(Close) Distance Makes the Heart Grow Fonder: Improving Implicit Racial Attitudes and Interracial Interactions Through Approach Behaviors

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In 4 studies, the authors examined the effect of approaching Blacks on implicit racial attitudes and immediacy behaviors. In Studies 1–3, participants were trained to pull a joystick toward themselves or to push it away from themselves when presented with photographs of Blacks, Whites, or Asians before completing an Implicit Association Test to measure racial bias. In Study 4, the effect of this training procedure on nonverbal behavior in an interracial contact situation was investigated. Results from the studies demonstrated that approaching Blacks decreased participants' implicit racial prejudice and increased immediacy when interacting with a Black confederate. The implications of these findings for current theories on approach, avoidance, and intergroup relations are discussed.

Keywords: approach, avoidance, implicit attitudes

Both early theorists (Bain, 1868; Spencer, 1865) and contemporary researchers (Cacioppo, Priester, & Berntson, 1993; Eagly & Chaiken, 1998; Greenwald & Banaji, 1995; Zanna & Rempel, 1988) view attitudes as being inextricably connected to evaluations and behavioral predispositions. However, it has not been until recent years that a more specific relationship between approach–avoidance behaviors and attitudes has been proposed and examined empirically (Barsalou, Niedenthal, Barbey, & Ruppert, 2003; Cacioppo et al., 1993; Chen & Bargh, 1999; Förster & Strack, 1997, 1998; Neumann & Strack, 2000a; Priester, Cacioppo, & Petty, 1996; Wentura, Rothermund, & Bak, 2000). In this recent theorizing, approach orientations are often conceptualized as a frame of mind or motivation associated with pulling something or someone toward the body, whereas avoidance orientations are viewed as motivations associated with pushing an object or person away (Förster, 2001).

Research along these lines has demonstrated that approach and avoidance behaviors can influence attitudes in a predictable fashion, with people generally evaluating objects more favorably after approach versus avoidance actions (Cacioppo et al., 1993; Förster & Strack, 1997, 1998; Neumann & Strack, 2000a; Priester et al.,

1996). For example, Cacioppo et al. (1993) demonstrated that when participants were instructed to flex their muscles by placing their palms on the bottom of the table and lifting (an approach position), they liked neutral Chinese ideographs more than they did when they were instructed to extend their muscles by placing their palms on the top of the table and pressing down (an avoidance position).

Although this line of research initially focused on attitudes toward nonsocial objects, these findings suggest the intriguing possibility that inducing approach orientations might similarly impact attitudes toward social stimuli. For example, approaching members of negatively evaluated ethnic or racial groups may reduce prejudice toward these groups. Two lines of research provide initial findings that suggest that changing approach or avoidance orientations can influence attitudes toward members of stigmatized groups. The first line of research has demonstrated that approach and avoidance behaviors can systematically influence the accessibility of positively and negatively evaluated social stimuli. Specifically, Förster and Strack (1997, 1998) investigated the impact of arm flexions and extensions on participants' recall of names of liked and disliked celebrities. Across several studies, they found that the names of more popular celebrities were generated when participants were flexing rather than extending their arms, whereas more names of notorious celebrities were generated when participants were extending rather than flexing their arms.

The second line of work, which is more directly related to the current research, reveals a correlation between attitudes toward social categories and approach and avoidance behaviors. In particular, Neumann, Hulsenbeck, and Seibt (2004) demonstrated that participants' attitudes toward people with AIDS, as measured by the Implicit Association Test (IAT; Greenwald, McGee, &

Schwartz, 1998), were significantly correlated with avoidance behaviors as indexed by the speed with which a subject pushed a computer mouse away from him- or herself when presented with a photograph of a person with AIDS. Similarly, in preliminary work conducted in conjunction with our present research (Phills & Kawakami, 2005), we found that negative implicit attitudes toward Blacks were significantly related to approach and avoidance behaviors as indicated by participants' pushing and pulling of a joystick in association with photographs of Blacks and Whites (Chen & Bargh, 1999). Although the size of our correlation ($r = .31$) was similar to the magnitude of the relationship that Neumann et al. (2004) obtained ($r = .33$), neither of these two correlational studies directly answer the question of causality. In particular, does approaching or avoiding stigmatized social categories causally impact attitudes and behaviors toward these groups?

The Present Research

Our primary goal in the present research was to extend theorizing on the relationship between approach behaviors and attitudes in two fundamental ways. First, whereas researchers in previous studies have examined the effects of approaching and avoiding nonsocial stimuli while concurrently assessing explicit attitudes toward that stimuli (Cacioppo et al., 1993) or the correlation between implicit attitudes toward meaningful social groups and approach–avoidance actions (e.g., Neumann et al., 2004), we investigated whether prolonged practice in approaching a particular social category in an initial session can subsequently causally influence attitudes toward that category. On the basis of previous findings by Kawakami, Dovidio, and their colleagues (Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000; Kawakami, Dovidio, & Van Kamp, 2005, 2007) that show that associations related to social categories can be altered in enduring ways through extended practice, we predicted that initial training in approaching Blacks would systematically impact subsequent attitudes.

Second, whereas previous researchers have considered the effects of manipulating approach and avoidance behaviors on explicit attitudes (Cacioppo et al., 1993; Priester et al., 1996), we examined the impact of changing approach and avoidance orientations on implicit attitudes and subtle nonverbal behaviors. We focused on implicit attitudes for several reasons. One reason is that implicit responses may be less amenable to social desirability and demand characteristic effects, particularly in socially sensitive domains such as racial attitudes, than are explicit responses (Fazio & Olson, 2003). Another reason is that measures of explicit and implicit racial stereotypes and attitudes are only weakly related empirically (Blair, 2001; Dovidio, Kawakami, & Beach, 2000; Kawakami, Dion, & Dovidio, 1998). Independent of explicit attitudes, implicit attitudes are influential in shaping personal and social behavior in general (Bargh, 1997) and interracial behavior in particular. For instance, implicit measures are a better predictor of spontaneous interracial behaviors, such as nonverbal behavior, than are explicit measures of prejudice (Dovidio, Kawakami, & Gaertner, 2002; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Dovidio, Kawakami, Smoak, & Gaertner, in press; Fazio, Jackson, Dunton, & Williams, 1995; McConnell & Leibold, 2001; see also Wilson, Lindsay, & Schooler, 2000). By examining how changing approach and avoidance behaviors can affect implicit attitudes towards Blacks, we, with the current research,

contribute to the expanding literature regarding the malleability of implicit attitudes. Although implicit responses were initially considered to be automatic "habits of mind" that were generally unchangeable (Bargh, 1999; Devine, 1989), more recent research has demonstrated their malleability (Blair, 2002). The present research can thus further advance an understanding of how implicit attitudes can be influenced in potentially enduring ways.

Whereas previous research has focused on the impact of approach and avoidance behaviors primarily on attitudes (Cacioppo et al., 1993; Priester et al., 1996) or memory processes (Förster & Stack, 1997, 1998), in addition to examining implicit attitudes, we also included a subtle measure of nonverbal behavior in an interracial interaction. Specifically, we investigated the possible link between approach orientations and nonverbal immediacy behaviors. Because of the importance of immediacy behaviors to interracial interactions and discrimination (Dovidio et al., 2002; Word, Zanna, & Cooper, 1974), we investigated whether training in approaching Blacks impacted two key indices of immediacy, namely, directness of participants' body orientation toward a Black interaction partner and proximal distance to the partner.

Overview

In summary, our goal in the present research was to examine the impact of training in approaching Blacks on implicit racial attitudes and immediacy behaviors in interracial interactions (Word et al., 1974), both of which have been identified as being critical to improving race relations (Dovidio, Gaertner, & Kawakami, 2003; Pettigrew & Tropp, 2006). To examine this relationship, we conducted four studies. In Study 1, we investigated the impact of supraliminal training in approaching Blacks on implicit racial attitudes. In Study 2, we examined the importance of awareness to this process by investigating the influence of subliminal training in approaching Blacks on implicit racial attitudes. In Study 3, we investigated the importance of bodily feedback and comparison target categories to this process by modifying the approach instructions and using an alternative comparison category in the training task. Finally, in Study 4, we examined the impact of approaching Blacks in a subliminal training procedure on immediacy behaviors in an interpersonal interaction with a Black partner.

Study 1

Our primary goal in Study 1 was to examine the impact of training in approaching and avoiding Blacks and Whites on subsequent implicit racial attitudes. Previous research suggests the possibility that associations related to social categories can be altered in enduring ways through extended practice that undermines the original habitual response (Kawakami et al., 2000, 2005, 2007). This research provides evidence that extensive practice in negating stereotypes can reduce the automatic activation of traditional associations. For example, in one study, participants were presented on a computer screen with photographs of Blacks and Whites in association with traits that were either stereotypic or nonstereotypic of Black Americans (Kawakami et al., 2000, Study 3). Participants in a training condition designed to reduce stereotype activation were instructed to negate racial stereotypes by responding "no" to photographs of Whites and traits associated

with Whites or photographs of Blacks and traits associated with Blacks. They were further instructed to respond "yes" to stereotype-inconsistent word–picture pairings. Participants in the control condition were given the opposite instructions.

The results of this study (Kawakami et al., 2000, Study 3) demonstrated that participants who were trained to respond in ways that were consistent with cultural stereotypic associations did not differ in the activation of implicit stereotypes before and after the training. In both conditions, these participants showed significant levels of implicit stereotyping. In contrast, although participants who were extensively trained to negate racial stereotypes also demonstrated significant implicit stereotype activation before the training, this bias was eliminated after the training. Participants who had extensive practice in negating cultural stereotypes no longer automatically activated stereotypes of Blacks. Building on the position that implicit associations reflect habits of mind, this research suggests that practicing counter-stereotypic associations can undermine the automatic activation of cultural stereotypic associations. Whereas Kawakami et al. (2000) examined the impact of training in negating stereotypes on the subsequent activation of stereotypes, in the present set of studies we investigated how practice in approaching and avoiding social categories can influence evaluative associations (i.e., implicit prejudice).

In accordance with previous research by Chen and Bargh (1999), the present study used movements with a joystick to reflect approach and avoidance orientations. Specifically, participants in Study 1 were trained to pull a joystick toward themselves when presented with Blacks and to push a joystick away from themselves when presented with Whites (the *approach Blacks–avoid Whites condition*) or to push a joystick away from themselves when presented with Blacks and to pull a joystick toward themselves when presented with Whites (the *avoid Blacks–approach Whites condition*). A third group of participants was trained to move the joystick to the left or right when presented with Blacks and in the opposite direction when presented with Whites (the *sideways control condition*). As in the Kawakami et al. (2000) studies, training on this task was extensive, with participants performing 480 trials. Furthermore, participants in this first study were specifically instructed to approach or avoid a particular racial category by pulling or pushing a joystick, respectively. Thus the movement of the joystick by the participant was explicitly associated with approach and avoidance concepts. After this initial phase, all participants were subsequently presented with what we called a second study, which was really a second phase designed to measure implicit racial attitudes, in which the participants were asked to complete a response latency association task, the IAT.

We hypothesized that extensively training non-Black participants to approach and avoid Blacks and Whites would have effects on implicit attitudes that are analogous to those found when training non-Black participants to negate stereotypes (Kawakami et al., 2000). On the basis of the fact that implicit prejudice and avoidance behaviors are assumed to already be automatic processes that are activated on presentation of the social category Black (Dovidio et al., 1997, 2002; Fazio et al. 1995; Greenwald et al., 1998; Phills & Kawakami, 2005; Neumann et al., 2004), we predicted no difference in implicit prejudice for participants who were trained to avoid Blacks and approach Whites and participants in the sideways control condition who were trained to move the joystick sideways to images of Blacks and Whites. This assump-

tion is supported by previous findings by Kawakami et al. (2000, 2005) that demonstrated no difference between the no-training control condition and a training condition consistent with existing biases. In contrast, participants trained to approach Blacks and avoid Whites were expected to show lower levels of implicit prejudice than were participants trained to avoid Blacks or participants in the control condition. Specifically, we predicted that a priori comparisons would indicate a significant difference between the approach Blacks–avoid Whites condition and the avoid Blacks–approach Whites and sideways control conditions.

Method

Participants. Fifty-six (46 female and 10 male) non-Black undergraduate students took part in the experiment for course credit or a movie pass.[1] The participants were randomly assigned to one of three training conditions (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) in a between-subjects design.

Procedure. On arrival, participants were informed that they would be involved in a series of separate, unrelated studies. In reality, however, the study consisted of two interrelated phases. Specifically, although participants were told that their primary task in Study 1 was to respond to a series of photographs so that we could examine theories of cognitive processes, the actual aim of this phase was to train participants to approach and avoid members of specific social categories. Our primary aim in the second phase, introduced to participants as Study 2, was to examine the effect of the training on the subsequent speed with which participants associated positive and negative concepts with these social categories on an IAT.

On entering the laboratory, participants were led to individual cubicles and seated behind a personal computer with a Pentium 4 processor. All participants were informed that photographs of faces of Blacks and Whites would be presented on a computer screen and that their task was to pull the joystick toward themselves, away from themselves, or sideways (depending on their condition) on presentation of a member of a particular category. Specifically, participants in the approach Blacks–avoid Whites condition were explicitly instructed to "approach Blacks" by pulling the joystick toward themselves when presented with Blacks and to "avoid Whites" by pushing the joystick away from themselves when presented with Whites. In contrast, participants in the avoid Blacks–approach Whites condition were asked to avoid Blacks by pushing the joystick away from themselves when presented with Blacks and to approach Whites by pulling the joystick toward themselves when presented with Whites. Whereas half of the participants in the sideways control condition were instructed to push the joystick to the right when presented with Blacks and to the left when presented with Whites, the other half of the control participants were told to push the joystick to the left when presented with Blacks and to the right when presented with Whites.

On each trial of the training task, the photograph remained on the computer screen until the participant responded. If the response

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[1] Although 59 students participated in Study 1, the data from 1 student who did not follow instructions, 1 student who completed the experiment twice, and 1 student whose data were not properly recorded were excluded from the analyses.

was correct, a blank screen appeared for 1,000 ms before the presentation of the next photograph. If the response was incorrect, a blank screen appeared for 100 ms before a red *X* was presented for 800 ms, which was then followed by a blank screen that appeared for 100 ms before the next trial.

In total, participants received 480 trials consisting of 10 blocks of 48 trials. In each block, black-and-white photographs of 24 Black men and 24 White men scanned from college yearbooks were presented. All trials in each block were presented in a random order. After each block, participants were given a break and asked to press the mouse when they were ready to continue the experiment. Participants were instructed to complete each trial as quickly and as accurately as possible. Before beginning the actual trials, however, participants were first presented with a practice set of 8 trials involving stimuli not used in the main trials.

To examine the effects of approach–avoidance training on implicit racial prejudice, we presented participants with the second task, the IAT. In this task, participants were instructed to categorize photographs of Black and White faces and positive and negative concepts. In particular, the stimuli included in this phase were black-and-white photographs of six Black faces and six White faces not used in the approach–avoidance task as well as six positive words (i.e., *love*, *cheer*, *rainbow*, *peace*, *happy*, and *caress*) and six negative words (i.e., *evil*, *pain*, *grief*, *vomit*, *hate*, and *filth*). In accordance with standard race IATs (Greenwald et al., 1998; Rudman, Ashmore, & Gary, 2001), in one set of critical trials, the *incompatible block*, participants were asked to use the same key when categorizing Black faces and positive words and when categorizing White faces and negative words. In the other set of critical trials, the *compatible block*, participants were asked to use the same key when categorizing Black faces and negative words and when categorizing White faces and positive words. Each critical block of compatible and incompatible associations consisted of 72 trials, and the order of the compatible and incompatible critical trials was counterbalanced across participants.

On completion of the experiment, participants were asked about their perceptions related to the purpose of the experiment, the main expectations of the experimenter, and the relationship between the separate tasks. The responses confirmed our expectation that none of the participants were cognizant of the predicted effects of the training task on response latencies in the IAT.

Results and Discussion

The new scoring algorithm was used to compute IAT scores (Greenwald, Nosek, & Banaji, 2003), in which the standard deviations within conditions were applied to calculate the *D* scores for each training condition. Higher *D* scores reflect more implicit prejudice by showing greater facilitation when associating Blacks with unpleasant words and Whites with pleasant words.

To examine the effect of training in approaching and avoiding Blacks on the speed with which participants associated positive and negative words with Blacks and Whites, we performed a Training (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) one-way analysis of variance (ANOVA) on the IAT *D* scores. As depicted in Figure 1, a significant effect for training was found, $F(2, 53) = 4.12$, $p = .02$. On the basis of the fact that implicit prejudice and avoidance behaviors are assumed to be the default and are automatically
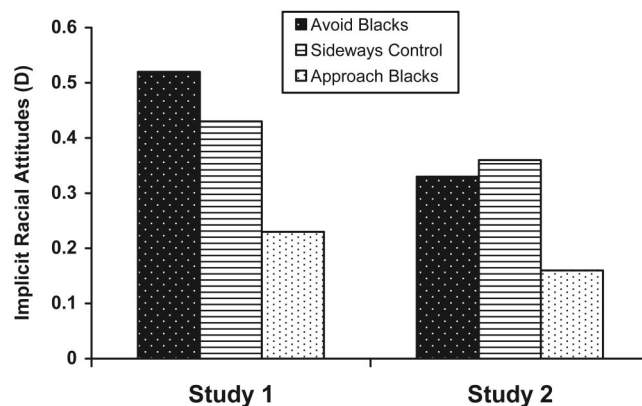

Figure 1. Effects of supraliminal (Study 1) and subliminal (Study 2) training procedures on implicit racial attitudes.

activated by the social category (Dovidio et al., 1997, 2002; Fazio et al., 1995; Greenwald et al., 1998; Neumann et al., 2004; Phills & Kawakami, 2005) and that no training control conditions and conditions aimed at maintaining an existing bias were found to produce similar results in previous research (Kawakami et al., 2000, 2005), we predicted no difference in implicit prejudice for participants who were trained to avoid Blacks and approach Whites and participants in the sideways control condition who were trained to move the joystick sideways in response to Black and White faces. The results supported this prediction. Participants showed no difference in implicit prejudice on the IAT in the avoid Blacks–approach Whites ($D = 0.52$) and the sideways control ($D = 0.43$) conditions, $t(35) = 0.87$, $p = .39$. An a priori contrast, however, demonstrated that these latter two conditions were significantly different from the approach Blacks–avoid Whites condition, $t(53) = 2.78$, $p = .007$. As predicted, participants demonstrated lower implicit prejudice on the IAT after training in approaching Blacks and avoiding Whites ($D = 0.23$) when contrasted with conditions in which participants avoided Blacks and approached Whites or pushed the joystick sideways to Black and White faces ($D = 0.47$).

In summary, the results from Study 1 demonstrate that training participants to systematically approach Blacks and avoid Whites can influence implicit racial attitudes. Specifically, participants who received extensive training in pulling a joystick toward themselves when presented with a photograph of a Black person and pushing it away from themselves when presented with a photograph of a White person showed significantly lower levels of implicit racial prejudice than did participants in the control conditions.

These findings are noteworthy for several reasons. First, whereas previous research has focused on explicit attitudes toward nonsocial objects (Cacioppo et al., 1993; Priester et al., 1996) or correlational data between implicit attitudes and social categories (Neumann et al., 2004; Phills & Kawakami, 2005), the present results are the first to show that approaching a member of a social category causes one to have more favorable implicit attitudes toward that category even when preexisting implicit evaluations of this group are initially negative. Given the theoretical importance of implicit attitudes (Bargh, 1997; Dovidio et al., 2000; Greenwald

et al., 2002; Wilson et al., 2000) and the ability of implicit attitudes to predict subtle forms of intergroup behavior (Dovidio et al., 1997, 2002; Kawakami et al., 2005), the implications of these findings for race relations are practically as well as conceptually significant.

Furthermore, the use of an implicit measure of attitudes after the training also has relevant methodological implications. Specifically, using a more automatic index of racial attitudes, the IAT, renders a demand characteristic explanation for the present findings less plausible than for more explicit measures of attitudes or evaluations (Dovidio & Fazio, 1992). Because participants' control over their responses on these types of reaction time tasks is limited as a result of time constraints, instructions, and task complexity, participants are less able to change their response patterns intentionally to reflect momentary motivations related to the experimental situation or self-presentational goals (Asendorpf, Banse, & Mücke, 2002; Egloff & Schmukle, 2002; Kim, 2003; Steffens, 2004).

Second, although the present findings are consistent with previous research demonstrating that concurrent arm flexions and extensions can influence attitudes toward nonsocial stimuli (Cacioppo et al., 1993; Priester et al., 1996), they provide new evidence that approach orientations toward a specific category may also have effects on subsequent responses if they have been previously practiced. In particular, the results from Study 1 show that social categories are evaluated more positively even after approach behaviors have subsided if participants are extensively trained in an earlier phase to associate approach behaviors with a specific target category. Demonstrating that approach tendencies can have enduring effects on attitudes significantly increases the implications of this process for intergroup relations. Specifically, these findings suggest the possibility that a history of approaching a social category may have positive and additive effects on prejudice. Furthermore, these findings provide further evidence that implicit attitudes, like implicit stereotypes, reflect learned habits of mind (Devine, 1989) that can be influenced by practice in responding in unconventional ways toward social groups (Kawakami et al., 2000, 2005).

Study 2

While our main goal in Study 1 was to examine the effects of approaching and avoiding members of social categories on implicit attitudes toward social categories, our primary aim in Study 2 was to examine the importance of awareness to this process. To achieve this goal, we modified the training procedure in Study 2 to include subliminal rather than supraliminal presentation of Black and White faces. Responses on the joystick, therefore, were no longer ostensibly contingent on racial categories. In particular, participants were instructed to simply pull a joystick toward themselves or push a joystick away from themselves when presented with the words *approach* or *avoid*. Participants in a sideways control condition were presented with the words *right* or *left*. Unbeknownst to all participants, these labels were associated with the subliminal presentation of Black or White faces according to condition. As in Study 1, after the training phase, all participants were presented with an implicit measure of racial attitudes, the IAT.

Our predictions for Study 2 were the same as those for Study 1. In particular, on the basis of previous theorizing and results

(Dovidio et al., 1997, 2002; Fazio et al., 1995; Greenwald et al., 1998; Kawakami et al., 2000, 2005), we expected no difference in implicit attitudes between participants in the avoid Blacks–approach Whites condition and in the sideways control condition. However, we did expect that participants in the approach Blacks–avoid Whites condition would demonstrate less implicit prejudice than participants in the latter two conditions.

Method

Participants. Fifty-four (37 female and 17 male) non-Black undergraduate students took part in the experiment for course credit or a movie pass.[2] Participants were randomly assigned to one of three subliminal training conditions (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) in a between-subjects design.

Procedure. On arrival, participants were informed that they would be involved in a series of separate, unrelated studies. As in Study 1, the first and second phases were related to approach and avoidance training and implicit racial prejudice, respectively.

The training phase of Study 2 was similar to that of Study 1. The one main difference for participants in this study was that the presentation of the photographs in the training was subliminal rather than supraliminal. In particular, participants were informed that they would be presented on a computer screen with the words *approach* or *avoid*, and they were instructed to pull the joystick toward themselves when presented with the word *approach* and to push the joystick away from themselves when presented with the word *avoid*. Some participants were also instructed to push the joystick to the right when presented with the word *right* and to push the joystick to the left when presented with the word *left*. Unbeknownst to the participants, however, before being presented with the words *approach*, *avoid*, *right*, or *left*, they were subliminally presented with a photograph of either a Black or a White face.

Specifically, participants in the approach Blacks–avoid Whites condition were presented with the word *approach* and therefore were required to pull the joystick toward themselves after being subliminally presented with a Black face and were presented with the word *avoid* and therefore were required to push the joystick away from themselves after being subliminally presented with a White face. In contrast, participants in the avoid Blacks–approach Whites condition were presented with the word *avoid* and therefore were required to push the joystick away from themselves after being subliminally primed with a Black face and were presented with the word *approach* and therefore were required to pull the joystick toward themselves after being subliminally primed with a White face. Whereas half of the participants in the sideways control condition were instructed to push the joystick to the right on presentation of the word *right* after the subliminal presentation of a Black face and to the left on presentation of the word *left* after the subliminal presentation of a White face, the other half of the participants in this condition were presented with the words *left* and *right* and were asked to push the joystick to the left after

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[2] Although 58 students participated in Study 2, the data from 3 students who did not follow instructions and 1 student who exited the program too early by accident were excluded from the analyses.

subliminal presentation of a Black face and to the right after the subliminal presentation of a White face, respectively.

On each trial of the subliminal training task, a forward mask of a moonscape that was the same size as the race photographs (5 in. $\times$ 6.5 in., or approximately 12.7 cm $\times$ 16.5 cm) was presented initially for 300 ms. Next, a photograph of a Black or White face was presented for 23 ms and followed by a backward mask, which was the same as the forward mask, for 33 ms (Draine & Greenwald, 1998). Finally, the word *approach*, *avoid*, *left*, or *right* was presented and remained on the computer screen until the participant responded. As in Study 1, participants received a total of 480 training trials and 8 practice trials before being presented with the same IAT procedure used to measure implicit racial attitudes in Study 1.

On the basis of pilot testing ($N = 10$), we chose the above parameters for the training procedure because the subliminal prime was presented consistently at 23 ms, and none of the participants reported awareness of racial faces even when specifically prompted. However, to further ensure that the training was subliminal, we carefully questioned all participants in the present study for awareness using a funnel debriefing after the experiment. In accordance with procedures used by Bargh and his colleagues (Bargh, Chen, & Burrows, 1996; Chartrand & Bargh, 1996), we extensively probed participants to ensure that they were unaware of the content of the subliminal primes. Specifically, participants were asked what they thought the purpose of the experiment had been and about their perceptions related to the main expectations of the experimenter. They were also asked about the relationship between the separate tasks, whether there was anything unusual about the experiment in general, and whether they noticed anything suspicious about the background in the approach and avoidance tasks. Further questioning was related to the specific content of the background flashes in this task. The responses from this interview indicated that only 4 participants expressed any awareness of the subliminal presentation of faces in this task, and the data of these participants were excluded from the analyses, leaving 50 participants.

Results and Discussion

To examine the effect of subliminal training in approaching Blacks on implicit racial attitudes, we performed a subliminal training (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) one-way ANOVA on the IAT D scores. As depicted in Figure 1, a marginally significant subliminal training effect was found in which the pattern of results mirrored the effects in Study 1, $F(2, 47) = 2.93$, $p = .06$. In accordance with our predictions, participants showed no difference in implicit prejudice on the IAT between the condition aimed at maintaining an existing bias and the control condition. As expected, IAT effects were similar after training in avoiding Blacks and approaching Whites ($D = 0.33$) and in the sideways control condition ($D = 0.36$), $t(33) = 0.27$, $p = .79$. However, also as predicted, an a priori contrast indicated that these conditions were significantly different from the approach Blacks–avoid Whites condition, $t(47) = 2.28$, $p = .03$. In particular, there was lower implicit prejudice on the IAT after training in approaching Blacks and avoiding Whites ($D = 0.16$) in comparison to the avoid

Blacks–approach Whites and the sideways control conditions ($D = 0.35$).

Although comparisons across studies need to be interpreted with caution, a supplementary analysis was conducted to examine the pattern of results across the supraliminal (Study 1) and subliminal (Study 2) training procedures. Specifically, a Study (supraliminal vs. subliminal) $\times$ Training (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control conditions) ANOVA was performed on the IAT D scores. A main effect of study was found, $F(1, 100) = 4.27$, $p = .04$. Participants in the supraliminal training study ($D = 0.39$) demonstrated more bias on the IAT than did participants in the subliminal training study ($D = 0.29$). More important for the present analysis and as expected on the basis of the findings of Studies 1 and 2, this analysis also revealed a significant effect for training, $F(2, 100) = 7.16$, $p = .001$, that was not qualified by whether the training was supraliminal or subliminal. In particular, the Study $\times$ Training interaction did not approach significance, $F(2, 100) = 0.64$, $p = .53$. Although in future studies researchers should examine the impact of subliminal and supraliminal training procedures within one study with random assignment to awareness conditions, the present pattern of findings suggests a similar impact of supraliminal and subliminal training on reducing implicit biases.

In summary, the results from Study 2 replicate the findings in Study 1 and further demonstrate that training in approaching and avoiding social groups can influence attitudes toward these categories, even when strong previous evaluative associations exist, even on implicit measures of attitudes, and even on subsequent tasks. Furthermore, Study 2 suggests that training in approaching members of racial categories can reduce implicit prejudice even without awareness of the racial contingencies in the training task. Although the use of an implicit attitude measure such as the IAT limits the possibility that demand characteristics are a viable explanation for the results in this paradigm, by using subliminal presentations of pictures of Blacks and Whites in the training phase, we were able to reduce participants' awareness and related motivations to control this process (Bargh & Chartrand, 2000).

Study 3

Our goal in the first two studies was to investigate the impact on implicit attitudes of explicitly associating approach and avoidance concepts with racial categories by pulling and pushing a joystick in supraliminal (Study 1) and subliminal (Study 2) training tasks. Previous research on attitudes toward nonsocial stimuli (e.g., Cacioppo et al., 1993; Priester et al., 1996), however, suggests that the simple action of extending or flexing muscles by pulling and pushing a joystick without *approach* and *avoid* labels may be sufficient to influence implicit racial attitudes. In particular, a growing body of literature has examined effects related to the embodiment of cognitions in social psychology (Förster, 2003; Förster & Strack, 1996, 1997, 1998; Kawakami, Young, & Davidio, 2002; Neumann & Strack, 2000a, 2000b; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Niedenthal, Brauer, Halberstadt, & Innes-Ker, 2001; Schubert, 2004; Schwarz & Bless, 1991; Wells & Petty, 1980; Zajonc, Pietromonaco, & Bargh, 1982). In part on the basis of these effects, Barsalou et al. (2003; Niedenthal et al., 2005) described a theory of social embodiment in which an interaction between the body and higher

cognition is detailed and the importance of compatibility between embodiment and cognition on performance is emphasized.

Although from an intergroup perspective it is important to examine how both behavior and cognition related to approach orientations can affect implicit prejudice, in accordance with this recent embodiment literature, in Study 3 we examined the impact of bodily feedback per se, independent of semantic associations related to the concepts of approach and avoidance. Specifically, participants in this study were shown how to simply push or pull a joystick away from or toward themselves in association with a particular category. Whereas participants in the previous two studies were explicitly instructed to pull the joystick or push the joystick to approach or avoid specific racial categories (Study 1) or in response to the words *approach* and *avoid* (Study 2), participants in Study 3 were shown how to carry out these push or pull actions with no higher order approach or avoidance semantic associations included in the instructions.

Our secondary goal in Study 3 was to examine the importance of the comparison nontarget social category in the training task on implicit attitudes. Specifically, in Studies 1 and 2, participants in the critical condition were trained to approach Blacks and avoid Whites and were subsequently presented with an implicit attitude test related to Blacks and Whites. Because the nontarget category Whites was included in both the approach training task and the implicit attitude test, it was unclear if the training was influencing responses to the Black target category (as we assumed), the White nontarget comparison category, or both. Specifically, it is possible, although not likely given earlier findings (Kawakami et al., 2000, 2005), that training in avoiding Whites rather than approaching Blacks reduced the bias on the race IAT. To resolve this issue, we randomly assigned participants in Study 3 to either a White or an Asian nontarget comparison category in the training phase.

One further modification in the procedure in Study 3 was the exclusion of the sideways control condition. Because previous theorizing predicts no difference between participants in the avoid Blacks–approach Whites or Asian conditions and the sideways control condition (Dovidio et al., 1997, 2002; Fazio et al., 1995; Greenwald et al., 1998) and because previous results related to antibias training (Kawakami et al., 2000, 2005) and the present findings from Studies 1 and 2 provide additional support for these expectations, Study 3 included only the avoid Blacks–approach Whites or Asian conditions as controls.

Because we did not expect that changes in training instructions that focus on the embodiment or the inclusion of a nontarget Asian comparison category would influence the basic impact of approaching Blacks on implicit attitudes, our predictions for Study 3 were the same as our predictions for Studies 1 and 2. Specifically, we predicted a main effect for training condition that was not qualified by the type of nontarget comparison category (i.e., Asian or Whites). We expected once again that participants who approached Blacks, regardless of whether they concomitantly avoided Whites or avoided Asians, would show lower levels of implicit racial prejudice on a Blacks–Whites IAT than would participants who avoided Blacks and concomitantly approached either Whites or Asians.

Method

Participants. Seventy-three (48 female and 25 male) non-Black undergraduate students took part in the experiment for

course credit or a movie pass.[3] Forty of these participants identified themselves as Canadian or being from a White European background (e.g., Italian, British), 15 as Asian (e.g., Chinese, Japanese, Korean), 8 as South Asian (e.g., Pakistani, East Indian), and 10 as other (e.g., Jewish, Middle Eastern). Participants were randomly assigned to one of four conditions in a 2 (approach Blacks vs. avoid Blacks) × 2 (White nontarget comparison category vs. Asian nontarget comparison category) between-subjects design.

Procedure. On arrival, participants were informed that they would be involved in a series of separate, unrelated studies. As in the previous studies, the first phase was the approach and avoidance training and the second phase measured implicit Black–White racial prejudice with the IAT.

The training phase in Study 3 was similar to that in Study 1 with two main differences. The first difference was that participants now received instructions in how to push and pull a joystick in relation to specific social categories rather than being told to explicitly approach and avoid these groups. In general, participants were told that "you will be making two movements with the joystick—like this [the experimenter demonstrated by pulling the joystick] and like this [the experimenter demonstrated by pushing the joystick]." Participants in the approach Blacks–avoid Whites or Asians conditions were specifically told that every time a photograph of a Black person was presented, they were to respond by pulling the joystick, and the exact pulling motion was demonstrated; and that every time a photograph of an alternative category member (either White or Asian depending on the condition) was presented, they were to respond by pushing the joystick, and the exact pushing motion was demonstrated. In contrast, participants in the avoid Blacks–approach Whites or Asians conditions were given the opposite demonstrations. Specifically, they were shown how to push the joystick when presented with a Black target person and how to pull the joystick when presented with a person from an alternative category (either White or Asian).

The second modification was the inclusion of an additional nontarget social category in the training that was unrelated to the comparison category used in the IAT. Specifically, the inclusion of White and Asian nontarget comparison categories in Study 3 resulted in four distinct conditions. In particular, participants in the approach Blacks–avoid Whites and avoid Blacks–approach Whites conditions received the same stimuli used in Studies 1 and 2. These participants were presented with black-and-white photographs of 24 Black men and 24 White men scanned from college yearbooks. Participants in the approach Blacks–avoid Asians and avoid Blacks–approach Asians conditions, in contrast, were presented with black-and-white photographs of 24 Black men and 24 Asian men scanned from college yearbooks. All participants received a total of 480 training trials in which the 48 photographs were presented in each of the 10 blocks of trials. Before beginning the actual trials, however, participants were first presented with a practice set of 8 trials involving stimuli not used in the main trials. Finally, all participants were presented with the same IAT procedure related to implicit evaluations of Blacks and Whites used in the previous studies.

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[3] Although 77 students participated in Study 3, the data from 4 students who did not follow instructions were excluded from the analyses.

Results and Discussion

To examine the effect of training in approaching and avoiding Blacks and Whites when instructions focused on embodiment and type of nontarget comparison category varied, we performed a Training (approach Blacks vs. avoid Blacks) × Nontarget Comparison Category (Whites vs. Asians) ANOVA on the IAT D scores. As depicted in Figure 2, a significant main effect of training was found, $F(1, 69) = 9.09$, $p = .004$. These results mirrored previous findings by showing that participants who were trained to approach Blacks ($D = 0.17$) showed less implicit prejudice than did participants who were trained to avoid Blacks ($D = 0.33$). Furthermore, this effect was not qualified by type of nontarget category. Specifically, the two-way interaction between Training × Nontarget Comparison Category was not significant, $F(1, 69) = 0.02$, $p = .89$.

Furthermore, analyses that examined each type of nontarget condition separately also demonstrated significant training effects. In particular, participants who were trained to approach Blacks and avoid Whites ($D = 0.18$) subsequently demonstrated more positive implicit racial attitudes than did participants who initially avoided Blacks and approached Whites ($D = 0.35$), $t(35) = 2.03$, $p = .05$. Likewise, participants who were trained to approach Blacks and avoid Asians ($D = 0.16$) subsequently demonstrated more positive implicit racial attitudes than did participants who initially avoided Blacks and approached Asians ($D = 0.32$), $t(34) = 2.31$, $p = .03$.

Because the training for half of the participants included Asian faces, we examined whether these effects would emerge when Asian participants were excluded. Although we did not expect differences between Asians and non-Asians on the Blacks–Whites racial IAT, further analyses excluding 15 Asians that were included in the main sample produced a similar set of results. Specifically, a Training (approach Blacks vs. avoid Blacks) × Nontarget Comparison Category (Whites vs. Asians) ANOVA produced a significant main effect only for training, $F(1, 54) = 4.13$, $p = .05$. As predicted, the two-way interaction between Training × Type of Nontarget Category was not significant, $F(1, 54) = 0.13$, $p = .73$. In general, participants who were trained to approach Blacks ($D = 0.19$) showed less implicit prejudice than did participants who were trained to avoid Blacks ($D = 0.32$).

In summary, the results from Study 3 demonstrate that even when training instructions did not explicitly use the terms *approach* and *avoid*, the pattern of findings replicates the effects in Studies 1 and 2. These results are in accordance with current theorizing related to social embodiment and provide further evidence for the close relationship between bodily feedback and higher cognitions (Barsalou et al., 2003; Niedenthal et al., 2005). In particular, these findings show that making bodily movements that pull a member of a social category toward the self can change attitudes toward that social category by making those attitudes more positive.

Furthermore, the results from Study 3 demonstrate that despite changes in the nontarget social category in the training task, participants continued to show reduced prejudice on the IAT. These findings suggest that the effects of approach behavior on implicit racial prejudice in the present research is related to approaching the target category Blacks rather than avoiding the nontarget category Whites. Even when the training sessions used a nontarget category that was not Whites (i.e., Asians), similar effects were produced on the Blacks–Whites IAT. Together, the findings from Studies 1, 2, and 3 provide consistent evidence that training in approaching Blacks leads to a reduction in implicit prejudice.

Study 4

Whereas the findings from Studies 1–3 demonstrate that approaching a social category can influence implicit attitudes toward that category, it is conceivable that approach training can also influence how people behave toward Blacks in an actual interracial interaction (Esses & Dovidio, 2002). To the extent that training in approaching Blacks can change people's general orientation toward that group, it might similarly be expected to impact people's immediacy behaviors and their willingness to open themselves up for interaction with a member of that group (Word et al., 1974). To test this assumption, in Study 4 we investigated the impact of training in approaching Blacks on nonverbal behaviors during an actual interaction with a Black confederate.

A classic set of studies on self-fulfilling prophecies by Word et al. (1974) underlines the importance of investigating immediacy behaviors during interracial interactions. In two studies, these researchers cleverly demonstrated that racial outgroup members are treated differently in subtle ways and that these differences can have a large influence on the interaction and evaluation of the outgroup targets. Specifically, participants in their first study were instructed to interview students for a position on a marketing team. Not surprisingly, this study demonstrated that participants responded more negatively toward Black applicants in comparison to White applicants by showing less immediate behaviors. In particular, Word et al. found that White interviewers sat farther away from and oriented their body less directly toward Black applicants than White applicants.

It is important to note that this initial study was followed by a second study in which participants were now placed in the role of applicant rather than interviewer. However, half of the interviewers were trained to respond with immediate behaviors similar to the interviewers' actions with White applicants in Study 1, and the other half of the interviewers were trained to respond with nonimmediate behaviors similar to the interviewers' actions with Black applicants in Study 1. The results from the second study convincingly demonstrated that participants who were treated in
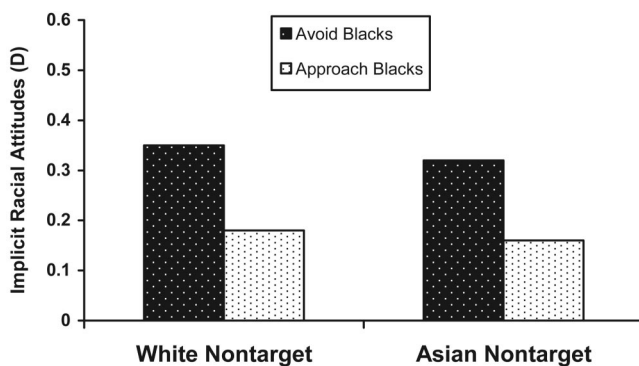

Figure 2. Effects of an embodiment training procedure and nontarget comparison categories in Study 3 on implicit racial attitudes.

nonimmediate ways were judged to be less adequate for the job and less composed by independent raters than were participants treated with immediate behaviors. Furthermore, participants who were subjected to nonimmediate, in comparison to immediate, behaviors by the interviewer reciprocated these behaviors by sitting farther away and orienting themselves in a nondirect fashion.

In the present study, we focused specifically on immediacy behaviors in an interracial context after approach training because these types of behaviors have been defined as communication behaviors that enhance closeness and nonverbal interaction with others (Word et al., 1974). Greater immediacy is related to increased physical proximity and perceptual availability to the communicator. Because of the importance of immediacy behaviors to interracial interactions and discrimination, in Study 4 we investigated the effects of approaching Blacks on immediacy toward a Black interaction partner. Specifically, we examined whether training in approaching Blacks would foster behavior that indicated an openness for communication toward a Black interaction partner. We selected seating proximity as one of our indices of immediacy because physical distance between two people can impede smooth interactions. The choice of the participant to sit closer to a Black person is clearly a positive behavior and indicates a willingness on the part of the person to be close and intimate (Henderson-King & Nisbett, 1996; Word et al., 1974). We chose body orientation as our second indicator of immediacy because when interacting with others, focusing one's body on one's partner indicates an interest and openness to communicate with that person (Word et al., 1974). It implies that one is available for the person. Turning away from a partner in a discussion, alternatively, can impede communication and may indicate an unwillingness to direct one's attention to the other person.

To examine the impact of approach orientation on immediacy behaviors, we first randomly assigned participants to one of three subliminal training conditions: approach Blacks–avoid Whites, avoid Blacks–approach Whites, or sideways control. Next, participants were asked to complete a task in which they revealed intimate details about their life to a partner (Aron, Melinat, Aron, Vallone, & Bator, 1997). Although the partner was ostensibly just another participant, a Black male confederate who was trained to respond with a set script was paired with each participant. During a brief interaction between the two "participants," the confederate recorded how far away the participant sat, as well as the participant's body orientation.

This study used two strategies to reduce the effects of demand characteristics and other explicit motivations related to the experimental setting on behavior in an interracial contact situation. First, the training procedure in Study 4 used the same subliminal presentation of photographs of Blacks and Whites as in Study 2. Therefore, participants were not aware that the training was related to racial categorizations. Second, we focused on subtle nonverbal behavior related to immediacy, such as body positioning and placement of chairs, in Study 4 to rule out explicit motivational explanations for the effects of the approach training. As demonstrated in previous race-related research (Dovidio et al., 1997, 2002; Word et al., 1974), bias toward Black participants may be more evident in subtle nonverbal spontaneous behaviors than in more explicit deliberative behaviors.

On the basis of the findings from Studies 1 and 2, we expected no differences in immediacy behaviors between participants in the avoid Blacks–approach Whites condition and in the sideways control condition. We did expect, however, that an a priori contrast would demonstrate more immediacy toward the Black confederate in the approach Blacks–avoid Whites condition than in the avoid Blacks–approach Whites and sideways control conditions.

Method

Participants. Forty-five (31 female and 14 male) non-Black undergraduate students took part in the experiment for course credit.[4] The participants were randomly assigned to one of three subliminal training conditions (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) in a between-subjects design.

Procedure. On arrival, participants were informed that they would be involved in a series of separate studies. Unbeknownst to the participants, the primary aim of the first study was to train participants to approach and avoid specific social categories. The goal of the next phase, introduced as the second study, was to examine the effect of the training on participants' immediacy behaviors during an intimate interaction with a member of the target category.

The training phase in Study 4 comprised the same subliminal training procedure used in Study 2, using identical parameters for the presentation of the stimuli. Specifically, participants in Study 4 were required to complete training in which they were instructed either to pull the joystick toward themselves when presented with the word *approach* or to push the joystick away from themselves when presented with the word *avoid* or to move the joystick sideways when presented with the words *left* or *right*. Each type of instruction was preceded by the subliminal presentation of a Black or a White face, depending on the training condition. To ensure that the training was subliminal, as in Study 2, we carefully questioned all participants for awareness after the experiment (Bargh et al., 1996; Chartrand & Bargh, 1996). Only 1 participant indicated any awareness of the subliminal presentation of racial faces; his data were excluded from the analyses, leaving 44 participants.

To examine the effect of approach–avoidance training on actual contact with Blacks, all participants were asked to engage in an interpersonal closeness task based on a paradigm by Aron et al. (1997). Specifically, participants were informed that their task was to get close to their partner by asking a series of questions. The questions called for self-disclosure on intimate topics and behaviors. Participants were paired with a Black male participant who was actually a hired confederate. To reduce inhibitions, make the interaction feel as natural as possible, and limit evaluation concerns, we had the interaction occur without the intrusion of a video camera or other recoding devices.

At the beginning of this task, participants were asked to join a confederate who was already stationed in a small cubicle, seated in a chair, and ostensibly waiting for the interaction to begin. The confederate was unaware of the training condition of the participant. The participant was instructed to take a seat by moving a chair to participate in this interaction. Both the participant and the confederate were provided with an instruction sheet and a list of

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[4] Although 47 students participated in Study 4, the data from 2 students who did not follow instructions were excluded from the analyses.

questions. The instructions emphasized that "this is a study of interpersonal closeness and your task is simply to get close to your partner." The instructions also described a procedure in which each partner was required to answer each question on the sheet. The confederate was instructed to answer the first question, then the participant answered the same question. Next, the participant was instructed to answer the second question, then the confederate answered the same question. The partners were instructed to continue through the set of questions, each taking turns at being the first to answer. The questions concerned intimate details related to the interaction partners' lives. For example, two items included were "When did you last cry in front of another person? By yourself?" and "What was one of the most embarrassing moments in your life?"

The confederate was instructed to respond in a pleasant but not overly friendly fashion to all participants. Extensive training and a specific script were used to standardize the confederate's responses as much as possible. During the question session, the confederate was required to record the immediacy of his partner's behavior. Although previous research on interracial interactions has used a number of different nonverbal indices to rate the positivity of interactions (e.g., eye blinking, eye contact), these types of ratings often involve videotaped interactions and subsequent coding (Dovidio et al., 1997, 2002). On the basis of previous research (Word et al., 1974), we expected approach behaviors to have the most powerful and direct impact on immediacy behaviors. Because of the demonstrated importance of these types of behaviors to subsequent openness for interracial interaction as well as self-fulfilling prophecy and behavioral confirmation processes (Klein & Snyder, 2003; Snyder, 1992; Word et al., 1974), the present research focused on immediacy behaviors by the participants as rated online by the confederate during the interaction.

In accordance with classic studies by Word and others (Henderson-King & Nisbett, 1996; Word et al., 1974), the confederate was instructed to rate the focus of the body position of the participant during the interaction and the distance of the participant's chair from his own. Specifically, the confederate was trained to estimate participants' body orientation by giving each participant a rating from −4 to 4. A rating of 0 indicated that the participant was sitting directly in front of the confederate with his body focused toward the confederate and open for contact. A rating of −4 or 4 indicated that the participant was not focused on the confederate and that his or her body was positioned at an approximate angle of 40° to the left or right of the participant, respectively. Each scale point between 0 and −4 or 0 and 4 indicated an increase of approximately 10° in body positioning away from the confederate. The confederate also estimated the distance from the front of the participant's chair to the front of his own chair on a scale from 1 to 9. A rating of 9 on this scale indicated the farthest possible distance from the confederate in the cubicle, and a rating of 1 indicated the closest distance.

Confederates were extensively trained prior to the experiment to make reliable judgments of body posture and seating distance. Specifically, a pilot study ($N = 20$) demonstrated that two separate Black confederates' ratings of body orientation were highly correlated with one another ($r = .95, p < .001$). Likewise, the two Black confederates' ratings of distance were highly correlated with

one another ($r = .91, p < .001$) and with an objective distance between the front of the confederate's chair and the front of the participants' chairs ($rs = .94, ps < .001$).

Results and Discussion

Before examining participants' immediacy behaviors during the interpersonal task, we transformed the scores related to the body position of the participants to absolute values. The body position scores were significantly correlated with the distance scores, $r(42) = .64, p < .001$, and the reliability, represented by Cronbach's α, was .77. Both the distance and the body position scores were therefore standardized and combined to create an overall immediacy score toward the Black confederate. Higher numbers on this measure indicate a more indirect body orientation and a greater seating distance and therefore less immediacy and less of an intimate orientation toward the confederate.

To examine the effect of the training in approaching Blacks on the participants' immediacy behaviors, we performed a subliminal training (approach Blacks–avoid Whites vs. avoid Blacks–approach Whites vs. sideways control) one-way ANOVA on the immediacy scores. As indicated in Figure 3, a significant effect for type of training was found, $F(2, 41) = 3.18, p = .05$. As expected on the basis of previous theorizing and results (Dovidio et al., 1997, 2002; Fazio et al., 1995; Greenwald et al., 1998; Kawakami et al., 2000, 2005) and the findings from Studies 1 and 2, simple effects analyses demonstrated no difference between participants who were trained to maintain a bias and the control condition, $t(26) = 0.08, p = .93$. In particular, participants' immediacy behaviors toward the Black confederate were similar in both the avoid Blacks–approach Whites condition ($M = 0.24$) and the sideways control condition ($M = 0.21$). However, as predicted, an a priori contrast indicated that immediacy ratings in these conditions were significantly different from the ratings in the approach Blacks–avoid Whites condition, $t(41) = 2.51, p = .02$. Replicating the pattern obtained in the previous studies with implicit attitudes, participants in the approach Blacks–avoid Whites condition displayed a more positive response by showing greater immediacy
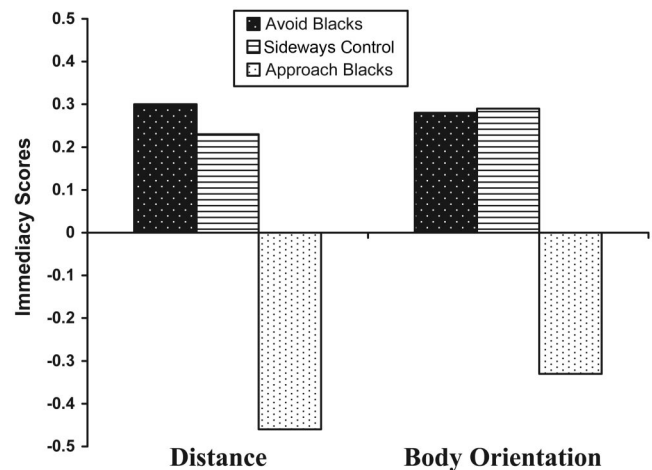

Figure 3. Effects of a subliminal training procedure in Study 4 on distance from and body orientation toward a Black confederate.

($M = -0.40$) than participants in the other training conditions ($M = 0.23$). Specifically, participants who were trained to approach subliminal Black faces and to avoid subliminal White faces sat closer to the Black confederate and oriented their bodies more directly toward the Black confederate than participants who were trained to avoid Blacks and to approach Whites or to respond in a neutral way.[5]

General Discussion

Our goal in the present studies was to examine the impact of approach−avoidance orientations on implicit racial attitudes and interracial behavior. The results from this research provide evidence of a direct causal relationship between approaching racial categories and implicit racial attitudes and behaviors. Specifically, the results from Studies 1–3 consistently demonstrate that regardless of whether participants were explicitly instructed to approach Blacks, were trained to respond to the word *approach* when subliminally presented with photographs of Black faces, or were simply shown how to pull a joystick toward themselves when presented with pictures of Blacks faces, approach orientations improved implicit attitudes toward this social category. As expected, the type of nontarget comparison category in the training procedure did not attenuate this pattern. Regardless of whether participants approached Blacks and avoided Whites or approached Blacks and avoided Asians, training in approaching Blacks reduced IAT effects. Furthermore, the results from Study 4 revealed that this type of training can also influence nonverbal behaviors in an actual interaction with a target category member. Specifically, we found that subliminal training in approaching Blacks led to more immediacy and openness toward a Black partner as rated online by the confederate during the interaction.

It is important here to discuss more specifically how implicit attitudes can be influenced by training in approaching social categories. In accordance with current theorizing, we assumed that pulling an object toward the self facilitates positive affective processing (Neumann & Strack, 2000a). Specifically, we predicted and found that participants who had extensive practice in approaching a member of a social category by pulling a joystick toward the self demonstrated more positive attitudes toward Blacks. Furthermore, although current theorizing also assumes that pushing an object away from the self facilitates negative affective processing (Neumann & Strack, 2002a), most of this research has not tested this assumption against an adequate neutral condition. In contrast to this theorizing, we did not predict or demonstrate this effect. Specifically, participants who were trained to avoid Blacks did not differ in their attitudes toward this racial group from participants in a control condition who were trained to respond to this social category in a neutral way (i.e., sideways). On the basis of previous research related to nonstereotypic training (Kawakami et al., 2000, 2005) as well as the assumption that avoiding Blacks is already highly automatized (Dovidio et al., 1997, 2002; Fazio et al. 1995; Neumann et al., 2004; Phills & Kawakami, 2005), we did not expect that practice in a well-learned response would have a significant effect.

It is interesting that recent theorizing related to motor and valence compatibility effects might seem to suggest an opposing set of predictions (Barsalou et al., 2003; Förster, 2004). In particular, this research would suggest that for objects that have strong preexisting evaluative associations, approach and avoidance behaviors would only influence attitudes if the behaviors and the initial attitudes were compatible. For example, Förster (2004) found that avoidance behaviors only influenced attitudes toward foods with a preexisting negative valence (e.g., beef lung) and approach behaviors only influenced attitudes toward foods with a preexisting positive valence (e.g., a popular soft drink). In particular, this model predicts that if the valence of the object and the evaluative implications of the behavior are compatible, then the sources of the valence are hard to distinguish and the two valences combine and lead to greater polarization. However, if the valences are incompatible (i.e., if the object is positive and avoided or if the object is negative and approached), it is easier to discriminate between the sources, and the approach or avoidance behavior will have no influence. In the present context, in contrast to the actual results and expectations, this model would predict that avoidance behaviors would make attitudes toward Blacks more negative and that approach behaviors would not affect attitudes toward Blacks because the valences of the two processes are incompatible.

Whereas previous results related to this motor compatibility model have used simple nonsocial targets with unambiguous valence associations, the focus of the present research was on evaluative responses toward Blacks. Although these responses have been shown to be predominantly negative on recent implicit measures (Dovidio et al., 1997; Fazio et al., 1995; Greenwald et al., 1998), Whites' responses to this category are typically complex and ambivalent, containing both positive and negative elements (Dovidio & Gaertner, 1998; Dovidio, Kawakami, Smoak, & Gaertner, in press; Gaertner & Dovidio, 1986; Katz, 1981; McConahay, 1986). It is therefore possible that approach behaviors toward this category may have activated different parts of a more complex knowledge structure, which resulted in the activation of a more positive construct and attitudes that were less prejudicial than normal.

However, it is also important to note that the procedures used by Förster (2004) and our procedures differed in the extent to which the participants approached the target object and the timing of the approach behaviors. Whereas the Förster (2004) studies required participants to evaluate the objects while simultaneously flexing or extending their arms over a short period of time, the present studies

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[5] Because the training targeted Black men, both male and female participants were paired with a confederate who was Black and male. Additional analyses examining the effects of participant sex indicated that this variable did not interact with the training. Specifically, the Training × Participant Sex interaction was not significant, $F(1, 41) = 0.33$, $p = .72$. Nevertheless, we also investigated responses by male and female participants separately in subsequent analyses. Planned comparisons indicated that women in the approach Blacks–avoid Whites condition displayed greater immediacy ($M = -0.42$) than did women in the avoid Blacks–approach Whites or sideways control training conditions ($M = 0.34$), $t(28) = 2.98$, $p = .006$. Although a perusal of the means and planned comparisons indicated that the levels of immediacy displayed by men in the approach Blacks–avoid Whites condition ($M = -0.24$) and men in the avoid Blacks–approach Whites or sideways control training conditions ($M = 0.04$) were in the same direction as the women, this difference was smaller. Furthermore, at least partially on the basis of the fact that there were only 13 men in this study, the results were nonsignificant, $t(10) = 0.95$, $p = .37$.

required participants to complete an implicit evaluation task after extensive practice in approaching or avoiding members of the social category. We propose that this latter procedure actually changed the traditional approach or avoidance tendencies toward this category. In particular, because participants are initially more oriented toward avoiding Blacks, positive attitudes are incompatible. However, after 480 trials in approaching members of this category, participants become more oriented toward approaching Blacks and therefore positive attitudes become compatible and negative attitudes become incompatible. This latter process can therefore be perceived to be in accordance with and not contradictory to the motor compatibility model.

Recent theorizing by Higgins and his colleagues (Förster, Higgins, & Idson, 1998; Förster, Higgins, & Strack, 2000; Higgins, 1997; Higgins, Roney, Crowe, & Hymes, 1994) further suggests that approach and avoidance orientations may be directly related to regulatory focus. In particular, approach behaviors are associated with a promotion focus and an emphasis on achieving one's ideals. People in a promotion focus are more apt to take risks and be adventurous. This type of focus could imply a greater willingness to meet new people from diverse backgrounds and races. Avoidance behaviors, alternatively, are associated with a prevention focus and an emphasis on norms and oughts. People in a prevention focus tend to play it safe and to protect themselves from the unknown. This type of focus would therefore imply less of a willingness to meet people from different backgrounds and races. By training people to automate their approach behaviors, the present paradigm may be increasing their tendencies to focus on promotion rather than prevention strategies.

Although the present set of results consistently demonstrates that approach behaviors can influence implicit prejudice, future research that examines the impact of these procedures on regulatory focus and motor compatibility directly is clearly warranted. This research should highlight the differences between traditional manipulations of approach and/or avoidance and training in approach and/or avoidance and the implications of each of these types of strategies for changes in attitudes to social categories that have more univalent evaluative associations (e.g., child molesters, skinheads) and those that are likely to have ambivalent evaluative associations (e.g., ethnic and racial groups).

Whereas previous research has primarily demonstrated the causal effects of approach and avoidance behaviors on changes in explicit attitudes, the present research extends these finding by focusing on implicit attitudes. Methodologically, our use of an implicit measure of attitudes, the race IAT, along with our manipulation of approach–avoidance orientations using both subliminal and supraliminal training procedures reveal that these effects can occur in a largely automatic fashion, outside of participants' awareness and beyond their conscious control (Bargh, 1997). These aspects of the research limit the possibility that self-presentational concerns and/or demand characteristics provide viable explanations for these results. Conceptually, these findings are important because of the significance of implicit attitudes to the activation of stereotypes and interracial behavior. Specifically, recent research has demonstrated that although explicit attitudes toward social categories are predictive of explicit controllable behavior, implicit attitudes are predictive of more implicit, subtle behaviors (Dovidio et al., 1997, 2002; Fazio et al., 1995; Kawakami et al., 2005, 2007). Furthermore, because of social norms that condone the occurrence of explicit stereotypes, prejudice, and discrimination, implicit stereotyping, prejudice, and other subtle forms of intergroup bias may be more prevalent and damaging to outgroup members (Gaertner & Dovidio, 1986). Examining different strategies that reduce these implicit biases therefore becomes critical. Although it is useful for future research to include both implicit and explicit measures of prejudice in the procedure, the present findings related to training in approaching Blacks can be added to the evolving list of effective strategies found to reduce implicit biases (Blair, 2002).

It is worth noting that the present research provides initial evidence that approach orientations can influence not only attitudes but also actual behavior in an interracial interaction. Specifically, this research shows for the first time that participants who have extensive training in approaching Blacks showed more immediacy and openness for communication with a Black interaction partner. Theoretically, the effect of training on immediacy behaviors may occur indirectly or directly. In terms of the indirect route, training in approach–avoidance orientation influences implicit attitudes, as we demonstrated in Studies 1, 2, and 3. Implicit attitudes, in turn, influence behaviors, particularly those that occur with minimal awareness and control, such as nonverbal behaviors (Dovidio et al., 1997, 2002). However, it is also possible that approach–avoidance tendencies may represent such a fundamental orientation toward a group that exposure to the social category itself may affect behavioral responses directly, without mediation by attitude or stereotype activation (Kawakami et al., 2002). Approaching a member of a group may imply opening oneself up for close interpersonal interactions. Indirect and direct effects, however, are not mutually exclusive, and it is possible that both are influential. Thus future researchers might productively consider both routes of influence by investigating the role of implicit attitudes and by examining a wider range of behaviors, including more controllable and overt behaviors as well as nonverbal behaviors (see Dovidio et al., 2002).

The contact hypothesis, as described by Allport (1954), proposed that negative attitudes toward stigmatized or negatively stereotyped groups can be ameliorated through appropriately structured intergroup contact. In general, research has provided support for this hypothesis, with people explicitly reporting more positive attitudes toward stigmatized outgroup members after positive interactions (for reviews, see Dovidio et al., 2003; Pettigrew, 1998; Pettigrew & Tropp, 2006; Stephan, 1987). Although obviously at a much more fundamental level, theorizing related to approach–avoidance orientations may bear some resemblance to the contact hypothesis. The finding that approaching a member of a social category can make people more positive toward that category (Dovidio et al., 2003; Pettigrew, 1998; Pettigrew & Tropp, 2000) is in accordance with the basic assumptions that contact between group members can lead to more favorable attitudes (Allport, 1954). While the contact hypothesis is clearly more complex and multifaceted because of an emphasis on the social environment and the specific set of boundary conditions necessary for this effect to occur (Pettigrew, 1998; Pettigrew & Tropp, 2000, 2006; Stephan, 1987), the present research related to approach behaviors focuses on a more basic and limited mechanism possibly related to initial automatic responses to outgroup members. Notwithstanding that this work does not speak directly to the more general questions related to the impact of contact in everyday settings over an

extended period of time, our results provide consistent evidence that even a limited set of approach behaviors can improve intergroup attitudes. Furthermore, although these findings suggest a direct link between moving toward a member of a social category and evaluation of that category, more research is needed to understand how approach behaviors can influence the quality and quantity of contact with outgroup members over time and how this, in turn, might influence racial attitudes.

To better understand the relationship between basic approach–avoidance processes, attitudes, and intergroup behavior, future researchers also need to focus on the causal bidirectionality of this relationship. On the basis of the proposal that social embodiment can function both as a response and as a stimulus, we assume that the interaction between embodiment and cognition is bidirectional (Barsalou et al., 2003). Specifically, we would predict not only that participants will be more positive toward a social category after approach behaviors but that they will be slower to approach a negative social category because approach behaviors are incongruent with negative evaluations.

Recent evidence from several laboratories provides support for this assumption (Chen & Bargh, 1999; Solarz, 1960). Results from experiments by Chen and Bargh (1999), for example, revealed that participants were faster at pulling a lever toward themselves than pushing a lever away from themselves when presented with a word that was positive and faster to push than pull the lever when presented with a word that was negative. Furthermore, Castelli, Zogmaister, Smith, and Arcuri (2004) and Vaes, Paladino, Castelli, Leyens, and Giovanazzi (2003), when using social stimuli, found that approach orientations, represented by movement toward the social stimuli, were facilitated by positive groups such as child counselors and that avoidance behaviors were facilitated by negative categories such as outgroup members. Recent studies in our laboratory (Phills, Kawakami, Divecha, Steele, & Dovidio, 2007) also demonstrated that attitudes toward social categories can influence approach and avoidance orientations toward members of these groups. In particular, we found that changing the evaluative associations related to social categories through training influenced the subsequent speed and extent to which participants approached group members.

In conclusion, the present set of studies provides new evidence of a causal relationship between approaching and avoiding social categories and implicit racial attitudes and immediacy in social interactions. Besides providing further conceptual insight into the nature and function of attitudes (Eagly & Chaiken, 1998; Greenwald & Banaji, 1995) and evidence concerning how implicit responses can be altered, the present work suggests new ways to combat unconscious biases and to promote positive intergroup communication.

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