ABSTRACT

TAKING IT PERSONALLY: CONTEXT EFFECTS ON THE PERSONALIZED IMPLICIT ASSOCIATION TEST

by Sara Nicole Austin

Olson and Fazio (2004) personalized the Implicit Association Test (IAT) to focus on measuring personal associations, which are presumably less influenced by situational variables and therefore are more reflective of one’s personal attitudes. Yet, previous research on the influence of context suggests even implicit measures can be susceptible to context effects. The current work examines whether the personalized IAT can be influenced by context too, and in particular, whether it is especially susceptible to social contexts that evoke self-knowledge associated with attitude object evaluations. In Experiment 1, implicit attitudes (as measured using a personalized and a traditional IAT) were influenced by the activation of attitude object relevant self-knowledge. In Experiments 2 and 3, personalized, but not traditional, implicit racial attitudes were more positive to the extent that an egalitarian experimenter was perceived to be more similar (Experiments 2 & 3) or closer (Experiment 3) to the participant. Implications are discussed.
TAKING IT PERSONALLY: CONTEXT EFFECTS ON THE PERSONALIZED IMPLICIT ASSOCIATION TEST

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## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Overview of Current Experiments</td>
<td>5</td>
</tr>
<tr>
<td>EXPERIMENT 1</td>
<td>5</td>
</tr>
<tr>
<td>Method</td>
<td>6</td>
</tr>
<tr>
<td>Participants</td>
<td>6</td>
</tr>
<tr>
<td>Materials</td>
<td>7</td>
</tr>
<tr>
<td>Self-aspect prime</td>
<td>7</td>
</tr>
<tr>
<td>Control prime</td>
<td>7</td>
</tr>
<tr>
<td>Traditional IAT</td>
<td>7</td>
</tr>
<tr>
<td>Personalized IAT</td>
<td>8</td>
</tr>
<tr>
<td>Procedure</td>
<td>9</td>
</tr>
<tr>
<td>Results</td>
<td>9</td>
</tr>
<tr>
<td>Discussion</td>
<td>11</td>
</tr>
<tr>
<td>EXPERIMENT 2</td>
<td>15</td>
</tr>
<tr>
<td>Method</td>
<td>15</td>
</tr>
<tr>
<td>Participants</td>
<td>15</td>
</tr>
<tr>
<td>Materials</td>
<td>15</td>
</tr>
<tr>
<td>Experimenter ratings of closeness</td>
<td>15</td>
</tr>
<tr>
<td>Closeness manipulation</td>
<td>15</td>
</tr>
<tr>
<td>Racial IATs</td>
<td>16</td>
</tr>
<tr>
<td>Procedure</td>
<td>17</td>
</tr>
<tr>
<td>Results</td>
<td>17</td>
</tr>
<tr>
<td>Discussion</td>
<td>19</td>
</tr>
<tr>
<td>EXPERIMENT 3</td>
<td>22</td>
</tr>
<tr>
<td>Method</td>
<td>23</td>
</tr>
<tr>
<td>Participants</td>
<td>23</td>
</tr>
<tr>
<td>Materials</td>
<td>23</td>
</tr>
<tr>
<td>Experimenter ratings of closeness</td>
<td>23</td>
</tr>
<tr>
<td>Closeness manipulation</td>
<td>23</td>
</tr>
<tr>
<td>Racial IATs</td>
<td>23</td>
</tr>
<tr>
<td>Explicit racial attitude measure</td>
<td>24</td>
</tr>
<tr>
<td>Procedure</td>
<td>24</td>
</tr>
<tr>
<td>Results</td>
<td>24</td>
</tr>
<tr>
<td>Discussion</td>
<td>26</td>
</tr>
<tr>
<td>GENERAL DISCUSSION</td>
<td>27</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>32</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>41</td>
</tr>
</tbody>
</table>
FIGURES

1. Drink preference as assessed by the traditional and personalized IATs for both self-domain and prime conditions in Experiment 1 (greater scores indicate a greater preference for mixed drinks relative to coffee)…………………………………………………………………………38

2. Implicit attitudes towards African-Americans as measured using the personalized and traditional IATs for both conditions in Experiment 2 (greater scores indicate greater negativity toward African-Americans relative to Caucasians)………………………………………………..39

3. Implicit attitudes towards African-Americans as measured using the personalized and traditional IATs for both closeness conditions in Experiment 3 (greater scores indicate greater negativity towards African-Americans relative to Caucasians)……………………………….40
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Attitudes are widely defined as a psychological tendency to evaluate a given entity with some degree of favor or disfavor (Eagly & Chaiken, 1993) and are generally assumed to exhibit relative stability over time and across situations (Eagly & Chaiken, 2007). However, considerable research suggests that the expression of attitudes is sensitive to contextual factors such as response options, question order, references to social norms, and question formatting (e.g., Mitchell, Nosek, & Banaji, 2003; Schwarz, 2007; Schwarz, Groves, & Schuman, 1998; Smith & DeCoster, 2000). For example, Caucasian participants report less racial prejudice on the Modern Racism Scale in the presence of an African-American experimenter than in the presence of a Caucasian experimenter (Fazio, Jackson, Dunton, & Williams, 1995). Indeed, some have argued that it is better to think of attitudes as evaluative judgments formed when needed rather than as enduring dispositions (e.g., Schwarz, 2007).

Historically, psychologists have focused on understanding the effects of context on explicit attitudes, which are evaluations that can be verbally reported and that are consciously available (Schwarz et al., 1998). More recently, researchers have become interested in the effect of context on implicit attitudes (e.g., Blair, 2002; Mitchell et al., 2003; Schwarz, 2007; Wittenbrink, Judd, & Park, 2001), which are evaluations that cannot be verbally reported because they are relatively nonconscious in nature. Specifically, implicit attitudes arise from paired associations in memory between attitude objects (e.g., insects) and evaluations (e.g., unpleasant) that become activated when encountering an attitude object (Greenwald, McGhee, & Schwartz, 1998; Rydell & McConnell, 2006; Smith & DeCoster, 2000; see also, Fazio & Towles-Schwen, 1999) while explicit attitudes arise from deliberative operations upon propositional and symbolic representations at a relatively higher-order level of cognitive processing (Gawronski & Bodenhausen, 2006; McConnell, Rydell, Strain, & Mackie, 2008). Part of the interest in developing implicit attitude measures was to assess evaluations that were less “contaminated” by extraneous “downstream” influences (e.g., Dovidio & Fazio, 1992; Fazio et al., 1995). For instance, Fazio et al. (1995) proposed that their implicit measure of attitudes provided a “bona-fide pipeline” for uncovering one’s true attitude, uncontaminated by self-presentation and consistency biases that are known to confound explicit attitude measures. However, recent research suggests that although implicit attitudes are different from explicit attitudes in many ways (e.g., Rydell & McConnell, 2006; Smith & DeCoster, 1998; Wilson, Lindsey, & Schooler, 2000), they can both be affected by context (e.g., Blair, 2002; Mitchell et
al., 2003; Sinclair, Lowery, Hardin, & Colangelo, 2005; Wittenbrink et al., 2001). For example, Wittenbrink et al. (2001) demonstrated that measures of implicit attitudes toward African-Americans varied as a result of exposure to either a positive (i.e., a family barbecue) or a negative (i.e., a gang incident) group stereotypic context. This research suggests that the same attitude object may activate different associations depending on the particular context in which the object is encountered (Gawronski & Bodenhausen, 2006).

Currently, the Implicit Association Test (IAT; Greenwald et al., 1998) is the most widely-used measure of implicit attitudes because of its considerable construct validity, predicative utility, internal consistency, and test-retest reliability (Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Nosek, Greenwald, & Banaji, 2005; Perugini, 2005). The IAT measures the differential association strength between two attitude objects (e.g., flowers vs. insects) with evaluation (e.g., pleasant vs. unpleasant) by examining the speed with which individuals can classify stimuli using two responses. In the first block of an IAT assessment, exemplars of attitude objects (e.g., images of flowers and insects) are categorized into the attitude object categories (e.g., flowers vs. insects). In the second block, participants categorize exemplars with clear-cut valence implications (e.g., pleasant and unpleasant words) using evaluative categories (e.g., pleasant vs. unpleasant). In the critical subsequent blocks, both attitude objects and evaluative objects must be concurrently categorized, with two concepts sharing the same response key (e.g., flowers or good vs. insects or bad). When strongly-associated categories (e.g., flowers and good) share a response key, categorization performance is faster than when less associated categories (e.g., insects and pleasant) share a response key. The speed advantage revealed when more strongly-associated categories share the same response key is the IAT effect, which represents the index of implicit attitude strength (Greenwald et al., 1998).

Yet, a potential unforeseen consequence of this task is that implicit attitude estimates provided by the IAT may be influenced by information associated with the attitude object unrelated to one’s personal evaluations of the attitude object (i.e., extra-personal associations; Han, Olson, & Fazio, 2006; Karpinski & Hilton, 2001; Olson & Fazio, 2004). Essentially, the attribute assignments regarding valence in the IAT task can evoke the question, “pleasant or unpleasant for whom?” For example, although many people may personally view spinach as quite pleasant, they would most likely be exposed to cultural associations suggesting that spinach is viewed by many people as unpleasant, and this extra-personal knowledge may be associated
with the attitude object in memory despite it not reflecting one’s own personal feelings toward spinach. As a result, extra-personal attitude object associations may affect one’s performance on the IAT measure even though such extra-personal associations may not reflect one’s own personal evaluation of spinach.

To address this potential influence of extra-personal knowledge, Olson and Fazio (2004) personalized the IAT by eliminating error feedback and changing the valence-related category labels to “I like” and “I don’t like.” These changes promote a more personal evaluation of task-related exemplars, presumably tapping one’s personal associations more closely. By focusing the evaluation on one’s idiosyncratic feelings and by eliminating error feedback (which is likely to lead people to consider more normative evaluations), the extent to which extra-personal associations contribute to IAT performance is presumably reduced. Although the personalized IAT has evidenced its ability to assess an important component of implicit associations that hinges on the relationship between associations and the self (Han et al., 2006; Olson & Fazio, 2004), there is still debate regarding what advantages exist to personalizing the IAT (e.g., Gawronski, Peters, & LeBel, 2008; Nosek & Hanson, 2008a). For example, the rationale for personalizing the IAT rests, “on the view of attitudes as associations in memory between the attitude object and one’s summary evaluation of the object…thus…an attitude is by definition an inherently personal association” (Olson & Fazio, 2004, pp. 655). However, research shows that attitudes are not formed in a vacuum and can be shaped by a wide variety of contextual factors (e.g., Blair, 2002; Mitchell et al., 2003; Sinclair et al., 2005; Wittenbrink et al., 2001). Therefore, although personal associations are likely to be activated automatically when encountering the attitude object (Olson & Fazio, 2004; Sherman, Chassin, Rose, & Koch, 2002), extra-personal associations may be activated as well depending on the context of the encounter. For example, when a person who likes spinach is enjoying this dish at home, one’s extra-personal associations are probably less likely to become activated than when encountering the same dish in a restaurant, where one’s extra-personal associations are likely to become more activated because of the presence of others. Research using the traditional IAT, which some would argue represents a blend of both personal and extra-personal associations, has demonstrated validity in predicting behavior (e.g., McConnell & Leibold, 2001; Rydell & McConnell, 2006), suggesting that the associations activated have some correspondence to behavioral outcomes. Indeed, one of the most intriguing features of associative evaluations is
that they can become activated irrespective of whether a person considers these evaluations to be accurate or not (Gawronski, Strack, & Bodenhausen, 2005; Strack & Deutsch, 2004).

Proponents of the personalized IAT also assume that, unlike extra-personal associations, personal associations are not influenced by situational variables and therefore better assess one’s true attitude (Olson & Fazio, 2004). However, attitudes are frequently conceptualized as multifaceted representations in memory that vary over time and across situations (Mitchell et al., 2003; Wilson et al., 2000; Wittenbrink et al., 2001). It is unlikely that personal associations are an exception to this rule, and it is more likely that situation and context influence personal associations in meaningful ways. For instance, some studies suggest that most individuals possess a number of context-dependent self-aspects (i.e., a self-relevant cognitive category, concept, or schema; Linville, 1985) and that attributes are likely to vary markedly across self-aspects (Baumeister, 1998; Brown & McConnell, 2009; Linville, 1985).

According to the Multiple Self-Aspects Framework (MSF; McConnell, in press; McConnell, Rydell, & Brown, 2009), self-concepts are comprised of a number of self-aspects (e.g., one’s student self, one’s dating self), each of which are associated with attributes derived from many sources, such as culture, feedback from others, inferences drawn from one’s behavior, experiences, and experienced or simulated bodily states. Therefore, contexts that make specific self-aspects more accessible should affect one’s perceptions and evaluations (e.g., Hugenberg & Bodenhausen, 2004; McConnell et al, 2009) because of the attitude-relevant associations imbued in a particular self-aspect, making relevant evaluative associations more accessible. For example, Hong, Morris, Chiu, and Benet-Martinez (2000) showed that Hong Kong and Chinese American bicultural possess both East Asian and Western cultural meaning systems, and that each system can be independently activated by culturally relevant icons or primes. Specifically, when bicultural participants, whom presumably possess both an East Asian and a Western self-aspect, were exposed to American cultural primes (e.g., pictures of an American flag, Superman) they exhibited a Western attribution style (i.e., greater internal relative to external attributions). Conversely, when participants were exposed to Chinese cultural primes (e.g., pictures of a Chinese dragon, Stone Monkey) they exhibited an East Asian attribution style (i.e., greater external relative to internal attributions). These results indicate that context (i.e., the cultural primes) can activate a relevant self-aspect (i.e., East Asian vs. Western) and that one’s active self-aspect can influence cognition (i.e., attribution style). Applied to the
current work, the Hong et al. (2000) findings suggest that context evoking self-aspect relevant knowledge can influence self-aspect activation and that the active self-aspect can influence activation of evaluative associations with attitude objects relevant to the active self-aspect. For example, when one’s scholar self-aspect is activated, more positive associations with coffee may become more accessible because of their relevance for that self-aspect, whereas positive associations with mixed drinks might become less accessible because such beverages are less relevant to one’s scholar self-aspect (Hugenberg & Bodenhausen, 2004). And similarly, when one’s socializing with peers self-domain is activated, more positive associations with mixed drinks might become more accessible while positive associations with coffee may become less accessible. Indeed, past research suggests that one’s self-concept varies considerably across situations, changing in response to cues and primes (Bargh & Williams, 2006), situational contexts (Brown & McConnell, 2009), the presence of others (Buckingham & Alicke, 2002), and even thinking about others (Fitzsimons & Bargh, 2003). Thus, it is likely that our personal associations differ depending on the contextual and situational factors present during the activation of one’s self-aspects, and accordingly, even measures such as the personalized IAT should be affected by such factors, and at times, could potentially be more subject to these influences.

**Overview**

The overall goal of the current research is to identify contextual factors that influence responses on the personalized IAT. Just as extra-personal associations can be affected by context (e.g., Blair, 2002; Mitchell et al., 2003; Wittenbrink et al., 2001), expressions of personal associations should also be affected by context that influence the accessibility of self-relevant knowledge. In Experiment 1, the effect of activating different aspects of the self on the personalized and traditional IAT was assessed to determine if active self-aspect influences responses on the personalized IAT. In Experiment 2 and 3, proximity of the source of an association to the self was experimentally manipulated, via interpersonal touch (Experiment 2) and an incidental similarity (Experiment 3), to examine if closeness to the self underlies the impact of self-relevant knowledge on personalized implicit attitude measures.

**Experiment 1**

Self-aspects have been shown to vary considerably and most individuals possess multiple self-aspects (e.g., Bargh & Williams, 2006; Brown & McConnell, 2009; Buckingham & Alicke,
2002; McConnell, in press; McConnell et al., 2009). Changes in the active self-aspect should be reflected in personal associations, which by nature represent associations that are more strongly associated with the self (Olson & Fazio, 2004). Additionally, previous research suggests that the activated self-aspect (e.g., scholar self-aspect) should lead to associations with objects and attributes closely associated with this self-aspect (e.g., coffee, intelligence) to become activated (Greenwald et al., 2002). Thus, the current study used a priming manipulation to change the differential accessibility of one’s personal context to observe the effect on implicit attitude measurement. In order to ensure that the priming task involved activation of self-knowledge instead of more normative knowledge associated with others’ socializing with peers or engaging in scholarship, two control conditions were included where normative knowledge relevant to either the socializing or scholarship self-aspect was evoked (i.e., knowledge associated with other students’ socializing or engaging in scholarship).

It was predicted that participants in the socializing self-aspect condition would show a relatively greater preference for mixed drinks on their personalized IAT scores than participants in the scholar self-aspect condition because of the shift in activated personal associations evoked by the self-aspect manipulation. Additionally, we were interested in whether the personalized IAT would show this effect more so than the traditional IAT because of the shift in personal rather than extra-personal associations primed by the self-aspect manipulation. Because the traditional IAT presumably measures extra-personal as well as personal associations, it should be relatively less sensitive to shifts in self-aspect activation, which presumably reflect personal associations more strongly. It was also predicted that participants in the socializing control-prime condition would not exhibit a greater preference for mixed drinks on the personalized IAT than participants in the scholar control-prime condition because normative or cultural information reflects extra-personal, rather than personal, associations that should not affect performance on the personalized IAT. Finally, it was predicted that participants in the socializing control-prime would exhibit a greater preference for mixed drinks on the traditional IAT than participants in the scholar control-prime condition because the traditional IAT is sensitive to the normative or cultural information primed earlier in this condition.

**Method**

**Participants.** One-hundred and one introductory psychology students from Miami University participated for partial fulfillment of a course requirement.
Materials.

Self-aspect prime. Opposing aspects of the self presumably held by most individuals in the subject pool (i.e., scholar self-domain and socializing with peers self-domain) were primed by a writing exercise (McConnell et al., 2009). MediaLab software was used to implement the task (Jarvis, 2001). Specifically, participants were told (scholarship prime in italics, socializing prime in brackets):

“For the next 5 minutes think about times when you were engaged in scholarly activities [socializing with peers]. On the keyboard, write down what comes to mind in as much detail as possible. It is important that you think about what you are like when you are engaged in scholarly activities [socializing with peers] during this 5 minute period and are as detailed in your description of your thoughts as possible. A new screen will appear in 5 minutes telling you when you should stop writing.”

Control prime. In order to ensure that the priming task involved activation of self-knowledge instead of more normative knowledge associated with other students’ socializing or engaging in scholarship, two control conditions were also used. In the control conditions, participants were told (scholarship prime in italics, socializing prime in brackets):

“For the next 5 minutes think how typical Miami students engage in scholarly activities [socializing with peers]. On the keyboard, write down what comes to mind in as much detail as possible. It is important that you think about what typical Miami students are like when they are engaged in scholarly activities [socializing with peers] during this 5 minute period and are as detailed in your description of your thoughts as possible. A new screen will appear in 5 minutes telling you when you should stop writing.”

Traditional IAT. Next, in an ostensibly unrelated categorization experiment, participants completed personalized and traditional IATs assessing preference for beverages associated with scholarship (e.g., coffee) relative to beverages associated with one’s social life (e.g., mixed drinks). Following past work (e.g., Greenwald et. al., 1998; McConnell, Rydell, Strain, & Mackie, 2008), each IAT consisted of seven blocks of trials with the following structure: (Block 1) 20 trials categorizing the concept exemplars (i.e., images of coffee and mixed drinks); (Block 2) 20 trials categorizing the attribute exemplars (i.e., pleasant and unpleasant words); (Block 3)
20 trials categorizing all exemplar types, with one concept category and one attribute category sharing a response key, and the other attribute category and concept category sharing the other response key; (Block 4) 20 trials using the same categorization rules as Block 3; (Block 5) 20 trials categorizing the concept exemplars as in Block 1, but with the key assignments reversed; (Block 6) 20 trials categorizing all four exemplar types, but reflecting the change of key assignments in Block 5; (Block 7) 20 trials using the same categorization rules as Block 6. For each IAT, 10 stimulus words were presented, 5 positive attributes (e.g., wonderful and awesome) and 5 negative attributes (e.g., offensive and disgusting); and 10 concepts images were presented, 5 exemplars of mixed drinks and 5 exemplars of coffee beverages, with all images being set to a uniform size (1.5 inches by 1.5 inches) and presented upon a neutral background. For half of the participants, Blocks 3 and 4 presented the “mixed drinks or unpleasant” and the “coffee drinks or pleasant” combinations and Blocks 6 and 7 presented the “mixed drinks or pleasant” and the “coffee drinks or unpleasant” combinations. For remaining participants, Blocks 3 and 4 presented the “mixed drinks or pleasant” and the “coffee drinks or unpleasant” combinations and Blocks 6 and 7 presented the “mixed drinks or unpleasant” and “coffee drinks or pleasant” combinations.

Participants were told that they were to make a series of category judgments. On each trial, a stimulus word or image was displayed in the center of a computer window and participants used the “D” and “K” keys on the keyboard to indicate their responses. Category label reminders were displayed on the left and right sides of the window. Participants were told:

“Make your judgments as rapidly as possible, but don’t respond so fast that you make many errors. Occasional errors are okay. If you do make a mistake, a red x will appear on the screen below the target word. Please press the correct category key to continue. You cannot continue until you make the correct response.”

Participants were also told to keep their index fingers on the “D” and “K” keys throughout the experiment to minimize delays in responding. All instructions were read aloud to participants and were also presented on the computer for participants to read prior to beginning the IAT. A 250-ms gray screen intertrial interval was used. In between blocks, participants were given a self-paced break and instructions for the next block.

**Personalized IAT.** The personalized IAT followed Olson and Fazio’s (2004) recommendations, which entails using the same methodology described by Greenwald et al.
(1998) for the traditional IAT with a few important modifications. Specifically, “I like” and “I don’t like” replaced “pleasant” and “unpleasant” as the attribute category labels, error feedback was excluded, and idiosyncratic attribute words (e.g., disco, spinach) replaced the positive and negatively valence attribute exemplars in order to enhance the personally-evaluative nature of the categorization task. Other than these changes, the same methodology and instructions utilized for the traditional IAT were also used for the personalized IAT.

Both IATs were scored based upon the recommendations of each measure’s authors.¹ Specifically, to reduce the positive skew inherent in response latency data (Greenwald et al., 1998), a log transformation was applied to each response latency. IAT effect scores were computed by comparing mean response latency of trials in Block 4 to trials in Block 7. Responses in Blocks 3 and 6 (which presumably are more sensitive to task learning effects), as reported by Greenwald et al. (1998), were discarded from analyses. The accuracy of any given trial was ignored, and extreme latencies were recoded such that those less than 300 ms were scored as 300 ms and those greater than 3000 ms were scored as 3000 ms. The mean response latency for the prejudice-consistent block trials was subtracted from the mean response latency for the prejudice-inconsistent block trials. Thus, larger positive IAT effect scores reflected relatively stronger negative attitudes toward African-Americans than Caucasians.

Procedure. After providing informed consent, participants completed the priming activity on a computer (participants were randomly assigned to experimental conditions). Afterwards, participants completed both the personalized and traditional IATs (completion order was counterbalanced between subjects) before being debriefed and dismissed from the lab.

Results

Of the 101 participants, 47 were removed from data analyses: 11 because of high error rates on the IAT (i.e., accuracy rates less than 90%) and 36 because they reported that they never drank coffee or never drank mixed drinks. Data from participants reporting that they never drank coffee or mixed drinks were excluded because people are less likely to have personalized

¹ Both IATs were scored using a variety of scoring procedures suggested by the authors, such as the traditional algorithm (Greenwald et al., 1998), and the improved algorithm (Lane, Banaji, Nosek, & Greenwald, 2007). Additional analyses using other trimming criteria (e.g., omitting incorrect trials, omitting trials with responses slower than two SDs from the mean) were also conducted yielding similar results to those presented.
attitudes about attitude objects for which they have little or no first-hand experience. Retaining data from these participants produced similar results. For the IAT, 5 participants exhibited high error rates (i.e., accuracy rates less than 90%) on the traditional IAT, 5 participants exhibited high error rates on the personalized IAT, and one participant exhibited high error rates on both IATs. Thus, responses from 54 participants (16 men, 38 women) were used for analysis.

Participants’ scores on the personalized IAT were positively and significantly correlated with scores on the traditional IAT, $r(52) = .42, p = .001$.

A 2 (Domain: scholar vs. socializing) x 2 (Prime: self vs. others) x 2 (IAT type: personalized vs. traditional) mixed-design ANOVA (IAT type was a within-subjects factor) was conducted to evaluate whether the self-aspect manipulation affected performance differentially on the personalized and traditional IATs. Prior to analyses, IAT scores were converted to z-scores to permit comparisons across IAT measures (to provide the reader with a sense of the IAT effects in raw ms, mean personalized IAT scores were -8.7ms, $SD = 195.19$, and mean traditional IAT scores were 13.75ms, $SD = 153.98$). Contrary to predictions, none of the within-subjects main or interaction effects were significant (see Figure 1). However, a between-subjects main effect of domain, $F(1, 50) = 14.21, p < .01$, was observed. Surprisingly, participants in the scholar self-domain condition exhibited a significantly greater preference for mixed drinks relative to coffee ($M = .36, SD = .88$) than did participants in the socializing self-domain condition ($M = -.39, SD = .61$). While those in the self-prime condition descriptively exhibited a greater preference for mixed drinks relative to coffee ($M = .16, SD = .89$) than those in the other-prime condition ($M = -.14, SD = .78$), this difference was not statistically significant, $F(1, 50) = 2.93, p = .09$.

To further investigate the nature of the self-aspect manipulation main effect (i.e., participants in the scholar self-domain condition exhibiting a greater preference for mixed drinks than coffee, relative to those in the socializing condition), the essays participants wrote during the manipulation were coded by two independent raters on 9-point scales, assessing nine dimensions that could plausibly explain this unexpected result (greater values indicate greater expression of the dimension; see Appendix A). Because of an error, nine of these essays were not recorded leaving 45 essays available for the data-coding analysis. Dimensions exhibiting sufficient interrater reliability (i.e., coefficient kappa $> .70$) were analyzed, using the sum of the raters’ scores. Correlation coefficients indicated that, of the four dimensions included in this
analysis, only anxiety exhibited in participants’ written accounts was correlated with IAT scores, $r(43) = .39$, $p < .01$, and $r(43) = .28$, $p = .07$, for the traditional and personalized IATs, respectively. In other words, as participants’ accounts revealed greater anxiety, their implicit evaluation toward mixed drinks relative to coffee became more positive, suggesting that greater positivity toward mixed drinks might serve an automatic goal state of anxiety reduction.

To investigate how the self-aspect manipulation differentially influenced anxiety ratings from the participants’ accounts, a 2 (Domain: scholar vs. socializing) x 2 (Prime: self vs. others) ANOVA was computed with anxiety as the dependent variable. A main effect of prime was found, $F(1, 41) = 9.32$, $p < .01$, with participants in the self prime condition ($M = 6.09$, $SD = 3.71$) exhibiting more anxiety than those in the other prime condition ($M = 3.25$, $SD = 2.56$). Additionally, the main effect of domain was marginally significant, $F(1, 41) = 3.20$, $p = .08$, with those in the scholar self-domain condition ($M = 5.29$, $SD = 4.18$) exhibiting more anxiety than those in the socializing self-domain condition ($M = 3.76$, $SD = 2.09$). The interaction effect was nonsignificant. These results are consistent with an account, albeit speculative, that a greater implicit preference for mixed drinks relative to coffee exhibited by those in the student self-domain condition reflected greater anxiety provoked by the student self-domain manipulation relative to the socializing self-domain manipulation and also the greater anxiety provoked by the self-knowledge prime relative to the normative-knowledge prime. However, a series of regression analyses (Baron & Kenny, 1986) indicated that the requirements for meditational analyses were not met because anxiety did not predict participants’ implicit attitudes toward drink preference.

**Discussion**

Contrary to the predictions, the manipulation of self-relevant context did not produce significant differences between personalized and traditional IAT scores. As noted previously, the personalized and traditional IAT were moderately correlated, suggesting that at least statistically, it might be difficult to observe differential effects on the two measures. Also surprisingly, participants in the scholar self-domain condition exhibited a greater preference for mixed drinks, relative to coffee, than those in the socializing self-domain condition. Further analyses of the essays the participants wrote suggested that those with a relatively greater implicit preference for mixed drinks over coffee revealed greater anxiety in the student self-domain manipulation relative to the socializing self-domain manipulation (presumably because of the greater
perceived difficulty in achieving success in one’s scholar self-aspect relative to one’s socializing with peers self-aspect) and also revealed greater anxiety in the self-knowledge prime relative to the normative-knowledge prime (presumably because of the greater self-focus when self-knowledge was primed relative to normative-knowledge).

This finding suggests that to the extent that inducing participants to consider their scholar self-aspect provoked anxiety, participants exhibited a greater preference for mixed-drinks than coffee, suggesting that mixed drinks might serve an automatic goal state of anxiety reduction. Indeed, previous research suggests that associative evaluations of an attitude object differ as a function of the object’s relevance for goals pursuit such that objects relevant to goal pursuit are evaluated more positively than those irrelevant for goal pursuit (Ferguson & Bargh, 2004). Although the self-domain manipulation shifted implicit preference for mixed drinks relative to coffee opposite of the anticipated direction, results indicated that the self-domain manipulation effectively shifted implicit attitudes as measured by the IATs. This interpretation is consistent with previous research, suggesting that implicit attitude measures are not set in stone, but rather may be influenced by the relevant activation of knowledge at the time of attitude measurement (Gawronski et al., 2008).

Another interpretation is that the degree to which participants’ scholar and socializing with peers self-aspects were integrated in their self-concepts (i.e., the extent to which their scholar and socializing with peers self-aspects are associated with congruent traits and attributes) may have influenced the unexpected pattern of implicit drink preferences as measured using the IATs (i.e., participants in the scholar self-aspect condition exhibiting greater preference for mixed drinks relative to coffee and participants in the socializing with peers self-aspect condition exhibiting greater preference for coffee relative to mixed drinks). A replication of the Hong et al. (2000) study described earlier found that the effect of self-aspect relevant cues (i.e., exposure to primes relevant to participants Chinese vs. American identities) on attribution style (i.e., internal vs. external) was moderated by participants’ perceived compatibility or opposition between their Chinese and American identities (Benet-Martinez, Leu, Lee, & Morris, 2002). Specifically, biculturals who perceived compatibility between their Chinese and American identities behaved in a more interdependent manner (i.e., greater external relative to internal attributions) when exposed to Chinese primes and also behaved in a more independent fashion (i.e., greater external relative to internal attributions) when exposed to American primes. Conversely, biculturals who
perceived opposition between their Chinese and American identities behaved in a more independent way when exposed to Chinese primes and behaved in a more interdependent way when exposed to American primes. They found that while participants who perceived compatibility between their Chinese and American identities reacted to primes in a manner consistent with their momentarily active identity (i.e., exhibiting attribution styles consistent with the cultural identity prime), participants who perceived opposition between these identities reacted to primes in a manner inconsistent with their momentarily active identity (i.e., exhibiting attribution styles inconsistent with the cultural identity prime), presumably because of reactance against cultural expectations associated with an identity. In other words, participants who perceived their cultural identities to be in opposition of one another were motivated to behave in manner consistent with the cultural identity opposite of that which was primed in order to fulfill their unmet psychological need for consistency. Therefore, it is possible that participants in the current study perceived their scholar and socializing with peers self-aspects to be incompatible, motivating them to resist the self-aspect manipulation as indicated by the greater preference for mixed drinks relative to coffee exhibited by participants in the scholar self-aspect condition and the greater preference for coffee relative to mixed drinks exhibited by participants in the socializing with peers self-aspect condition.

Both automatic goal pursuit and reactance to the self-aspect manipulation could account for the finding in the current study that greater preference for mixed drinks relative to coffee was exhibited by participants in the scholar self-aspect condition and that greater preference for coffee relative to mixed drinks was exhibited by participants in the socializing with peers self-aspect condition. Future studies could investigate the relative influence of each mechanism on implicit attitude measurement by assessing the compatibility of participants’ self-aspects that are intended to be primed and also by utilizing separate measures of implicit attitudes for each attitude object. If incompatibility in participants’ self-aspects motivated reactance to the self-aspect manipulation, then self-aspect incompatibility should moderate the influence of the self-aspect manipulation on implicit attitude measurement (i.e., when compatibility is greater, participants should exhibit implicit evaluations consistent with the self-aspect primed but when compatibility is low participants should exhibit implicit evaluations inconsistent with the self-aspect primed). However, if automatic goal pursuit influenced participants’ implicit attitudes, then to the extent that participants’ experienced anxiety, implicit positivity toward the attitude
object capable of reducing participants’ anxiety (in the case of the current study, mixed drinks) should increase, while greater anxiety should be unrelated to the attitude object incapable of reducing participants’ anxiety (in the current study, coffee). Future work on the relative influence of each mechanism should also utilize a direct self-report (i.e., explicit questionnaire) or indirect measure (i.e., galvanic skin response) of participants’ anxiety following the self-aspect manipulation to provide a more valid measure of anxiety than was used in the current experiment, which relied on a proxy variable (i.e., the sum of two independent raters assessment of anxiety in participants’ written accounts from the self-aspect manipulation writing task).

Another limitation of the current study was the large exclusion rate of participants due to reports that they never drank coffee or never drank mixed drinks. Analyses using the entire data set were similar to the results reported here, however removing these participants from analyses seemed important for assessing participants’ self-relevant evaluations associated with the attitude objects (i.e., coffee and mixed drinks). Additionally, high error rates on the IATs, especially the personalized IAT, resulted in the exclusion of several participants from data analyses. Consistent with previous research, error rates were greater for the personalized than the traditional IAT, presumably because of the lack of error feedback in the personalized IAT (Nosek & Hansen, 2008a; Olson & Fazio, 2004). To address some of these concerns, Experiments 2 and 3 assessed racial IATs assessing attitudes toward more commonly encountered and considered attitude objects, race (i.e., African-Americans and Caucasians).

In addition, Experiment 2 investigated how proximity to the self (i.e., the degree to which another person is psychologically included in the self) provides another contextual factor that might influence the personalized IAT. When applied to implicit associations, the unified balanced identity theory states that others, and groups of others, associated strongly with the self typically share similar attributes and valence (Greenwald et al., 2002), thus personal implicit evaluations might be susceptible to context supplied by closer others. Also, research from the social inclusion literature attests to the tendency to incorporate the traits of close others into the self-concept (Hinkley & Andersen, 1996). For example, participants’ implicit racial attitudes have been shown to shift toward the egalitarian attitudes possessed by a liked, but not toward a disliked, experimenter (Sinclair et al., 2005). Thus, it is possible that information related to more distant others (i.e., a disliked experimenter) may be more extra-personal in nature whereas information associated with one who is presumably closer to the self (i.e., a liked experimenter)
may be more personal in nature. Taken further, it is even possible that information associated with a very close other could influence one’s personal associations especially strongly because of the inclusion of that individual in the self-concept, resulting in some degree of attitudinal transference that could be measurable on the personalized IAT. Experiments 2 and 3 explore this reasoning more directly by experimentally manipulating proximity of the source of an association to the self to establish that closeness to the self underlies the impact of self-relevant knowledge on personalized implicit attitude measures.

**Experiment 2**

An interpersonal touch manipulation (Fisher, Rytting, & Heslin, 1976; Seger & Smith, 2007) was used to manipulate proximity of an experimenter espousing an egalitarian message from the self. Previous research suggests that touch is an embodied cue for self-other overlap such that even casual, incidental, interpersonal touch leads to greater inclusion of the other into the self (Fiske, 2004; Smith, 2008). It was predicted that as the experimenter was viewed as more included in the self (i.e., close condition), her egalitarian views would be more strongly associated with the self, being reflected in participants’ personal, more so than their extra-personal, associations. As a result, participants in the close condition were expected to exhibit relatively less implicit prejudice (i.e., less implicit negativity towards African-Americans in comparison to Caucasians) on the personalized IAT than on the traditional IAT because of the greater inclusion of the egalitarian experimenter in the self. Conversely, participants in the control condition were predicted to exhibit relatively less implicit prejudice on the traditional, relative to the personal, IAT because her egalitarian views would be represented as a more extra-personal than as a personal association.

**Method**

**Participants.** Eighty-three introductory psychology students from Miami University participated for partial fulfillment of a course requirement that was described as a departmental assessment of research assistants.

**Materials.**

**Experimenter ratings of closeness.** The Inclusion of Other in the Self scale (IOS; Aron, Aron, & Smollan, 1992) was used to assess the degree to which participants viewed the experimenter as close to the self. Specifically, this instrument presents seven diagrams demonstrating different degrees of overlap between two circles, with one circle representing the
self and the other circle representing the experimenter. Participants identified the depiction that best represented their relationship with the experimenter on a 7-point scale where larger values indicate greater inclusion in the self. In support of the study’s cover story (i.e., a departmental assessment of research assistants), the IOS was included along with several 9-point scale items inquiring about participants’ interaction with the experimenter (e.g., “How friendly was the experimenter?”), including two additional indices of closeness toward the experimenter (i.e., how similar participants felt to the experimenter, how likely they believed they were to interact with her again). MediaLab software was used to implement this task (Jarvis, 2001).

**Closeness manipulation.** Similar to previous work (Seger & Smith, 2007), in the close condition the experimenter leaned over the participant and pressed a button which began the survey containing the experimenter ratings such that the experimenter’s arm touched the participant’s shoulder for 1-2 secs. In the control condition, the experimenter followed the same procedure except that she did not touch participants when providing directions for the survey but instead asked participants to begin the program themselves. As recommended by previous authors (Fisher et al., 1976; Seger & Smith, 2007; Smith, 2008), all participants and experimenters were same sex (i.e., women) to minimize potential variability in attraction and arousal toward the experimenter.

**Racial IATs.** In an ostensibly unrelated categorization experiment, participants completed a personalized and a traditional racial IAT to assess measures of implicit prejudice. The traditional racial IAT measures the relative degree of negativity toward African-Americans relative to Caucasians. Category (African-American and Caucasian) exemplars utilized in this study were the same as those utilized in previous racial IATs (McConnell & Leibold, 2001; McConnell et al., 2008), with the method and instructions for the traditional IAT used in Experiment 1 being used in the current study. Stimuli were drawn from a list of 20 stimulus words: 5 positive exemplars (e.g., wonderful, awesome), 5 negative exemplars (e.g., offensive, disgusting), 5 exemplars of African-American names (e.g., Tyrone, Latoya) and 5 exemplars of Caucasian names (e.g., Tyler, Lynn). For half of the participants, Blocks 3 and 4 presented the prejudice-consistent combinations (i.e., African-American and unpleasant shared the same response key and Caucasian and pleasant shared the same response key) and Blocks 6 and 7 presented the prejudice-inconsistent combinations (i.e., African-American and pleasant shared the same response key, and Caucasian and unpleasant shared the same response key). For
remaining participants, Blocks 3 and 4 presented the prejudice-inconsistent combinations and Blocks 6 and 7 presented the prejudice-consistent combinations (to provide counterbalancing).

The same method and instructions described for the personalized IAT in Experiment 1 were used in the current study. The same 10 category exemplar names utilized for the traditional racial IAT were used in the personalized racial IAT, and the same positive and negative exemplars used in Experiment 1 that were personalized in nature (e.g., disco, spinach) were used in the current experiment. Both IATs were scored using the same procedure conducted in Experiment 1.

Procedure. The current method was modeled after Sinclair et al. (2005). Specifically, the experimenter wore a shirt promoting positivity toward African-Americans (the shirt read, “E-racism” in large red letters) to provide an association for the experimenter between African-Americans and positivity. However, her proximity to the self was experimentally manipulated via an interpersonal touch manipulation (Smith, 2008). To ensure that participants noticed the experimenter’s shirt, they read the egalitarian message on the experimenter’s shirt aloud under the guise of a “vision acuity test” (Sinclair et al., 2005). Afterwards, the experimental induction of proximity (i.e., the closeness manipulation) was conducted (participants were randomly assigned to a condition), before administering the experimenter ratings to determine if the closeness manipulation affected perceived proximity between the experimenter and the participants. Finally, participants completed both implicit measures (order of presentation was counterbalanced between subjects) before being fully debriefed and dismissed from the lab.

Results

Of the original 83 participants, 20 were removed from data analyses due to high error rates (i.e., accuracy rates less than 90%) on either of the IATs (9 participants exhibited high error rates on the traditional IAT, 7 exhibited high error rates on the personalized IAT, and 4 exhibited high error rates on both IATs). To ensure that the closeness manipulation was effective, an independent t-test was conducted to examine differences in IOS scores between the closeness and control conditions. There were no reliable differences in IOS scores between participants in the close condition (M = 1.29, SD = .54) and those in the control condition (M = 1.28, SD = .66), t(61) = .12, ns. Moreover, there were no differences between experimental conditions on the other experimenter ratings. In short, the closeness manipulation did not appear to have an effect on perceptions of the experimenter as intended.
Despite the lack of a successful manipulation, a 2 (Closeness: close vs. control) X 2 (IAT type: personalized vs. traditional; a within-subjects factor) mixed-design ANOVA was conducted on the IAT measures. Prior to analyses, IAT scores were converted to z-scores (to provide the reader with a sense of the IAT effects in raw ms, mean personalized IAT scores were 152.03ms, SD = 182.63, and mean traditional IAT scores were 202.18ms, SD = 167.66). An interaction between IAT type and closeness condition, $F(1, 61) = 6.17, p < .02$, was observed, however the pattern of this interaction was not consistent with the predictions (see Figure 2). Specifically, post-hoc analyses (paired t-tests) indicated that participants in the close condition exhibited a greater trend toward more implicit negativity toward African-Americans, relative to Caucasians, on the traditional IAT ($M = -.25, SD = .85$), $t(26) = -1.86, p = .07$, compared to the personalized IAT ($M = .16, SD = .89$). However, participants in the control condition descriptively exhibited greater implicit negativity toward African-Americans, relative to Caucasians, as measured using the traditional IAT ($M = .19, SD = 1.07$) than the personalized IAT ($M = -.12, SD = 1.07$), although the difference was not statistically reliable, $t(35) = 1.64, p = .11$. Independent t-tests indicated that implicit negativity toward African-Americans relative to Caucasians, as measured using the personalized IAT was statistically equivalent in the close ($M = .16, SD = .89$) and control conditions ($M = -.12, SD = 1.07$), $t(61) = 1.09, p = .28$. Similarly, an independent t-test indicated that participants’ implicit negativity toward African-Americans relative to Caucasians, as measured using the traditional IAT, was also statistically equivalent in the close ($M = -.25, SD = .85$) and control ($M = .19, SD = 1.07$) conditions, although the difference between conditions was trending towards significance with those in the control condition descriptively exhibiting greater implicit negativity toward African-Americans relative to Caucasians, $t(60.74) = -1.82, p = .07$. Separate independent t-tests indicated that there was no difference between scores on the traditional IAT for those in the control condition and scores on the personalized IAT for those in the close condition, $t(60.26) = -.12, p = .91$. Homogeneity of variances was evaluated using Levene’s test which was significant, $p < .05$, indicating a significant difference of variance in scores between conditions. To address this violation of the homogeneity of variance assumption, degrees of freedom were calculated using independent rather than pooled standard variance estimates. Specifically, degrees of freedom were obtained using the equation (Moser & Stevens, 1992):

$$V = \frac{\left(1 + \frac{u}{s_2^2}ight)^2}{\frac{1}{n_1(n_1-1)} + \frac{u^2}{n_2^2(n_2-1)}}$$

where: $u = \frac{s_2^2}{s_1^2}$.
was no difference between scores on the personalized IAT for those in the close condition and scores on the traditional IAT for those in the control condition, \( t(61) = -.53, p = .60 \). These results are opposite of the prediction that participants in the close condition would exhibit relatively less implicit negativity toward African-Americans (relative to Caucasians) on the personalized IAT in comparison to the traditional IAT because of the greater inclusion of the egalitarian experimenter in the self. Results are also inconclusive regarding the prediction that participants in the control condition would exhibit relatively less implicit negativity towards African-Americans, relative to Caucasians, on the traditional IAT than on the personalized IAT, because her egalitarian beliefs were represented as extra-personal rather than personal associations.

Correlations were computed between the experimenter rating variables and IAT scores to further investigate how participants’ perceptions of the experimenter related to IAT scores. Results indicated that perceived similarity was negatively correlated with participants’ scores on the personalized IAT, \( r(61) = -.28, p < .03 \), but not on the traditional IAT \( r(61) = .05, ns \). In other words, personalized but not traditional implicit racial attitudes were relatively more positive toward African-Americans than Caucasians in the presence of an egalitarian experimenter perceived as more similar to the participant. This outcome presumably occurred because as the experimenter was perceived as being more similar to the self, her egalitarian views were more strongly associated with the self and thus were reflected in participants’ personal automatic evaluative associations (i.e., personalized IATs) more so than in their extra-personal evaluative associations (i.e., traditional IATs).

**Discussion**

Although the results indicate that the closeness manipulation was ineffective, suggestive evidence was provided that measurements using the personalized IAT and the traditional IAT may be differentially related to the perceived proximity of an attitude-relevant source to the self. This is consistent with previous research suggesting that others, and groups of others, associated strongly with the self share similar attributes and valence (Greenwald et al., 2002) and with research from the social inclusion literature that attests to the tendency to incorporate traits of close others into the self-concept (e.g., Aron et al., 1992; Hinkley & Andersen, 1996). Another interpretation of the manipulation check results is that participants in the close condition may have felt more threatened by the experimenter, who out-achieved participants on a relevant self
domain (i.e., egalitarianism), than those in the control condition, due to the relatively greater
closeness between participants in the close condition and the experimenter, motivating those
individuals to dispel this threat to self-esteem by reducing closeness to the superior other (in this
case the egalitarian experimenter). This is consistent with Tesser’s self-evaluation maintenance
model (SEM; Tesser, Millar, & Moore, 1988) of social comparison, which posits that when an
other outperforms the self on a task high in relevance to the self self-evaluation is threatened and
that the closer this outperforming other is to the self the greater the threat to self-evaluation will
be. This interpretation is also consistent with previous research (Lockwood & Kunda, 1997),
suggesting that individuals’ reports of perceived similarity toward a more successful other can
exhibit reactance when success is achieved in a self-relevant domain (previous research suggests
that most individuals explicitly support egalitarianism; Nosek & Hansen, 2008b). In other words,
the experimental manipulation of closeness may have been effective despite the nonsignificant
difference in self-reported closeness toward the experimenter due to participants in the close
condition exhibiting reactance in their self-reports of closeness toward the experimenter.

Consistent with previous research (Nosek & Hansen, 2008a; 2008c; Olson & Fazio,
2004), stronger implicit prejudice was expected on the traditional, relative to the personalized,
IAT presumably because of the influence of negative extrapersonal associations toward African-
Americans.3 In other words, although many people probably possess positive personal

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3 Comparing participants’ mean scores on the traditional and personalized IAT as indicated by
previous work (Nosek & Hansen, 2008a; 2008c; Olson & Fazio, 2004) to mean scores on the
traditional and personalized IAT in the current Experiments is cautionary due to procedural
differences in IAT construction between authors. For example, Nosek and Hansen (2008a,
2008c) utilized photographs of African-American and Caucasian faces as racial exemplars for
both IATs in their work whereas Olson and Fazio (2004) utilized stereotypic African-American
and Caucasian names as racial exemplars for both IATs. Additionally, in some studies, such as
Experiment 1 of Olson and Fazio (2004) and Experiments 1-3 in the current work, idiosyncratic
attribute exemplars (e.g., spinach and disco) were utilized for the personalized IAT while
normatively valenced attribute exemplars (e.g., vomit and happy) were utilized for the traditional
IAT. In other studies, such as Experiments 2-4 of Olson and Fazio (2004) and also Nosek and
Hansen (2008a, 2008c), normatively valenced attribute exemplars were utilized in both the
personalized and traditional IAT. Variance in demographic features of participants also indicates
cautions in meaningful interpretation of the relation between personalized and traditional IATs
across procedural and methodological designs. For example, participants in the Nosek and
Hansen (2008a, 2008c) experiments were more ethnically diverse than participants in the Olson
and Fazio (2004) experiments and the range of participant age was also relatively greater in the
associations with African-Americans, their responses on the traditional IAT could reflect negativity from extrapersonal sources (e.g., culturally-transmitted prejudice). This default pattern was exhibited more for participants in the control condition than for those in the close condition, suggesting that the closeness manipulation performed in the close condition reduced implicit prejudice as measured on both IATs, which is consistent with previous work suggesting that the traditional IAT is influenced by both extra-personal and personal associations (Olson & Fazio, 2004). Adding to previous work, which has primarily utilized a between-subjects approach (Nosek & Hansen, 2008a; 2008c; Olson & Fazio, 2004), the repeated-measures design of Experiment 2 allowed for investigation of within-subjects differences between the personalized and the traditional IAT.

Although the correlation coefficients provided some potential support for the original predictions, the ineffective manipulation prohibited more conclusive support for the predictions. To further evaluate the original predictions, Experiment 3 was conducted as a conceptual replication of Experiment 2 with modifications aimed at addressing the ineffective closeness manipulation. Specifically, the closeness manipulation utilized in Experiment 2 was replaced with a more commonly-used manipulation based on incidental similarity. Another limitation of Experiment 2 was that the experimental procedure allowed for the possibility that greater perceived similarity toward the experimenter predicted more egalitarian attitudes because of participants’ pre-existing agreement with the egalitarian attitudes expressed by the experimenter. That is, participants were exposed to the experimenter’s egalitarian message prior to their completion of the experimenter ratings of closeness, and as a result, their ratings of closeness could have been driven in part by their agreement with her attitudes (rather than having closeness influence participants’ attitudes). To address this concern in Experiment 3, the experimenter wore a white lab coat concealing the egalitarian shirt until after the experimenter rating task was completed to prevent the egalitarian message from influencing perceived similarity and IOS toward the experimenter. This modification also addressed the concern that participants in the close condition of Experiment 2 exhibited reactance in their self-reports of closeness toward the experimenter, due to her superior performance (relative to participants) in espousing her

Nosek and Hansen (2008a; 2008c) experiments compared to the range of participant age in the Olson and Fazio (2004) experiments.
egalitarian views, a domain that is presumably self-relevant for participants (as indicated by previous research; Nosek & Hansen, 2008b).

Another limitation of Experiment 2 was the absence of explicit attitude measures. Some authors argue that cultural knowledge or extra-personal associations contaminate the measurement of implicit attitudes (Karpinski & Hilton, 2001; Olson & Fazio, 2004) whereas others suggest that such influence could be understood as a distinguishing feature of implicit and explicit attitudes (Nosek & Hansen, 2008a). Previous research investigating the relations between implicit attitudes, as measured by both IATs, and explicit attitudes has provided theoretically interesting, yet inconsistent, findings. For example, Olson and Fazio (2004) observed stronger correlations between self-reported attitudes and the personalized IAT compared to the original IAT, which was interpreted as evidence that personalized removed extra-personal contaminating variance in the original IAT, thus improving its relation with explicit attitude measurement. However, in a conceptual replication of that study, Nosek and Hansen (2008a) observed that stronger correlations between self-reported attitudes and the personalized IAT were moderated by the pattern of error rates between response blocks in the IAT. More specifically, Nosek and Hansen (2008a) found that, compared to the original procedure, personalizing made participants less likely to categorize items into their superordinate categories as required by the task performance rules (e.g., identify a Black face as belonging to the category “Black”), and more likely to explicitly evaluate the target concepts (i.e., rate whether a Black face is liked or disliked, suggesting that participants were more likely to explicitly evaluate target concepts instead of following the categorization performance instructions for the IAT. Additionally, the authors argue that lack of error feedback on the personalized IAT may induce more deliberate control on task performance relative to the traditional IAT, which provides participants with error feedback. Unlike previous work, in Experiment 3 it was predicted that implicit racial attitudes as measured using the traditional, but not the personalized, IAT would be more related to explicit attitude measures because of the shared influence of cultural or normative knowledge on both explicit attitude and traditional IAT measures.

**Experiment 3**

In the current study, proximity to the self was experimentally manipulated via an incidental similarity manipulation (Burger, Messian, Patel, Prado, & Anderson, 2008). Previous
work suggests that incidental similarity often creates a sense of close association between two people as they become aware that they share a common attribute not shared by others (Heider, 1958). Therefore, awareness of an incidental similarity between two people should lead to greater inclusion of the other into the self. It was predicted that as experimenters were viewed as more included in the self (i.e., close condition), their egalitarian views would be more strongly associated with the self, being reflected in participants’ personal, more so than their extra-personal, evaluations. As a result, participants in the close condition were predicted to exhibit relatively less implicit prejudice (i.e., less relative implicit negativity toward African-Americans) on the personalized IAT than on the traditional IAT because of the greater inclusion of the egalitarian experimenter in the self. Conversely, participants in the control condition were predicted to exhibit relatively less implicit racial prejudice on the traditional IAT, relative to the personalized IAT, because of the experimenter’s egalitarian views being represented as an extra-personal, rather than as a personal, association.

**Method**

**Participants.** Forty-two introductory psychology students from Miami University participated for partial fulfillment of a course requirement presented as a departmental assessment of research assistants.

**Materials.**

**Experimenter ratings of closeness.** The experimenter ratings utilized in Experiment 2 were also used in the current experiment.

**Closeness manipulation.** Similar to previous work (Burger et al., 2008), after explaining the informed consent form, the experimenter administered a paper questionnaire to participants assessing basic demographic information (i.e., gender, age, ethnicity, and birth date). In the close condition, after collecting the survey experimenters commented that they shared the same birthday as the participant before filing the sheet in a cabinet. In the control condition, experimenters followed the same procedure except they did not comment about the participant’s birth date. Because previous research had not reported gender effects for this manipulation, participants and experimenters of both sexes were involved in the experiment.

**Racial IATs.** The same methodology, instructions, and scoring procedures described for the traditional IAT and the personalized IAT in Experiment 2 were used in the current study.
Explicit racial attitude measure. Two separate feeling thermometers assessing attitudes towards African-Americans and Caucasians were used. Specifically, participants were asked to indicate their positivity toward each attitude object (i.e., African-Americans and Caucasians) on a scale ranging from 0 degrees (very unfavorable) to 100 degrees (very favorable). Difference scores between these measures were computed to provide an index of explicit attitudes towards African-Americans relative to Caucasians, allowing for an explicit measure conceptually similar to the racial IATs (which also measure attitudes towards African-Americans relative to Caucasians).

Procedure. The current study was similar to Experiment 2, however the experimenter’s proximity to the self was experimentally manipulated via an incidental similarity manipulation (Burger et al, 2008). Additionally, the experimenter wore a white lab coat over the egalitarian shirt during the experimenter rating task in order to prevent the egalitarian message from influencing closeness toward the experimenter. After explaining the informed consent form, the experimenter administered a paper questionnaire to participants regarding basic demographic information (i.e., gender, age, ethnicity, and birth date), which also contained the explicit racial attitude measures. Upon completing the questionnaire, the closeness manipulation was executed based on the experimenter’s comments (participants were randomly assigned to condition). Next, the experimenter ratings were completed, and the “vision acuity test” was performed to convey the experimenter’s positive attitudes toward African-Americans. Afterwards, participants completed both implicit measures (presentation order was counterbalanced between subjects). Finally, participants were fully debriefed before being dismissed from the lab.

Results

Responses from eight participants were removed from data analysis due to high error rates (i.e., accuracy rates less than 90%) on either of the IATs (5 were removed due to high error rates on the personalized IAT and 3 were removed due to high error rates on the traditional IAT) leaving 34 participants for inclusion in the analyses. In contrast with Experiment 2, correlations indicated that IOS scores and similarity to the experimenter ratings were positively correlated, $r(32) = .33, p = .05$, therefore these two variables were added together to provide an index of closeness to the experimenter. Also in contrast with Experiment 2, independent t-tests indicated that the experimental manipulation was effective, with participants in the close condition
reporting significantly greater closeness toward the experimenter ($M = 8.94, SD = 3.07$) than those in the control condition ($M = 7.06, SD = 1.14$), $t(20.36) = 2.37$, $p < .01$.

A 2 (Closeness: close vs. control) X 2 (IAT type: personalized vs. traditional; a within-subjects factor) mixed-design ANOVA examined the effect of the experimental manipulation on the IAT scores. For the analyses, IAT scores were converted to z-scores (to provide the reader with a sense of the IAT effects in raw ms, mean personalized IAT scores were 199.42ms, $SD = 191.97$, and mean traditional IAT scores were 229.58ms, $SD = 144.87$). The ANOVA revealed a significant interaction between IAT type and closeness condition, $F(1, 32) = 4.08$, $p = .05$, however, consistent with the results of Experiment 2, the pattern of this interaction was contrary to predictions (see Figure 3). Specifically, post-hoc analyses (paired-samples t-tests) indicated that participants in the close condition exhibited statistically equivalent implicit negativity toward African-Americans relative to Caucasians, as measured using the personalized IAT ($M = .25, SD = 1.08$) and the traditional IAT ($M = -.19, SD = .93$), $t(16) = 1.17$, $p = .26$. Conversely, participants in the control condition tended to exhibit greater implicit negativity toward African-Americans relative to Caucasians as measured using the traditional IAT ($M = .19, SD = 1.05$) than measurement using the personalized IAT ($M = -.25, SD = .86$), $t(16) = -1.99$, $p = .06$.

Independent t-tests indicated that participants’ implicit negativity toward African-Americans relative to Caucasians, as measured using the personalized IAT, was statistically equivalent between conditions, $t(32) = 1.50$, $p = .14$. Similarly, a separate independent t-test indicated that participants’ implicit negativity toward African-Americans relative to Caucasians, as measured using the traditional IAT, was also statistically equivalent between conditions, $t(32) = -1.11$, $p = .28$. Separate independent t-tests indicated that there was not a significant difference between scores on the traditional IAT for those in the control condition and scores on the personalized IAT for those in the close condition, $t(32) = .17$, $p = .86$. Likewise, there was not a significant difference between scores on the personalized IAT for those in the close condition and scores on the traditional IAT for those in the control condition, $t(32) = .20$, $p = .84$. Consistent with Experiment 2, results were opposite of the prediction that participants in the close condition would exhibit relatively less implicit negativity towards African-Americans, relative to Caucasians, as measured using the personalized IAT than measurement using the traditional IAT. Conversely, results were also opposite of the prediction that participants in the control condition would exhibit relatively less implicit negativity towards African-Americans relative to
Caucasians as measured using the traditional IAT than measures derived from the personalized IAT.

Correlations were computed to further investigate how participants’ perceptions of closeness to the experimenter related to IAT scores. Consistent with the findings of Experiment 2, the closeness index (i.e., sum of IOS and similarity scores) was negatively correlated with scores on the personalized IAT, \( r(32) = -.63, p < .05 \), but not the traditional IAT, \( r(32) = .15, ns \). Fisher’s r-to-z transformation indicated that these correlations were reliably different from each other, \( z = 2.63, p < .05 \). In other words, as closeness to the experimenter increased, implicit negativity towards African-Americans relative to Caucasians as measured using the personalized IAT decreased, and this relation was stronger than the relation between closeness to the experimenter and traditional IAT scores. Also of interest, participants’ relative explicit attitudes were correlated to their implicit attitudes as measured using the traditional IAT, \( r(32) = .69, p < .05 \), but were statistically unrelated to implicit attitudes as measured using the personalized IAT, \( r(32) = .22, ns \). Fisher’s r-to-z transformation indicated that the difference in correlations was significant, \( z = 2.46, p = .01 \). These results support the expectation that scores on the traditional IAT were subject to similar influences as explicit attitudes such as cultural norms, whereas scores on the personalized IAT were less influenced by personal associations.

Discussion

Although the closeness manipulation in the current experiment was effective, the pattern of interaction observed between IAT type and closeness condition was inconsistent with predictions. Consistent with the results of Experiment 2, participants in the control condition exhibited greater implicit negativity toward African-Americans, relative to Caucasians, as measured using the traditional IAT than measured using the personalized IAT. In light of the substantial modifications of the initial methodology addressing limitations of Experiment 2, and the replication of this unexpected pattern across both experiments, it seems unlikely that this pattern of interaction is a result of methodological or Type I error. A potential interpretation of this result is that scores on the personalized IAT were statistically equivalent in the close condition because, for these participants, the egalitarian experimenters’ superior achievement in a self-relevant domain (i.e., egalitarianism) was perceived to be threatening to their self-esteem, motivating them to distance themselves from the threatened self-relevant domain (egalitarianism) as indicated by the greater implicit prejudice exhibited on the personalized IAT in the close.
relative to the control condition. As noted previously, this is consistent with Tesser’ et al.’s (1998) SEM model of social comparison, which posits that when an other outperforms the self on a task high in relevance to the self, one’s self-evaluation is threatened.

Similar to Experiment 2, personalized but not traditional implicit racial attitudes were more positive in the presence of egalitarian experimenters to the extent that the experimenter was perceived as being closer to the self. Such a finding is consistent with the experimenter’s beliefs (conveyed on a t-shirt) being reflected in participants’ personal implicit attitudes, which presumably are more related to one’s personal associations. This finding was consistent with Experiment 2, but the current experiment eliminated the possible confound that exposure to the shirt prior to rating the experimenter led to the observed correspondence between reported similarity with the experimenter and less racial prejudice being exhibited. Consistent with previous research, the findings also suggest that, similar to explicit attitude measures, the traditional IAT is subject to cultural influence and normative pressure (Han et al., 2006; Olson & Fazio, 2004). More specifically, implicit racial attitudes as measured using the traditional, but not the personalized, IAT were significantly and positively related to explicit attitude measures, which may suggest that a shared influence of cultural or normative knowledge on both explicit attitude and traditional IAT measures. Although some have posited that the personal character of associations is determined by their endorsement on a propositional level (Gawronski & Bodenhausen, 2006), the current finding that explicit attitudes were statistically unrelated to scores on the personalized IAT suggesting that propositional endorsement may have little influence on the personal character of associations.

**General discussion**

The current findings suggest that one’s personalized but not traditional implicit racial attitudes were more positive in the presence of egalitarian experimenters to the extent that they were perceived as being closer to the self, presumably because the experimenters’ egalitarian views were more strongly associated with the self, influencing the participant’s personal, more so than extra-personal, automatic evaluations. Rather than viewing the personalized IAT as an improved “lens” to one’s “true attitude” (Olson & Fazio, 2004), the current work suggests that the personalized IAT may be a lens to one’s personal associations, which may be influenced by others when there is closeness between the source of an association and the self.
Yet in addition to the finding that greater perceived closeness with a persuasive agent revealed more congenial personal (but not traditional) implicit attitudes in line with the views expressed by that person, another surprising finding obtained in Experiments 2 and 3 was the relative equalization in implicit attitudes toward African-Americans in the conditions where experimental closeness was greater (in comparison to the control conditions). In Experiments 2 and 3, a possible explanation for this finding was could reflect the egalitarian experimenter’s superior achievement in a self-relevant domain (i.e., egalitarianism) being perceived as a threat to participants’ self-esteem, motivating them to distance themselves from the threatened self-relevant domain (egalitarianism) as indicated by the relatively greater implicit prejudice exhibited on the personalized IAT in the close relative to the control condition, which is also consistent with the SEM model. The relative equalization in implicit attitudes between conditions suggests that the closeness manipulations used in Experiments 2 and 3 did not influence closeness toward the experimenter to a degree sufficient for production of significant between-subjects differences in implicit attitudes toward African-Americans.

However, several limitations of this work warrant discussion. In Experiment 1, the self-domain manipulation influenced implicit attitudes in the opposite direction of predictions (i.e., participants in the scholar self-domain condition exhibited a greater preference for mixed drinks, relative to coffee, than those in the socializing self-domain condition), perhaps because of the greater anxiety exhibited by students induced to think about their scholar self-aspects relative to their socializing self-aspects. These results suggest that to the extent that the manipulations provoked anxiety, participants exhibited a greater preference for mixed drinks than coffee, suggesting that mixed drinks might serve an automatic goal state of anxiety reduction. This is in-line with previous research indicating that associative evaluations of an attitude object differ as a function of the object’s relevance for goal pursuit, such that objects relevant to goal pursuit are evaluated more positively than those irrelevant for goal pursuit (Ferguson & Bargh, 2004). However, this unanticipated influence of goal pursuit on implicit attitudes toward mixed drinks relative to coffee as measured on both IATs in Experiment 1 prohibit conclusive support for this possibility in this experiment. Another possibility, consistent with cultural identification research (Benet-Martinez et al., 2002), is that participants in Experiment 1 perceived their scholar and socializing with peers self-aspects to be incompatible, motivating them to resist the self-aspect manipulation as indicated by the greater preference for mixed drinks relative to coffee exhibited
by participants in the scholar self-aspect condition and the greater preference for coffee relative to mixed drinks exhibited by participants in the socializing with peers self-aspect condition. Future studies could investigate the relative influence of each mechanism on implicit attitude measurement by assessing the compatibility of participants’ self-aspects that are intended to be primed and also by utilizing a separate measure of implicit attitudes for each attitude object so that evaluations toward an object capable of resolving an automatic goal state can be examined separately from evaluations toward an object that is irrelevant to goal states.

In Experiment 2, the manipulation of closeness toward the experimenter used in that study (based on touch) was ineffective, however this concern was addressed in Experiment 3 which utilized an effective (i.e., greater closeness toward the experimenter was exhibited in the close condition relative to the control condition) closeness manipulation (incidental similarity of shared birthdays with the experimenter). However, the closeness manipulations used in Experiments 2 and 3 did not influence closeness toward the experimenter to a degree sufficient for production of significant between-subjects differences in implicit attitudes toward African-Americans. Future research should consider using other closeness manipulations or combine manipulations to increase participants’ degree of perceived closeness with the experimenter.

Additionally, a large participant exclusion rate was a concern in all three studies. In Experiment 1, many participants had no first-hand experience with the relevant attitude objects (i.e., mixed drinks and alcohol). Although these concerns were addressed in Experiments 2 and 3 by using attitude objects with which participants have more interaction (i.e., African-Americans and Caucasians), there was still a considerable exclusion rate because of poor performance on the IAT. The exclusion rate for the current studies indicates that caution is warranted in generalizing the current findings. In future research, the importance of soliciting careful, accurate responses on the IAT could be emphasized or a less stringent exclusion criterion for error rates on the IAT could be used (in some previous work only participants whose accuracy rates were less than 80% were excluded from analysis; Olson & Fazio, 2004).

In future studies, it would be useful to examine the predictive validity of personal and extra-personal associations for behavior. Although the influence of extra-personal associations on behavior has been doubted based on the assumption that attitudes are more strongly influenced by personal rather than by extra-personal associations (Olson & Fazio, 2004), it has been established that traditional IAT measures, which presumably tap into personal as well as
extra-personal associations, can predict behavior (e.g., McConnell & Leibold, 2001, 2009; Rydell & McConnell, 2006). Although one could argue that personal associations may better predict behavior than extra-personal associations, under some conditions extra-personal associations may predict behavior even better than one’s personal associations (Han et al., 2006).

For example, the MODE model (Fazio & Towles-Schwen, 1999) maintains that motivational concerns such as self-presentation can affect the behavioral expression of one’s automatically-activated attitude. Studies have shown that even the psychological presence of close others can trigger nonconscious interpersonal goal pursuit (Fitzsimons & Bargh, 2003), influencing participants’ thoughts, feelings, and behaviors. Therefore, it may be the case that activated extra-personal associations better predict behavior when motivation to adhere to social norms, or other behavioral standards, is high. Conversely, personal associations may better predict behavior when motivation to adhere to one’s personal standards is high. Past research suggests that the context of a situation often primes normative or personal standards, and that people use these standards to choose and evaluate their behaviors (Stone & Cooper, 2001). Therefore, extra-personal and personal associations could exhibit differential predictive validity depending on the context of the situation.

In conclusion, one’s personalized but not traditional implicit racial attitudes were more positive in the presence of egalitarian experimenters to the extent that they were perceived as being closer to the self, presumably because the experimenters’ egalitarian views were more strongly associated with the self, influencing the participant’s personal, more so than extra-personal, automatic evaluations. Additional research is necessary to determine if the influence of context on implicit attitude assessment using the personalized IAT is important in determining behavior, which would more conclusively support the functional relevance of context on implicit attitudes. The current work represents a starting point for subsequent research investigating the influence of context on personal associations and the implications of such contextual influence on current conceptualizations of the distinction between personal and extrapersonal evaluative associations. For example, some research suggests that the personal or extrapersonal character of an association is determined by subjective perceptions of source attribution such that activated associations inconsistent with momentarily activated explicit attitudes are attributed to questionable extrapersonal sources while activated associations consistent with momentarily active explicit attitudes are attributed to the self, thus being reflected in personal more so than
extrapersonal associations (Gawronski et al., 2008). The current work adds to this previous research by suggesting that the personal or extrapersonal distinction of an association may not depend on source attribution dichotomously between the self or others, but rather it depends on the proximity of the source of an association from the self.
References


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Note: Standard error bars indicate one standard error above and one standard error below the mean. Means and standard errors depict standardized scores.

Figure 1. Drink preference as assessed by the traditional and personalized IATs for both self-domain and prime conditions in Experiment 1 (greater scores indicate a greater preference for mixed drinks relative to coffee).
Note: Standard error bars indicate one standard error above and one standard error below the mean. Means and standard errors depict standardized scores.

Figure 2. Implicit attitudes towards African-Americans as measured using the personalized and traditional IATs for both conditions in Experiment 2 (greater scores indicate greater negativity toward African-Americans relative to Caucasians).
Note: Standard error bars indicate one standard error above and one standard error below the mean. Means and standard errors depict standardized scores.

Figure 3. Implicit attitudes towards African-Americans as measured using the personalized and traditional IATs for both closeness conditions in Experiment 3 (greater scores indicate greater negativity towards African-Americans relative to Caucasians).
Appendix: Data coding dimensions and instructions

Each of the following dimensions should be coded using a 9-point scale, with greater numbers indicating a greater degree of the respective dimension. For example, when considering anxiety, one would use the 9-point scale as illustrated below.

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<td>Extremely Anxious</td>
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**Anxiety**: apprehension and/or physical symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune. In our case, this would include descriptions of physical symptoms (e.g., “shaky hands” or “butterflies in my stomach”), negative outcomes (e.g., “failing the test” or “not fitting in”), or a direct statement about feeling anxious, nervous or stressed.

**Relaxation**: the abatement of intensity, vigor, energy or tension, resulting in calmness of mind, body, or both. In our case, this would include descriptions of physical signs of relaxation (e.g., “muscles relaxed”), emotional or cognitive signs (e.g., “felt calm” or “quit worrying”), or a direct statement about feeling relaxed.

**Interpersonal Orientation**: extent to which other people are mentioned (not the quantity of people, just the otherness).

**Group Orientation**: extent to which larger groups of other people are mentioned in the essay.

**Negativity towards self**: negativity about some aspect of the self, such as one’s competence, abilities, personality traits, etc. (e.g., “I’m easily distracted” or “I’m socially awkward”).

**Positivity towards self**: positivity about some aspect of the self, such as one’s competence, abilities, personality traits, etc. (e.g., “I’m smart” or “I’m very friendly”).

**Negativity towards others**: negativity about some aspect of another individual or individuals, such as his/her/their competence, abilities, personality traits, etc. (e.g., “they are not hardworking”).

**Positivity towards others**: positivity about some aspect of another individual or individuals, such as his/her/their competence, abilities, personality traits, etc. (e.g., “they are hardworking”).

**Promotion focus**: self-regulation strategy concerned with gains versus non-gains, ways advancing towards the goal, and involves maximal goal states (e.g., how I wish things could be). The ideal self guides this sort of self-regulation, so one is likely to mention their hopes, aspirations, and feelings of accomplishment (e.g., “I hope to ace the exam”).

**Prevention focus**: self-regulation strategy concerned with non-losses and loses, ways of preventing regression away from the goal, and involves minimal goal states (e.g., how things need to be to get by). The ought self guides this sort of self-regulation, so one is likely to mention obligations, duties, and responsibilities (e.g., “I hope to pass the class”).