious construct, nor that differential speed to "shoot" Black armed men vs. White armed men in a computer simulation reflects purely automatic processes. Most likely, the underlying stereotypes, goals, and

behavioral responses represent a blend of conscious and nonconscious influences (Sherman, in press). However, the use of reaction time methods like the GNAT, the indirectness of the IMCP measure (as an interaction of two other implicit measures), and the strong social undesirability of behavior like Shooter Bias, not to mention the indirect nature of the Shooter Task, all point to a substantially nonconscious role for IMCP.

Based on the results of the present study and those of Glaser and Knowles (in press), it would be premature to conclude that IMCP is a purely and wholly automatic construct, meeting the "four horsemen" criteria (Bargh, 1990). Specifically, it is not yet clear whether high IMCP participants initiate control of prejudice without intention; whether implicit control of prejudice can itself be inhibited, if for some reason someone wanted to; nor whether IMCP-instigated control of spontaneous bias occurs without awareness. However, a reasonably strong case can be made from the present results that the mitigation of spontaneous prejudice evidenced here is efficient (i.e., requires few cognitive resources) because it occurs under depletion and because reports of subjective experience indicate that no extra conscious effort is required.

One advantage of the method we have developed to operationalize IMCP is that the inclusion of the BOP measure, in addition to fine-tuning an assessment of motivation based solely on an attitude toward a goal state (i.e., NAP), allows for an additional inference about the nature of IMCP, specifically with regard to control. A direct (negative) relation between NAP and Shooter Bias could indicate that those high in NAP are, by virtue of their negative attitude toward prejudice, motivated to control prejudice, as we theorize. It could also be argued, however, that those who are good at regulating their responses to an implicit NAP measure (i.e., making themselves indicate a negative attitude toward prejudice that may or may not reflect their true implicit attitude) are also good at regulating their performance on something like the Shooter

Task. This could reflect a general regulatory (i.e., self-control) facility as much as a specific motivation to control prejudice. The inclusion of BOP allows for a more specific inference with regard to motivation to control prejudice because, if the IMCP measure were simply picking up regulatory facility, effective regulators would most likely score low in BOP – they would be able to present themselves as less associated with prejudice. To the contrary, the NAP by BOP interaction measure of IMCP seems to be specifically assessing motivation to control prejudice, perhaps even *in spite of* the potential for good regulators to control their responding on the BOP measure.

Motivation to control prejudice has for some time been hypothesized to play an important moderating role between people's implicit and intentional intergroup processes (Devine, 1989; Fazio et al., 1995; Monteith, 1993). It now appears that nonconscious egalitarian goals also hold promise to ameliorate what were previously considered uncontrollable acts of bias. In addition to offering hope for improving intergroup relations and reducing discrimination, these findings add evidence for the comprehensiveness of nonconscious mental life and, somewhat paradoxically, for limitations on the inevitability of automatic reactions.

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Appendix A: Subjective Experience Items

1. During the previous police simulation task, how much did you feel you have to control yourself?
2. How hard was it to control your automatic responses?
3. How much did you find yourself more biased to shoot a black person than a white person?
4. How hard did you try not to shoot an unarmed black person?
5. How hard did you try not to shoot an unarmed white person?
6. How much discomfort did you feel when trying to answer correctly?
7. How frustrating did you find the police simulation task to be?
8. How mentally exhausted do you feel now, after you've finished the police simulation task?

Appendix B: Text stimuli used in Go/No-go Association Tests (GNATs)

Belief that Oneself is Prejudiced (BOP)

Prejudice: unjust, bigoted, prejudiced, biased, racist.

Tolerance: accepting, tolerant, inclusive, open-minded, impartial.

Me: me, my, mine, myself, I.

Distracter set: table, door, month, contents, context.

Negative Attitude toward Prejudice (NAP)

Prejudice: unjust, bigoted, prejudiced, biased, racist.

Good: pleasant, glorious, excitement, wonderful, good, excellent, fabulous, marvelous, splendid, terrific.

Bad: horrible, terrible, dirty, unpleasant, destroy, brutal, bad, evil, disaster, awful.

Distracter set: table, door, month, contents, context.

Race-Weapons Stereotype (RWS)

Weapon: gun, handgun, firearm, pistol, revolver.

European American: Chip, Roger, Brad, Paul, Jay, Donald, Steve, Ted.

African American: Alonzo, Jamel, Malik, Tyrone, Lamont, Luther, Darnel, Darien.

Distracter set: table, door, month, contents, context.

Table 1

Means (and Standard Deviations) for Reaction Times for Correct Responses as a Function of Target Ethnicity and Object Type in the Shooter Task

	Targets	
Object Type	African American	European American
Armed	611 (87)	632 (83)
Unarmed	762 (89)	756 (91)

Table 2

Standard Coefficients for Regression of Shooter Bias on Depletion Condition, BOP, NAP, RWS, and their interaction components

Factor	Standardized Coefficient (Beta)
Depletion Condition	.11
Implicit Belief Oneself is Prejudiced (BOP)	-.07
Implicit Negative Attitude toward Prejudice (NAP)	-.11
Implicit Race-Weapons Stereotype (RWS)	.14
BOP × NAP (IMCP)	-.14
BOP × RWS	.15
NAP × RWS	.06
IMCP × RWS	-.18
Depletion Condition × IMCP	-.28*
Depletion Condition × RWS	-.06
Depletion Condition × IMCP × RWS	.00

*$p < .05$, two-tailed.

Figure 1. Shooter bias as a function of Implicit Motivation to Control Prejudice (IMCP) and Depletion Condition at the average value of implicit Race-Weapons Stereotype (RWS). IMCP is calculated as the product of implicit Negative Attitude toward Prejudice (NAP) and implicit Belief that Oneself is Prejudiced (BOP) scores.

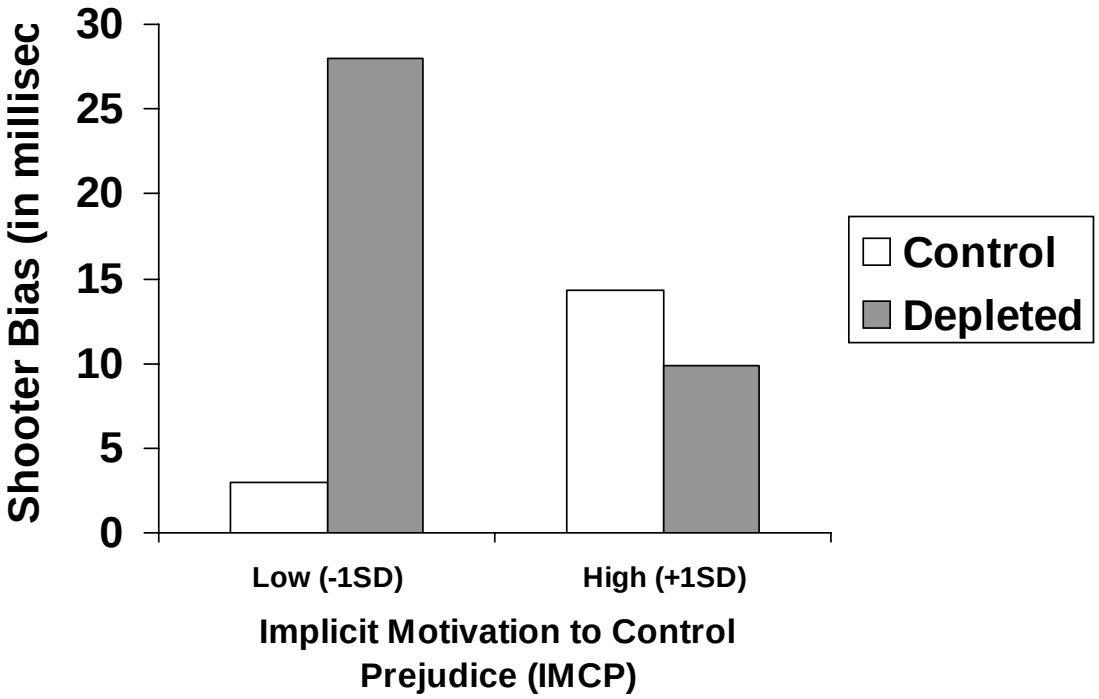
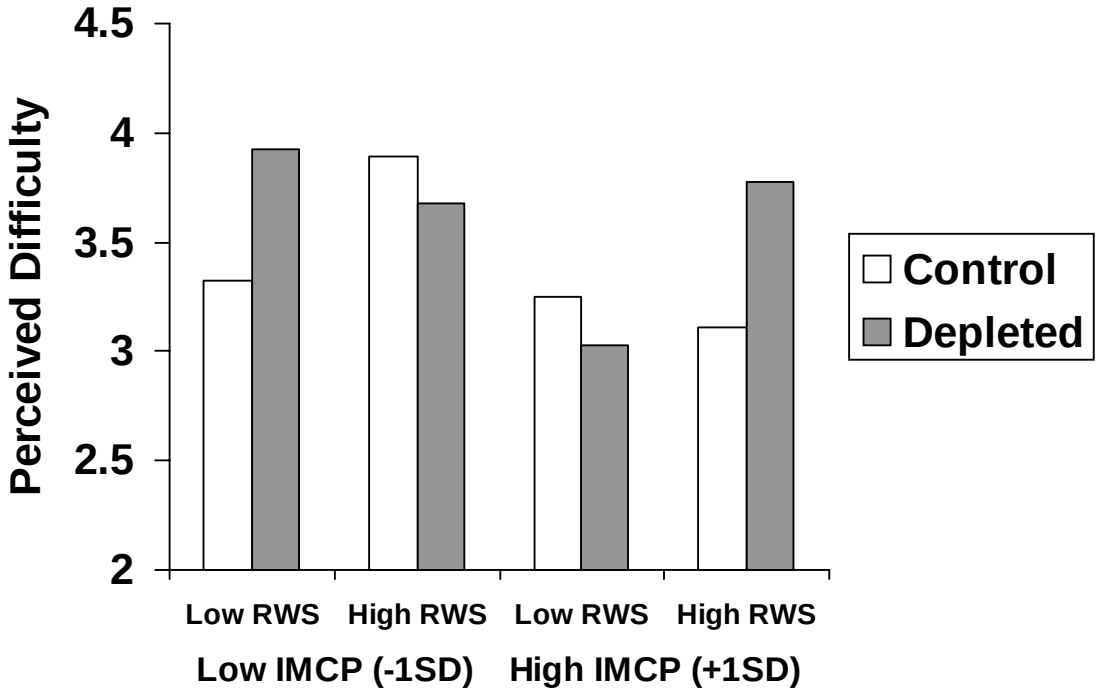


Figure 2. Subjective experience of difficulty of the Shooter Task in Control and Depleted conditions for people high and low in IMCP. Difficulty scores were calculated at ±1 SD of Race-Weapons Stereotype (RWS) and of IMCP.



Footnotes

[1]Dunton and Fazio (1997) found that both concern with acting prejudiced and restraint to avoid dispute moderated the relation between implicit and explicit bias, but had somewhat mixed results in terms of achieving conventional levels of statistical significance with different explicit measures of prejudice.

[2] The Moskowitz et al. (1999) method was "indirect" in the sense that it did not involve directly asking participants to make statements regarding their egalitarianism. Furthermore, because participants were not likely aware that their behavior was being evaluated, their egalitarianism was likely spontaneous. However, because the behavior was relatively overt and the triggering event (exhibiting gender stereotyping) was also observable, it would not be prudent to describe it as *implicit* in the sense of occurring primarily outside of conscious awareness.

[3] At best, implicit motives can be inferred by measuring the attitude toward the goal end-state (e.g., a positive implicit attitude toward health predicts health-promoting behaviors, Fishbach & Shah, 2006). Or, in the case of regulatory goals, a positive attitude toward the regulatory behavior itself could reflect the goal, just as Mauss and colleagues (Mauss, Evers, Wilhelm, & Gross, 2006) have shown that positive associations toward emotion regulation assessed by an IAT predict better emotion regulation. In fact, our NAP measure bears considerable resemblance to Mauss et al's Emotion Regulation IAT (ER-IAT) wherein they measured associations between emotion regulation- versus expression-related words (control, cool, hide, contain, suppress vs. expressive, emotional, reveal, disclose, discharge) and positive versus negative words. However, the availability of emotion control and expression verbs allows for a more direct assessment of an attitude toward control/expression. Similar words could have

been used with regard to control or expression of prejudice in a measure of IMCP, but we think they are more generically related to emotional expression. Accordingly, we adopted the approach of assessing the attitude toward the end state (being prejudiced), NAP, and fine-tuned the measure by adding an indicator of self-relevance, BOP.

[4]Participants in the Depleted condition unscrambled significantly fewer words ($M = 3.82$, $SD = 1.97$) than participants in the Control condition ($M = 9.19$, $SD = 1.03$), $t(113) = 18.29$, $p < .01$. Performance in the anagram task did not correlate with any effects in the main analysis.

[5] There are four major differences between the original Shooter Task procedure (Correll et al., 2002) and the modified version used here. First, while Correll et al. (2002) used a button box as the input device, the present experiment used a gamestick with a trigger squeeze in order to increase the authenticity of the task. Second, while Correll et al. (2002) used a response window (i.e., a time range during which responses had to be made in order to be registered), participants in our experiment were encouraged to respond quickly, but not given this explicit limit; thus, there were fewer errors and automatic biases were assessed solely on the basis of response latencies, and not error rates. Third, we did not reward participants monetarily based on their accuracy in the task, as Correll et al. (2002) had, in order to remove motivational factors not directly related to prejudice and stereotyping. Lastly, we administered only 56 trials, fewer than Correll et al.'s (2002) 80, because we sought to shorten the task given the number of other measures included in the experimental sessions.

[6]Because raw IMCP scores were defined as the product of BOP and NAP, IMCP would be positive if both NAP and BOP were negative. Because this would grossly misrepresent those participants, cases where both BOP and NAP had negative values (five participants) were excluded from the present analyses. Alternative methods to address this problem (e.g., adding a

constant to all values to raise the minimum score above zero) served to distort the distribution in a manner that seemed to pose at least as great a cost to validity than the loss of data from five participants. Nevertheless, inclusion of these cases in the analyses using various methods did not appreciably alter our results.

[7]Because BOP and NAP were measured after the depletion manipulation and the shooter task, one could be concerned that their relation to the shooter bias is more an effect than a cause. Accordingly, we ran analyses treating BOP, NAP, and their interaction as dependent variables to see if they were affected by the depletion manipulation or participants' performance on the shooter task. There were no significant effects of the depletion manipulation or of variability in the shooter bias on BOP, NAP, or their interaction (all *p's* > 0.16). That BOP, NAP, and their interaction were not affected by an experimental manipulation of cognitive resources or performance on the shooter task suggests that these measures are reasonably stable.

[8]When the explicit motivation scores (IMS and EMS) were entered in the regression in the place of BOP and NAP scores, no significant main or interaction effects involving these variables were observed (all *p*s > .10).