

Implicit and Explicit Preferences for Physical Attractiveness in a Romantic Partner: A Double Dissociation in Predictive Validity

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Five studies develop and examine the predictive validity of an implicit measure of the preference for physical attractiveness in a romantic partner. Three hypotheses were generally supported. First, 2 variants of the go/no-go association task revealed that participants, on average, demonstrate an implicit preference (i.e., a positive spontaneous affective reaction) for physical attractiveness in a romantic partner. Second, these implicit measures were not redundant with a traditional explicit measure: The correlation between these constructs was .00 on average, and the implicit measures revealed no reliable sex differences, unlike the explicit measure. Third, explicit and implicit measures exhibited a double dissociation in predictive validity. Specifically, explicit preferences predicted the extent to which attractiveness was associated with participants' romantic interest in opposite-sex photographs but not their romantic interest in real-life opposite-sex speed-daters or confederates. Implicit preferences showed the opposite pattern. This research extends prior work on implicit processes in romantic relationships and offers the first demonstration that any measure of a preference for a particular characteristic in a romantic partner (an implicit measure of physical attractiveness, in this case) predicts individuals' evaluation of live potential romantic partners.

Keywords: implicit measures, mating, physical attractiveness, attraction, mate preferences

Imagine that you want to know the characteristics that someone values in a romantic partner. Assuming that you do not possess a detailed history of this person's past love interests, how might you assess his or her preferences? Perhaps the most straightforward route would be to simply ask: You could generate a questionnaire containing a list of traits like *trustworthy* or *physically attractive*, and presumably he or she would complete the questionnaire by consulting consciously held, personally validated beliefs about the pros and cons of each trait. In fact, researchers have used such explicit methods to study romantic partner preferences for over half a century (e.g., Hill, 1945). These efforts have revealed that partner preferences show theoretically sensible sex differences (Buss, 1989; Eagly & Wood, 1999) and are associated with myriad aspects of respondents' self-concepts (Campbell, Simpson, Kashy, & Fletcher, 2001) and their expectations about their future lives (Eagly, Eastwick, & Johannesen-Schmidt, 2009).

Although explicit measures have substantial merits, they may fail to capture some important attitudinal processes (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). But what if there were a

way to assess people's preferences that did not depend on consciously accessible self-reports? Implicit measures have become vital tools for social psychologists, and scholars have made productive use of such techniques to study romantic relationships (e.g., Fitzsimons & Bargh, 2003; Glassman & Anderson, 1999; Mikulincer, Gillath, & Shaver, 2002; Zayas & Shoda, 2005). In fact, implicit methods may be particularly revealing in romantic relationships. After all, the romantic domain is frequently a source of intense emotion (Kelley et al., 1983) and, unlike many other social psychological domains (e.g., intergroup relations), it is generally acceptable for affectively laden, gut-level judgments (e.g., passionate love, chemistry) to inform romantic decisions and behaviors, at least in contemporary Western culture (Shaver, Wu, & Schwartz, 1991; Simpson, Campbell, & Berscheid, 1986). Furthermore, relationship partners may fail to act on their consciously validated standards for good behavior (e.g., "I should be patient with my partner even if our discussion is tense") because they interact frequently and often while psychologically depleted (Baldwin, Lydon, McClure, & Etchison, 2010; Finkel & Campbell, 2001). According to current attitudinal theories (Dovidio, Kawakami, & Gaertner, 2002; Gawronski & Bodenhausen, in press; Wilson, Lindsey, & Schooler, 2000), these are precisely the circumstances under which implicit measures should predict outcomes better than explicit ones.

Under the guidance of these theories and with a particular emphasis on the associative-propositional evaluation model (Gawronski & Bodenhausen, 2006, 2007, in press), the present article examines the possibility that implicit methods can illuminate human mate preferences. We specifically examined the implicit preference for physical attractiveness, as physical attractiveness is a strong positive predictor of romantic attraction, especially in the early stages of relationship development (Eastwick & Fin-

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kel, 2008; Walster, Aronson, Abrahams, & Rottmann, 1966). Specifically, five studies explored three questions regarding the implicit preference for romantic partners' physical attractiveness: Do people, on average, exhibit an implicit preference (i.e., a positive spontaneous affective reaction) for physical attractiveness in a romantic partner; does this preference correlate with their explicit preference for physical attractiveness; and what do explicit and implicit preferences predict? In examining these questions, the present studies integrate mate preference research—a classic sociological (e.g., Hill, 1945) and evolutionary psychological (e.g., Buss, 1989) topic—with modern social psychological perspectives on implicit and explicit attitudes.

Implicit Processes in Close Relationships

Several intersecting lines of research have demonstrated that mental representations of significant others can be activated outside of awareness, leading people to think or behave as if they were interacting with that significant other (Andersen & Chen, 2002; Baldwin, Carrell, & Lopez, 1990; Fitzsimons & Bargh, 2003). In a classic yet controversial line of research, psychodynamic scholars found that subliminally presenting participants with the phrase “Mommy and I are one” (relative to control phrases) predicted positive outcomes on measures of well-being and psychopathology (Silverman & Silverman, 1964; see Banse, 2003). Also, recent studies on the phenomenon of transference (Andersen, Reznik, & Glassman, 2005) demonstrated that participants who were exposed to subliminal descriptions of a significant other inferred that an unfamiliar interaction partner possesses other (nonprimed) characteristics of the significant other (e.g., Glassman & Andersen, 1999). In the motivational domain, participants who were subliminally primed with the name of a friend reported more commitment than unprimed participants to goals that the friend had for the participant (Shah, 2003). In other words, people possess schemas that represent particular significant relationships and unconsciously guide thought and behavior.

In a related literature, implicit measures such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) have been adapted for the study of close relationships. One study found that participants implicitly associated the names of their close relationship partners with positive concepts and that attachment security predicted the strength of this association (Zayas & Shoda, 2005). In addition, hospitalized women's implicit positive attitudes toward their romantic partner were associated with their well-being above and beyond explicit positive attitudes toward the partner (Banse & Kowalick, 2007). These studies suggest that implicit attitudes toward romantic partners can be assessed and have sensible correlates.

Yet previous research has not examined preferences for particular traits in a partner in an implicit, indirect manner. Drawing from the associative-propositional evaluation model framework (Gawronski & Bodenhausen, 2007, in press), we conceptualize an implicit preference for a trait as the strength of a person's spontaneous affective reaction to that trait in a romantic partner. One measure of such a preference would be a person's implicit association between that trait and the general concept of a desirable romantic partner. This measure finds precedent in measures of *implicit beliefs* (Greenwald et al., 2009), such as women's tendency to implicitly associate romantic partners (e.g., boyfriend,

lover) with fantasy concepts (e.g., Prince Charming) more than reality (e.g., Average Joe; Rudman & Heppen, 2003). Similarly, we hypothesized that people, on average, would implicitly associate a specific positive trait—namely, physical attractiveness—with the general concept of a desirable romantic partner and with attitude objects that they like.

Hypothesis 1: Participants, on average, will reveal an implicit preference (i.e., a positive spontaneous affective reaction) for physical attractiveness in a romantic partner.

Study 1 assessed implicit associations of the concept of an ideal romantic partner with physical attractiveness using the go/no-go association task (GNAT; Nosek & Banaji, 2001). Studies 2–5 implemented a personalized like/dislike version of the GNAT to examine whether participants associate attitude objects they like with physical attractiveness.

Correspondence Between Implicit and Explicit Measures

Psychologists have sought implicit measures because they hypothesized that such measures might diverge from explicit ones under certain theoretically meaningful circumstances (Fazio & Olson, 2003; Greenwald et al., 2002). Unlike implicit measures, explicit measures assess not spontaneous associations but rather propositional beliefs about the truth or falsity of a statement (Gawronski & Bodenhausen, 2007, in press). Indeed, implicit and explicit measures of the same construct are often not highly correlated; for example, recent meta-analyses have shown that the average implicit–explicit correlation for the IAT is in the .2–.3 range (Greenwald et al., 2009; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; see also Nosek, 2005). There are many possible explanations for implicit–explicit dissociations; relevant to the present discussion is the possibility that participants might have limited introspective access to some psychological processes (Wilson & Dunn, 2004). For example, the correlation between implicit and explicit measures is less positive to the extent that people introspect about the topic in everyday life and is more positive when explicit measures assess participants' spontaneous gut reactions (Hofmann et al., 2005; see also Ranganath, Smith, & Nosek, 2008). Also, implicit and explicit measures are especially weakly correlated when participants are encouraged to introspect about the reasons underlying their explicit judgments, but these correlations are much stronger when participants instead consider their feelings (Gawronski & LeBel, 2008). Other moderator variables for the implicit–explicit association have been identified as well (e.g., social desirability, Greenwald et al., 2009; attitude strength, Nosek, 2005; correspondence between measures, Hofmann et al., 2005).

Given this theoretical and empirical background, how should romantic partner preferences fare in terms of the correlation between implicit and explicit measures? With regard to the introspective limits account, Eastwick and Finkel (2008) argued that explicit romantic partner preferences could reflect participants' beliefs about the reasons why they might desire a potential partner. These reasons are likely to be based on participants' theories about whether certain traits are desirable or undesirable in a partner and not on the feelings that a romantic partner who possesses those

traits would elicit (see also Wilson, Dunn, Bybee, Hyman, & Rotondo, 1984; Wilson, Kraft, & Dunn, 1989). Thus, correlations between implicit and explicit partner preferences might be weak if explicit measures tap reasons whereas implicit measures tap spontaneous affect associated with physically attractive partners. Also potentially relevant to the gap between reasons and feelings within the romantic domain is another finding from the Greenwald et al. (2009) meta-analysis revealing that implicit–explicit correlations tended to be quite low in the domain of relationships, lower than in any other content domain. Given this evidence, we hypothesized that implicit–explicit correlations would not be strong for romantic partner preferences—perhaps even weaker than the .2–.3 IAT average.

Hypothesis 2: Participants' implicit romantic partner preference for physical attractiveness will correlate only weakly with their explicit preference.

Predictive Validity of Implicit and Explicit Measures

Another impetus behind the development of implicit measures was the possibility that they would uniquely predict behavior, a prediction that has been confirmed meta-analytically for the IAT (Greenwald et al., 2009). In fact, several perspectives on implicit and explicit measures hypothesize a double dissociation in predictive validity: That is, explicit (but not implicit) measures should predict behaviors that are under deliberate, conscious control, whereas implicit (but not explicit) measures should predict behaviors that are spontaneous and less likely to be controlled (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Wilson et al., 2000). As predicted, explicit (but not implicit) measures of racial attitudes predict deliberate, controlled responses, such as perceived legitimacy of the Rodney King verdict (Fazio et al., 1995), perceived guilt of a Black defendant (Dovidio et al., 1997), and verbal friendliness toward a Black interaction partner (Dovidio et al., 2002). In contrast, implicit (but not explicit) measures of racial attitudes tend to predict less deliberate responses, such as the completion of letter sequences with negatively valenced words (Dovidio et al., 1997), nonverbal discomfort while interacting with a Black individual (Dovidio et al., 1997), and independent coders' ratings of participants' friendliness toward a Black interaction partner (Dovidio et al., 2002). Outside the domain of prejudice, Asendorpf, Banse, and Mücke (2002) found that an explicit (but not an implicit) measure of participants' own shyness predicted controlled shy behavior (e.g., speech) but that an implicit (but not an explicit) measure of shyness predicted spontaneous shy behavior (e.g., gaze aversion, tense body posture). The evidence to date on the predictive validity of explicit and implicit measures thus suggests that explicit measures predict behavior when participants possess the motivation or the ability to align their responses with consciously validated beliefs, whereas implicit measures predict behavior in situations where participants do not or cannot use propositional reasoning to inform behavior.

The present research explores the possibility that romantic partner preferences might reveal a similar double dissociation. Consistent with this possibility, prior research suggests that explicit partner preferences may have greater predictive validity in some domains than others. For example, explicit partner preferences for

physical attractiveness predicted ratings of photographed persons (Wood & Brumbaugh, 2009): Participants who ideally desired partners who were sexually suggestive, curvaceous, muscular, or thin were indeed more attracted to photographs of people that exhibited these characteristics. Furthermore, participants reported more interest in potential romantic partners who approximated their idiosyncratic partner preferences on paper (i.e., a written profile) before a live interaction with the partner had taken place (Eastwick, Finkel, & Eagly, 2011). These sorts of tasks are well suited to the application of propositional beliefs: When participants make deliberative evaluative judgments about relatively simple stimuli, they will rely on their consciously validated standards to make these evaluations (Sritharan, Heilpern, Wilbur, & Gawronski, 2010). Therefore, explicit partner preferences should predict romantic interest judgments regarding photographs and written profiles, and it is unclear whether implicit preferences could add any incremental power in predicting such evaluations beyond explicit preferences.

In contrast to such tasks where participants evaluate photographs or written stimuli, on tasks where participants evaluate live potential partners, their explicit preferences for a given trait (e.g., physical attractiveness) do not predict the extent to which that trait inspires romantic interest. This dissociation has been demonstrated when participants (a) meet speed-dating partners, (b) meet confederates in the laboratory, and (c) meet opposite-sex potential partners in their everyday life (Eastwick & Finkel, 2008; Eastwick et al., 2011; Todd, Penke, Fasolo, & Lenton, 2007). There are several possible explanations for this dissociation. As reviewed above, people may be especially likely to rely on momentary feelings and gut reactions when making evaluations in the romantic domain, especially when faced with a potential romantic partner in the flesh and especially in the early, affectively laden stages of the courtship process. In other words, an evaluation of a live potential romantic partner may be more like a spontaneous outcome than a deliberative one.¹ If explicit partner preferences reflect propositional beliefs about the reasons why a particular person might be a good or bad partner, then explicit preferences would be unlikely to predict such evaluations according to the associative–propositional evaluation model (Sritharan et al., 2010). However, implicit preferences could predict evaluations of live partners if implicit preferences reflect the spontaneous affect that participants experience in response to a particular trait in a romantic partner.

In addition, the ambiguity and complexity of live interactions with potential romantic partners may result in superior predictive validity of implicit compared with explicit measures. In general, people tend to interpret ambiguous information to be consistent with their implicit affective reactions (Gawronski, Geschke, & Banse, 2003; Hugenberg & Bodenhausen, 2003). As it happens, live interactions are often filled with ambiguity, as real behavior

¹ Indeed, there is precedent in the emotions literature for conceptualizing the same dependent variable as either a deliberative or a spontaneous outcome, depending on the context. For example, self-reports of emotion are consistent with sex-differentiated schemas when participants report on what they feel retrospectively (Robinson, Johnson, & Shields, 1998) or in general (Barrett, Robin, Pietromonaco, & Eyssell, 1998) but not when they report the emotions that they are experiencing in the moment (see Robinson & Clore, 2002).

can be interpreted in any number of possible ways. After all, people are complex stimuli with traits whose meaning is shaped by the context of other accompanying traits and behaviors (Asch, 1946). Even a simple trait like physical attractiveness takes on a different character depending on whether it is complemented by youthful innocence (e.g., “the boy next door”), cool elegance (e.g., “the Manhattan intellectual”), toned muscles (e.g., “the jock”), or reckless abandon (e.g., “the party girl”; see also Ashmore, Solomon, & Longo, 1996). Thus, people who have a strong implicit preference for attractiveness might be especially likely to interpret other available information more favorably for attractive than for unattractive targets, and so implicit preferences should successfully predict the strength of the association between attractiveness and romantic interest. Given these considerations, our third hypothesis is the following double dissociation (examined in Studies 3–5):

Hypothesis 3: Participants’ explicit partner preference for physical attractiveness will predict their attraction to targets presented in photographs. Participants’ implicit preference for physical attractiveness will predict their attraction to live romantic targets. The other two associations—between explicit preferences and attraction to live targets and between implicit preferences and attraction to targets in photographs—will be weak and likely nonsignificant.

Finally, given the large literature on sex differences in partner preferences (e.g., Buss, 1989; Eagly & Wood, 1999; Eastwick & Finkel, 2008; Feingold, 1990, 1992; Li, Bailey, Kenrick, & Linsenmeier, 2002; Li & Kenrick, 2006), we examine sex differences in both explicit and implicit preferences. Consistent with this literature, we expect to find that men will give higher ratings than women on explicit measures of the preference for physical attractiveness in a romantic partner. Our prediction regarding sex differences in implicit preferences derives straightforwardly from the prior literature in conjunction with Hypothesis 3. If (a) physical attractiveness predicts romantic interest in live potential romantic partners equivalently for men and women (Eastwick & Finkel, 2008; Feingold, 1990) and (b) implicit preferences predict the magnitude of this physical attractiveness–romantic interest association (Hypothesis 3), then sex differences are unlikely to emerge on implicit partner preferences. We did not advance predictions regarding whether sex differences would emerge in the predictive validity of explicit or implicit preferences (e.g., whether sex moderates Hypothesis 3), but we examine these sex differences as well.

Study 1

Our aim in the first study was modest but essential: Demonstrate that romantic partner preferences could be measured implicitly. As a starting point, we considered the Rudman and Heppen (2003) IAT, which assessed the extent to which the concept “romantic partner” (vs. the control concept “other men”) was associated more strongly with fantasy concepts than with reality concepts. For our initial study, we chose “ideal partner” as the evaluatively positive attribute (instead of “romantic partner”) because it refers precisely to our concept of interest, and we chose “nonideal partner” as the evaluatively

negative opposite. However, given that we were interested in the implicit preference for physical attractiveness, we could not use an IAT design, because the presence of physical attractiveness does not clearly imply the absence of some other trait. That is, any IAT that used “physical attractiveness” as the target category would place it in opposition to some other some trait category, like “trustworthy” or “exciting.” To avoid creating an artificial trade-off between physical attractiveness and a specific alternative trait, we used the GNAT, an implicit measure that assesses participants’ associations regarding a single target construct (Nosek & Banaji, 2001). In Study 1, we used the GNAT to explore our first hypothesis (that participants, on average, will implicitly associate physical attractiveness with the concept of an ideal romantic partner) and our second hypothesis (that the implicit preference for physical attractiveness will exhibit a weak correlation with the explicit preference).

Method

Participants. Participants were 94 undergraduate students who completed the experiment to fulfill a course requirement. Three participants were removed from analyses for making excessive errors (i.e., false alarms \geq hits), which likely indicated poor understanding of the task. The remaining 91 participants (48 men, 43 women) were 18.6 years old on average ($SD = 0.9$), and 27% were Asian American, 4% were African American, 56% were Caucasian, and 13% were other or unreported.

Materials.

Implicit romantic partner preferences. The implicit measure of romantic partner preference for physical attractiveness used in the present study was based on the GNAT (Nosek & Banaji, 2001), which assesses the strength of participants’ positive versus negative associations regarding a single category (in this case, physical attractiveness). The GNAT requires four categories of words: a target category, a distractor category, an evaluatively positive attribute dimension, and an evaluatively negative attribute dimension. In each block of trials (except some practice trials; see below), words from all four categories appear in the middle of the screen one at a time. The first category of words (the target category) in this study consisted of *physical attractiveness* synonyms (*sexually appealing, nice body, good looking, sexy, gorgeous, attractive*), and the second category of words (the distractor category) consisted of trait words that were not synonymous with *physical attractiveness* (*understanding, supportive, considerate, affectionate, good listener, trustworthy, educated, successful, promising career, ambitious, driven, good earner, mean, complaining, cold*). Participants were instructed to hit the space bar (“go”) when the word presented in the middle of the screen was a synonym of physical attractiveness and to refrain from hitting the space bar (“no-go”) when one of the other traits was presented. To remind participants of the target category, the top left-hand corner of the screen displayed the phrase “beautiful/handsome” during all trials. Words from the two trait categories were presented in blue font on a black background.

The third category of words (evaluatively positive attributes) consisted of synonyms for *ideal partner* (*wonderful partner, desired partner, perfect partner, exceptional partner, preferred partner, optimal partner*), and the fourth category of words (evaluatively negative attributes) consisted of synonyms for *nonideal*

partner (*terrible partner, undesired partner, imperfect partner, inadequate partner, poor partner, nonoptimal partner*).² Participants completed two blocks of trials: one in which participants had to hit the space bar for ideal partner words and refrain from hitting the space bar for nonideal partner words, and one in which participants had to hit the space bar for nonideal partner words and refrain from hitting the space bar for ideal partner words. To remind participants of the target category, the top right-hand corner of the screen displayed the phrase “ideal partner” or “non-ideal partner” during all trials. Words from the two ideal partner categories were presented in white font on a black background.

Thus, in one block (the ideal pairing block) the target “go” words were physical attractiveness words and ideal partner words, whereas the distractor “no-go” words were other trait words and nonideal partner words. In the other block (the nonideal pairing block), the target “go” words were physical attractiveness words and nonideal partner words, whereas the distractor “no-go” words were other trait words and ideal partner words. The implicit measure is calculated as the difference in participants’ performance between these two blocks (see the Results section).

In each of the two blocks, 15 words from each of the four categories were presented in the middle of the screen for a total of 60 trials per block. Words were selected randomly from each category without replacement, then rerandomized after all words from the category had been presented within that block. Participants had 750 ms to respond to each word. If they correctly hit the space bar when a target word appeared (hit) or correctly refrained from hitting the space bar when a distractor word appeared (correct rejection), a green *O* appeared in the middle of the screen. If they incorrectly hit the space bar when a distractor word appeared (false alarm) or incorrectly refrained from hitting the space bar when a target word appeared (miss), a red *X* appeared in the middle of the screen. The interstimulus interval was 300 ms, and the order in which the two blocks were completed was assigned randomly. Prior to completing the two blocks, participants completed 30 practice trials in which ideal partner words served as the target (but no traits were presented), 30 practice trials in which nonideal partner words served as the target (but no traits were presented), and 30 practice trials in which physical attractiveness words served as the target (but no ideal or nonideal partner words were presented). In addition, before each block, participants were given 16 practice trials in which they performed the identical categorization tasks as in the upcoming block.

The GNAT can be scored in two ways: using participants’ response latencies (e.g., Maner, Miller, Rouby, & Gailliot, 2009) or using their error rates (e.g., Blair, Ma, & Lenton, 2001; see Nosek & Banaji, 2001). The response latency measure was the average length of time it took each participant to hit the space bar on the hit and correct rejection trials; distractor item trials and trials in which participants made an error are not included in the calculation of the response latency measure. The error rate measure was the d' sensitivity statistic. To calculate d' , we converted the hit and false-alarm rates for each block from percentages to z scores, and then the false-alarm z score was subtracted from the hit z score. We assigned perfect (100%) hit rates within a block a z score of 2.33 and perfect false-alarm rates (0%) a z score of -2.33 (as if the rates were 99% and 1%, respectively). Each participant received a response latency and d' score for both the ideal partner block and the nonideal partner block. Participants’ average re-

sponse latencies ranged from 388 to 608 ms, and their average d' scores ranged from 0.08 to 4.65 (a perfect score).

Explicit romantic partner preferences. Participants rated on a 1 (*not at all*) to 9 (*extremely*) scale the extent to which the characteristics *sexually appealing, nice body, good looking, sexy, gorgeous, and attractive* described their ideal romantic partner. These items were averaged to produce an explicit measure of the romantic partner preference for physical attractiveness ($\alpha = .90$). These items were assessed along with other trait words that are not relevant to the present article.

Procedure. At a mass testing session at the start of the academic quarter, participants completed the explicit measure of romantic partner preferences. When participants arrived at the laboratory, a research assistant obtained consent and began the GNAT computer program. The instructions explained to participants that they would complete a categorization task that examined traits a romantic partner might possess. Participants first completed the GNAT practice trials, followed by the experimental trials. After completing the GNAT, participants were debriefed and dismissed.

Results

For the GNAT task to serve as a measure of an implicit romantic partner preference for physical attractiveness, we would first need to demonstrate that participants were more proficient at the task when physical attractiveness (a positive characteristic in a partner) was paired with the concept of an ideal partner rather than a nonideal partner. Consistent with this prediction, participants were faster at the GNAT task in the ideal pairing block ($M = 517$ ms, $SD = 32$) versus the nonideal pairing block ($M = 530$ ms, $SD = 33$), $t(90) = -3.37$, $p = .001$, $d = 0.40$. Curiously, participants’ d' sensitivity scores did not significantly differ between the ideal ($M = 2.32$, $SD = 0.86$) and the nonideal ($M = 2.29$, $SD = 0.89$) blocks, $t(90) = 0.37$, $p = .713$, $d = 0.03$. In other words, participants responded to target words more quickly but not more accurately when physical attractiveness was paired with the concept of an ideal partner versus a nonideal partner.

To examine how participants’ performance on the GNAT measure correlated with other variables (e.g., explicit measures), we created a variable that indicates the strength of each participant’s implicit preference for physical attractiveness. This implicit preference variable was calculated in two ways: the difference between each participant’s reaction time scores on the ideal and nonideal blocks and the difference between each participant’s d' scores on the ideal and nonideal blocks (see Nosek & Banaji, 2001). Both variables were coded such that higher scores indicated a stronger preference for physical attractiveness (i.e., faster reaction times and larger d' s on the ideal block). Neither implicit preference score significantly correlated with participants’ explicit preferences,

² We chose these words instead of the good (e.g., *cheerful, good, smiling*) and bad (e.g., *brutal, hate, sickening*) evaluative categories used in the typical GNAT because we wanted to ensure that we assessed participants’ associations between physical attractiveness and the concept of an ideal partner, not whether they associated physical attractiveness with positivity in general. One could easily argue that a GNAT using the general good and bad categories assesses the extent to which the participant himself or herself wishes to be physically attractive, for example.

$r(89) = -.04, p = .737$, for the reaction time measure and $r(89) = .15, p = .160$, for the d' measure.

Finally, men and women differed as expected in their explicit preference for physical attractiveness, $M_{\text{men}} = 7.24, M_{\text{women}} = 6.50, t(89) = 2.87, p = .005$ (see Table 1). However, men and women did not significantly differ in their implicit preferences as assessed using the reaction time measure, $M_{\text{men}} = 13.8, M_{\text{women}} = 11.7, t(89) = 0.28, p = .784$, or the d' measure, $M_{\text{men}} = .09, M_{\text{women}} = -.03, t(89) = 0.62, p = .539$.

Discussion

Study 1 largely supported our hypotheses. First and foremost, participants were faster on the GNAT when physical attractiveness was paired with the concept of an ideal romantic partner than when it was paired with the concept of a nonideal partner. Participants are typically faster at correctly identifying a stimulus when they are primed with a concept that is closely related in memory to the stimulus either semantically (Neely, 1977) or evaluatively (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Therefore, for the average participant in this study, physical attractiveness was more closely associated in memory with a desirable romantic partner than with an undesirable partner. A significant difference between the ideal and nonideal blocks did not emerge on the d' measure; participants were equally accurate on the task in both conditions. We do not further examine the d' measure in this report, focusing instead on the reaction time measure.³

With regard to our second hypothesis, the implicit measure of physical attractiveness (both the reaction time and the d' measures) correlated weakly with the explicit measure as predicted. In other words, the preference that is assessed by the GNAT procedure was largely independent of the preference that participants reported on the explicit measure, which is likely to be conscious and controllable. Given this lack of association, it is perhaps not surprising that no sex difference emerged for the implicit measure even though the expected sex difference did emerge for the explicit measure. Nevertheless, these findings await replication.

Study 2

Study 2 was identical to Study 1 except that we altered the GNAT slightly. The categories “ideal partner” and “nonideal partner” used in Study 1 were somewhat clunky: They are hybrids of evaluative concepts (like “pleasant” vs. “unpleasant”; Greenwald et al., 1998) and semantic concepts (like “romantic partner” vs. “other men”; Rudman & Heppen, 2003) and are thus rather complex for an implicit task. In addition, participants likely possess the knowledge that people in general consider physical attractiveness to be important in an ideal romantic partner, and this normative information could have influenced their responses to our ideal partner GNAT (Olson & Fazio, 2004). Inspired by Olson and Fazio’s (2004) personalized IAT, in Study 2, we created a personalized version of the GNAT. This task examined whether participants continue to show an implicit preference for physical attractiveness in a romantic partner when the implicit measure taps their personal attitudes and limits the influence of normative knowledge about what qualities are generally desirable or undesirable in a partner.

Method

Participants. Participants were 66 undergraduate students (35 men, 31 women) who completed the experiment to fulfill a course requirement. The instructions were clarified for this study, and no participants had to be excluded for making excessive errors. The participants were 19.2 years old on average ($SD = 1.1$ years); the racial breakdown was 15% Asian American, 3% African American, 71% Caucasian, and 11% other or unreported.

Materials and procedure. The implicit measure of the romantic partner preference for physical attractiveness in this study was a mixture of the GNAT used in Study 1 and the personalized IAT (Olson & Fazio, 2004). It differed from the Study 1 measure in five ways. First, instead of completing an ideal partner block and a nonideal partner block, participants completed an “I like” block and an “I don’t like” block. For the “I like” block, participants were instructed to hit the space bar when the word presented in the middle of the screen was something that they liked and to refrain from hitting the space bar when the word was something that they did not like. For the “I don’t like” block, participants were instructed to hit the space bar when the word presented in the middle of the screen was something that they did not like and to refrain from hitting the space bar when the word was something that they liked. As a reminder, the words “I like” or “I don’t like” were displayed in the top right-hand corner of the screen; participants were instructed that this portion of the study had no right or wrong answers.

Second, the two categories of words representing an ideal partner and a nonideal partner were replaced with a single category of attitude objects (e.g., *football, opera, motorcycles, tequila, romance novels*; see Olson & Fazio, 2004). These attitude objects were chosen by Olson and Fazio (2004) because they tended to be liked by some people and disliked by other people. Thus, in one block (the “I like” block), the target “go” words were physical attractiveness words and objects the participant liked, whereas the distractor “no-go” words were other trait words and objects the participant disliked. In the second block (the “I don’t like” block), the target “go” words were physical attractiveness words and objects the participant disliked, whereas the distractor “no-go” words were other trait words and objects the participant liked.⁴ Attitude object words were presented in white font on a black background; 30 attitude objects were presented in each block (to

³ For the interested reader, we note that there was no difference between the “I like” and “I don’t like” conditions on the d' measure in Studies 2, 3, and 5, but participants were more accurate in the “I like” condition in Study 4, $t(173) = 2.09, p = .038$. In addition, the d' measure did not correlate with explicit preferences in Studies 2–5, and no significant sex differences emerged for the d' measure in Studies 2–5. Finally, the d' measure did not interact with the attractiveness of the photographs to predict romantic interest in the photographic targets in Studies 3 and 5, nor did it interact with the attractiveness of the confederate to predict romantic interest in Study 5. (This interaction approached significance in the predicted direction in Study 4 for the subjective measure of physical attractiveness.)

⁴ Like Olson and Fazio (2004), we did not idiosyncratically assess which stimuli each participant liked or disliked, so there were no correct or incorrect answers to these items. The instructions encouraged participants to make their liking judgments on each trial—to feel how much they liked or disliked the word each time they saw it—while stressing that it was okay for them to make different liking judgments about the same item over the course of the study.

Table 1
Descriptive Statistics for Men’s and Women’s Explicit and Implicit Romantic Partner Preferences for Physical Attractiveness Across the Five Studies

Measure	Men		Women		<i>t</i>	<i>z</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Explicit preference							
Study 1	7.24	1.24	6.50	1.21	2.87**		0.60
Study 2	6.93	1.13	6.17	1.40	2.44*		0.59
Study 3	7.20	1.17	6.64	1.47	1.45		0.41
Study 4	7.72	1.11	7.20	1.17	2.96**		0.45
Study 5	3.06	0.83	2.57	0.88	2.42*		0.57
Meta-analytic sex difference						5.39***	0.52
Implicit preference (RT)							
Study 1	13.84	32.66	11.72	40.42	0.28		0.06
Study 2	34.83	56.47	23.19	57.44	0.83		0.20
Study 3	29.11	74.52	21.54	47.37	0.43		0.12
Study 4	35.47	50.73	25.64	53.79	1.24		0.19
Study 5	28.86	43.19	32.52	46.78	-0.34		-0.08
Meta-analytic sex difference						1.20	0.11

Note. The *t* column tests the difference between means for men and women. All measures are scored such that more positive values indicate a stronger preference. Implicit preference (RT) is calculated as the reaction time for the incompatible block minus the compatible block.

* *p* < .05. ** *p* < .01. *** *p* < .001.

replace the 15 ideal and 15 nonideal synonyms presented in each block in Study 1). As the “I like” task versus “I don’t like” task is slightly more difficult than the categorization task used in Study 1, the response window was lengthened to 1,000 ms and the inter-stimulus interval was lengthened to 400 ms.

Third, because the “I like” versus “I don’t like” task did not reference romantic partners directly (unlike the Study 1 ideal partner GNAT), the instructions emphasized romantic partner preferences to place participants in the relevant mindset. For example, participants were told that the traits examined in this experiment were “traits that students like yourself believe to be important in a romantic partner.”

Fourth, when participants indicated that they liked the attitude object (i.e., hitting the space bar in the “I like” block and refraining from hitting the space bar in the “I don’t like” block), a smiley face appeared as feedback. When participants indicated that they did not like the attitude object, a disgusted face appeared. As in Study 1, a green *O* and red *X* indicated correct and incorrect responses, respectively, to the physical attractiveness words and distractor trait words.

Fifth, because there was no correct answer to the attitude object stimuli, only participants’ responses to the physical attractiveness words and distractor trait words were used to calculate the reaction time and *d'* measures. Participants’ average response latencies ranged from 469 to 775 ms and their average *d'* scores ranged from 0.88 to 4.65.

The explicit measure of preference for physical attractiveness was identical to the one used in Study 1 ($\alpha = .92$). The rest of the procedure was also identical to Study 1.

Results and Discussion

We examined whether participants were more proficient at the GNAT task when physical attractiveness was paired with the objects that the participant liked rather than objects that the par-

ticipant disliked. Indeed, participants were faster at the GNAT task in the “I like” block ($M = 599$ ms, $SD = 54$) versus the “I don’t like” block ($M = 628$ ms, $SD = 54$), $t(65) = -4.20, p < .001, d = 0.54$. These results replicated those of Study 1: Participants responded to physical attractiveness words more quickly when they were instructed to give the “go” response to attitude objects that they liked versus objects that they disliked.

The strength of participants’ implicit preference for physical attractiveness was calculated using a difference score as in Study 1. Again, the implicit preference score did not significantly correlate with participants’ explicit preferences, $r(64) = -.09, p = .473$. As in Study 1, men and women differed in their explicit preference for physical attractiveness, $M_{men} = 6.93, M_{women} = 6.17, t(64) = 2.44, p = .017$. However, men and women did not significantly differ in their implicit preferences as assessed using the reaction time measure, $M_{men} = 34.8, M_{women} = 23.2, t(64) = 0.83, p = .410$.

In general, the Study 2 results replicated those from Study 1. Participants were faster on the GNAT when physical attractiveness was paired with attitude objects the participant liked than when it was paired with attitude objects the participant disliked. Furthermore, the implicit measure again demonstrated no reliable correlation with the explicit measure, and sex differences emerged on the explicit measure but not the implicit measure. Given the personalized design of the implicit measure in Study 2, the average participant’s implicit preference for physical attractiveness is unlikely to consist solely of normative knowledge of the characteristics that people generally associate with an ideal partner (Olson & Fazio, 2004). Therefore, we continue to use the personalized GNAT in Studies 3–5.

Study 3

Study 3 marked our first attempt to compare the predictive validity of implicit and explicit preferences for physical attractive-

ness. We began by examining a relatively simple dependent variable: participants' romantic interest in physically attractive versus unattractive people depicted in photographs. The association between the physical attractiveness of the person in the photograph and participants' romantic interest in him or her should indeed be moderated by explicit preferences (e.g., Wood & Brumbaugh, 2009). However, we were skeptical about the ability of implicit preferences to moderate the association between the attractiveness of the person in the photograph and romantic interest. Although there are many cases in which both explicit and implicit measures predict dependent variables equally well (Greenwald et al., 2009), given that the photographic rating task was relatively simple and well suited to the application of consciously validated propositional beliefs (Sriharan et al., 2010), it seemed plausible that the task would be more relevant to participants' explicit preferences than their implicit preferences.

Method

Participants. Participants were 49 undergraduate students (23 men, 26 women) who completed the experiment to fulfill a course requirement. They were 18.8 years old on average ($SD = 1.0$ years); the racial breakdown was 16% Asian American, 8% African American, 65% Caucasian, and 11% other or unreported. One participant did not complete the photograph romantic interest ratings because of a computer error.

Materials. The GNAT implicit measure of romantic partner preference for physical attractiveness was identical to the measure used in Study 2. The explicit measure of romantic partner preference for physical attractiveness was identical to the measures used in Studies 1 and 2 ($\alpha = .94$).

To obtain the photographs for the romantic interest ratings, we randomly selected 12 photographs of women and 12 photographs of men from a set of 110 photographs taken from the website <http://www.hotornot.com>. A separate group of 29 men and 23 women rated the attractiveness of the opposite-sex photos on a scale of 1 (*not at all attractive*) to 7 (*extremely attractive*). For the purposes of the data analysis, the six highest rated photographs of men and six highest rated photographs of women (out of the randomly selected set of 12 male and 12 female photographs) were considered attractive ($M = 4.08$) and the six lowest rated photographs of men and six lowest rated photographs of women were considered unattractive ($M = 2.91$). Each selected photograph clearly depicted the face of one individual and was age appropriate for the sample.

Participants completed a two-item dependent measure of romantic interest ("How much do you like this person?" and "How much would you like to get to know this person better?"; $\alpha = .92$) regarding the opposite-sex individual depicted in each of the 12 photos on a scale from 1 (*not at all*) to 9 (*a great deal*). The photographs were presented to participants on a computer screen in a random order.

Procedure. As in Studies 1 and 2, participants completed the explicit measure of romantic partner preference for physical attractiveness at a mass-testing session early in the academic quarter. After arriving at the experimental session, they completed the GNAT implicit measure of romantic partner preference for physical attractiveness as in Study 2. Finally, participants completed

the photograph romantic interest ratings and were then debriefed and dismissed.

Results

Studies 1 and 2 replication. As in Studies 1 and 2, we examined participants' performance on the GNAT measure. Replicating results from Study 2, participants were faster at the GNAT task in the "I like" block ($M = 605$ ms, $SD = 68$) versus the "I don't like" block ($M = 631$ ms, $SD = 58$), $t(48) = -2.88$, $p = .006$, $d = 0.40$. The strength of participants' implicit preference for physical attractiveness (calculated as in Studies 1 and 2) did not significantly correlate with their explicit preferences, $r(47) = .09$, $p = .538$. In this study, men and women did not significantly differ in their explicit preference for physical attractiveness, $M_{\text{men}} = 7.20$, $M_{\text{women}} = 6.64$, $t(47) = 1.45$, $p = .154$, although the trend was in the expected direction. As in Studies 1 and 2, men and women did not significantly differ in their implicit preferences, $M_{\text{men}} = 29.1$, $M_{\text{women}} = 21.5$, $t(47) = 0.43$, $p = .669$.

Predictive validity of explicit and implicit preferences on the photograph rating task. We examined whether explicit or implicit romantic partner preferences for physical attractiveness were valid predictors of participants' romantic interest in opposite-sex targets. If partner preferences have predictive validity, we would expect to find that individuals with a stronger (vs. weaker) preference for physical attractiveness in a partner would demonstrate a stronger association between the attractiveness of the photographs and their romantic interest in the photographs. In other words, the Preference \times Attractiveness interaction should significantly and positively predict romantic interest. For these analyses, participants' explicit and implicit partner preferences were standardized and the attractiveness of the photographs was coded -1 for unattractive and 1 for attractive. Each participant provided 12 rows of data, and so SAS PROC mixed was used to account for this nonindependence; the intercept was permitted to vary randomly.

Participants' explicit preferences had predictive validity on the photographic rating task, as the Explicit Preference \times Attractiveness interaction was (nearly) significant, $\beta = .07$, $B = 0.14$, $t(526) = 1.93$, $p = .054$. Predicted means for participants with strong ($+1$ standard deviation) and weak (-1 standard deviation) explicit preferences for physical attractiveness are plotted in Figure 1; main effects in all predictive validity analyses are presented in Appendix A, and all simple effects underlying the significant two-way interactions are presented in Appendix B. Although participants with weak preferences for a physically attractive partner expressed more romantic interest in the attractive versus unattractive photographs, $\beta = .25$, $B = 0.55$, $t(526) = 6.83$, $p < .001$, this association was even larger (i.e., the regression slope was steeper) among participants with strong preferences, $\beta = .39$, $B = 0.84$, $t(526) = 6.32$, $p < .001$. In addition, this Explicit Preference \times Attractiveness interaction was significantly moderated by sex (coded $-.5$ for men and $.5$ for women), $\beta = -.09$, $B = -.040$, $t(524) = -3.40$, $p < .001$. Among men, the Explicit Preference \times Attractiveness interaction was strong and significant, $\beta = .16$, $B = 0.35$, $t(262) = 3.48$, $p < .001$. Although men with weak preferences for a physically attractive partner expressed more romantic interest in the attractive versus unattractive photographs, $\beta = .21$, $B = 0.42$, $t(262) = 2.67$, $p = .008$, this association was even larger

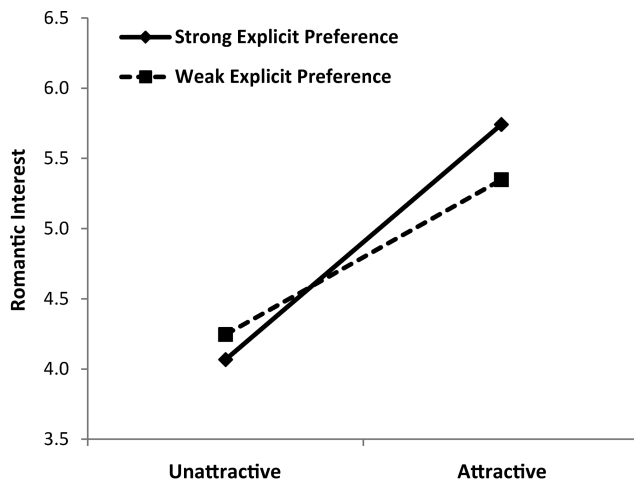


Figure 1. Study 3: Regression slopes predicting romantic interest from the attractiveness of people in photographs for all participants. Slopes are presented separately for participants with strong (+1 standard deviation) and weak (−1 standard deviation) explicit romantic partner preferences for physical attractiveness.

among men with strong preferences, $\beta = .55$, $B = 1.11$, $t(262) = 6.90$, $p < .001$. The Explicit Preference \times Attractiveness interaction was nonsignificant for women, $\beta = -.02$, $B = -.05$, $t(262) = -0.86$, $p < .390$.

Participants' implicit preferences did not have predictive validity on the photographic rating task, as the Implicit Preference \times Attractiveness interaction was nonsignificant, $\beta = -.01$, $B = -.02$, $t(526) = -0.20$, $p = .841$. This interaction was not moderated by sex, $\beta = .01$, $B = 0.06$, $t(524) = 0.35$, $p = .724$. In summary, explicit preferences (at least for men) but not implicit preferences predicted the extent to which physical attractiveness was associated with participants' romantic interest in the photographic targets in this study.

Discussion

Study 3 again supported the two main hypotheses examined in Studies 1 and 2: Participants, on average, revealed an implicit preference for physical attractiveness in a romantic partner, and this implicit preference did not correlate with the explicit preference for physical attractiveness. Of course, the main contribution of Study 3 was that it examined the predictive validity of implicit and explicit preferences for physical attractiveness on a photograph rating task. As predicted, to the extent that participants explicitly reported that they desired physical attractiveness in a romantic partner, they revealed a stronger association between the physical attractiveness of the opposite-sex individual depicted in the photographs and their romantic interest in them. Participants who explicitly reported a weak desire for physically attractive romantic partners still revealed a positive association between physical attractiveness and romantic interest, but this association was significantly more positive for participants who reported a strong desire for physically attractive partners. Curiously, this moderation by explicit preferences was only significant for men, a sex difference that was not predicted a priori. Nevertheless, there is some precedent for

the finding that explicit partner preferences are more likely to direct judgments for men than for women. For example, men may be more likely than women to act on their romantic racial preferences: One recent study (Hitsch, Hortaçsu, & Ariely, 2010) found that men who explicitly reported that they preferred a same-race romantic partner indeed revealed a strong same-race bias when sending e-mails through an online dating site, whereas men who explicitly stated that they did not have a racial preference did not show this bias. However, women were as likely to e-mail same-race partners regardless of whether they did or did not explicitly claim to have a same-race preference. Yet Wood and Brumbaugh (2009) did not find a sex difference in the predictive validity of explicit preferences on a photograph rating task that closely parallels the current task, and thus it will be important to test whether this sex difference replicates, which we do in Study 5.

Implicit preferences did not significantly moderate the association between the physical attractiveness of the people in the photographs and participants' romantic interest in them. However, perusing photographs is only one way—and probably a somewhat atypical way—that people evaluate romantic partners. The norm in modern Western culture is that potential romantic partners meet and evaluate each other in person before they begin a romantic relationship, and explicit preferences tend not to predict romantic interest under such circumstances (Eastwick & Finkel, 2008; Eastwick et al., 2011; Todd et al., 2007). We conducted Study 4 to examine if implicit preferences have predictive validity when participants evaluate a potential romantic partner whom they have met in person. Indeed, if romantic interest regarding a live potential partner is more like a spontaneous evaluation than a deliberative one (Sritharan et al., 2010), then a live romantic encounter should be a context where implicit preferences have predictive validity (Gawronski & Bodenhausen, in press).

Study 4

In Study 4, we examined the predictive validity of implicit preferences in the context of a speed-dating event. At a heterosexual speed-dating event, all of the opposite-sex pairs have a chance to meet one another on a series of brief (e.g., 4-min) dates (Finkel & Eastwick, 2008; Finkel, Eastwick, & Matthews, 2007). At the completion of the event, the organizers provide mutually interested individuals with an opportunity to contact each other, presumably to arrange a more traditional date. In the present study, we assessed participants' explicit and implicit ideal partner preferences for physical attractiveness before the speed-dating event, and we assessed their romantic interest in each speed-dating partner on a brief questionnaire immediately after each date. We expected that the pattern of data would be a mirror image of Study 3: The Explicit Preference \times Attractiveness interaction should not predict romantic interest, but the Implicit Preference \times Attractiveness interaction should.

Method

Participants. In the spring of 2007, 187 undergraduate students participated in one of eight heterosexual speed-dating events hosted on campus (see Finkel et al., 2007, for a detailed methodological account of a similar study). Participants were recruited for

the events via informational e-mails and flyers posted around campus. The sample analyzed in this report consisted of the 174 participants (88 men, 86 women) who completed the implicit measure of the partner preference for physical attractiveness at a preevent session 1 week before their speed-dating event. These participants were 19.6 years old ($SD = 1.2$) on average; the racial/ethnic breakdown was 2% African American, 16% Asian, 70% Caucasian, 3% Hispanic, and 9% biracial or other racial group.

Materials. The GNAT implicit measure of romantic partner preference for physical attractiveness was identical to the measure used in Studies 2 and 3. For the explicit measure of romantic partner preference for physical attractiveness, participants rated the extent to which the items *physically attractive* and *sexy/hot* characterized their ideal romantic partner ($r = .72$) on a scale from 1 (*not at all*) to 9 (*extremely*).

The attractiveness of the speed-dating partner was calculated in two different ways. The subjective measure of physical attractiveness was the participant's rating of the speed-dating partner on the items *physically attractive* and *sexy/hot* ($r = .90$) on a 1 (*not at all*) to 9 (*extremely*) scale ($M = 4.6$, $SD = 2.1$). The objective measure of physical attractiveness was created using two indices: (a) a consensus measure of physical attractiveness, which was the average of the *physically attractive* and *sexy/hot* items across all 11–12 opposite-sex individuals who met the speed-dating partner and (b) the average rating provided by opposite-sex nonparticipants (17 men, 29 women) who rated a photo of the speed-dating partner on a scale from 1 (*not at all attractive*) to 7 (*extremely attractive*). These two indices were strongly associated ($r = .60$), so we standardized each and averaged them to create an objective measure of physical attractiveness. (Hypothesis tests reveal identical conclusions when analyzing both indices separately.)

The dependent variable was a two-item measure of romantic interest ("I was sexually attracted to my interaction partner" and "I am likely to say 'yes' to my interaction partner"; $r = .74$). Participants completed these items regarding each opposite-sex speed-dating partner on a scale from 1 (*strongly disagree*) to 9 (*strongly agree*).

Procedure. Participants signed up for a speed-dating session online and completed a 30-min preevent questionnaire, including the explicit measure of the ideal partner preference for physical attractiveness. Subsequently, they attended a 30-min pre-session approximately one week before their scheduled speed-dating session; they completed the GNAT implicit preference for physical attractiveness measure at this time. Men and women attended different pre-sessions so that they could not interact in advance with their future speed-dating partners.

After arriving at the speed-dating event, which was held in an on-campus art gallery, participants posed for a digital photograph taken by a research assistant; the research assistant was willing to take multiple photos until the participant was happy with one. Participants then had 4-min speed-dates with 11 or 12 opposite-sex individuals, depending on event attendance. Immediately after each speed-date, they completed a 2.5-min interaction record questionnaire, which included the subjective measure of physical attractiveness and the dependent measure of romantic interest.

Results

Studies 1–3 replication. As in Studies 1–3, we first examined participants' performance on the GNAT measure. Replicating results from Studies 2 and 3, participants were faster at the GNAT task in the "I like" block ($M = 607$ ms, $SD = 59$) versus the "I don't like" block ($M = 638$ ms, $SD = 56$), $t(173) = -7.71$, $p < .001$, $d = 0.70$. As in Studies 1–3, the strength of participants' implicit preference for physical attractiveness (calculated as in Studies 1–3) did not significantly correlate with their explicit preferences, $r(172) = .03$, $p = .710$. As expected, men reported a greater explicit preference for physical attractiveness than women, $M_{\text{men}} = 7.72$, $M_{\text{women}} = 7.20$, $t(172) = 2.96$, $p = .004$. As in Studies 1–3, men and women did not significantly differ in their implicit preferences, $M_{\text{men}} = 35.5$, $M_{\text{women}} = 25.6$, $t(172) = 1.24$, $p = .217$.

Predictive validity of explicit and implicit preferences on speed-dater evaluations. We first examined whether participants' explicit and implicit preferences for physical attractiveness moderated the extent to which their subjective judgment of each speed-dating partner's attractiveness (standardized to $M = 0$, $SD = 1$) predicted their romantic interest in that partner. For the explicit preference for physical attractiveness, the Explicit Preference \times Subjective Attractiveness interaction was nonsignificant, $\beta = .00$, $B = 0.01$, $t(1842) = 0.31$, $p = .759$. Furthermore, this association was not moderated by participant sex, $\beta = -.02$, $B = -.010$, $t(1840) = -1.58$, $p = .115$. However, consistent with hypotheses, the Implicit Preference \times Subjective Attractiveness interaction did predict romantic interest in the speed-dating partners, $\beta = .03$, $B = 0.06$, $t(1842) = 1.95$, $p = .051$; predicted means are plotted in Figure 2. Although participants with weak (-1 standard deviation) implicit preferences for a physically attractive partner expressed more romantic interest in a speed-dating partner to the extent they thought the partner was attractive, $\beta = .81$, $B = 1.72$, $t(1842) = 37.95$, $p < .001$, this association was even larger among participants with strong ($+1$ standard deviation) implicit preferences for physical attractiveness.

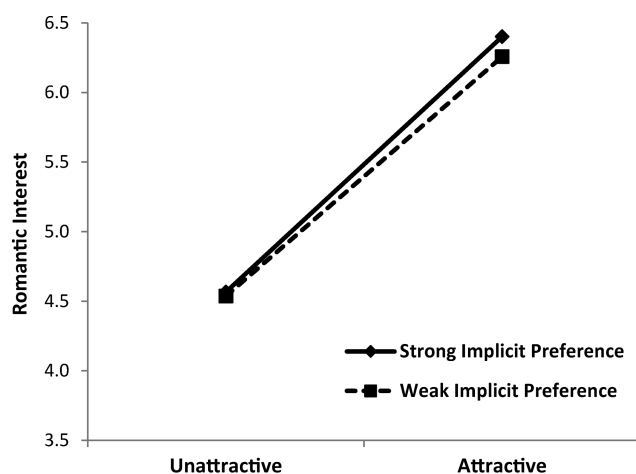


Figure 2. Study 4: Regression slopes predicting romantic interest from speed-dater attractiveness for all participants using a subjective measure of attractiveness. Slopes are presented separately for participants with strong ($+1$ standard deviation) and weak (-1 standard deviation) implicit romantic partner preferences for physical attractiveness.

tion) implicit preferences, $\beta = .87$, $B = 1.84$, $t(1842) = 46.77$, $p < .001$. The Implicit Preference \times Subjective Attractiveness interaction was not moderated by participant sex, $\beta = -.02$, $B = -0.09$, $t(1840) = -1.45$, $p = .148$.

We also conducted an identical set of analyses using the objective ratings of each speed-dating partner's attractiveness (standardized to $M = 0$, $SD = 1$). For the explicit preference, the Explicit Preference \times Objective Attractiveness interaction was nonsignificant, $\beta = .00$, $B = -0.01$, $t(1844) = -0.13$, $p = .898$, and this association was not moderated by participant sex, $\beta = .00$, $B = 0.02$, $t(1842) = 0.18$, $p = .859$. Unlike the subjective attractiveness interaction, the Implicit Preference \times Objective Attractiveness interaction was not significant, $\beta = .02$, $B = 0.05$, $t(1844) = 1.18$, $p = .237$, but this interaction was marginally moderated by participant sex, $\beta = -.03$, $B = -0.14$, $t(1842) = -1.76$, $p = .079$. The Implicit Preference \times Objective Attractiveness interaction was significant for men, $\beta = .07$, $B = 0.14$, $t(922) = 2.56$, $p = .011$. Although men with weak implicit preferences for a physically attractive partner expressed more romantic interest in a speed-dating partner to the extent that the partner was objectively attractive, $\beta = .40$, $B = 0.78$, $t(922) = 10.11$, $p < .001$, this association was even larger among participants with strong implicit preferences, $\beta = .55$, $B = 1.06$, $t(922) = 14.09$, $p < .001$. The Implicit Preference \times Objective Attractiveness interaction was nonsignificant for women, $\beta = .00$, $B = 0.00$, $t(920) = -0.06$, $p = .949$.

Discussion

As in Studies 1–3, participants in Study 4 were faster at completing the GNAT when physical attractiveness was paired with liked versus disliked objects, and their implicit preferences again did not correlate with their explicit preferences. In sharp contrast to the photograph-rating context of Study 3, implicit preferences had predictive validity in the Study 4 speed-dating context but explicit preferences did not. That is, the association between the physical attractiveness of a speed-dating partner and participants' romantic interest in him or her was stronger to the extent that participants revealed an implicit preference for physical attractiveness; explicit preferences were irrelevant to the association between physical attractiveness and romantic interest. This implicit preference effect did not differ by sex when physical attractiveness was measured as participants' subjective assessment of the speed-dating partner's attractiveness, but it was only true for men when using a more objective measure of physical attractiveness.

In combination, the findings from Studies 3 and 4 hint at a double dissociation in predictive validity. The associative-propositional evaluation model (Gawronski & Bodenhausen, in press) suggests that explicit measures should predict behavior when participants evaluate relatively simple stimuli that are well suited to the application of propositional beliefs and consciously validated standards (Sritharan et al., 2010). In contrast, implicit measures assess spontaneous affective reactions and should therefore predict behavior when participants' evaluations reflect momentary feelings and gut reactions or the stimulus is ambiguous and complex (Gawronski et al., 2003; see also Dovidio et al., 1997, 2002; Ranganath et al., 2008; Wilson et al., 2000). In other words, explicit preferences should predict evaluations of stimuli like the photographs in Study 3, whereas implicit measures should predict

evaluations of stimuli like the live speed-dating partners in Study 4. This is exactly what happened. The fact that this pattern emerged on similar romantic interest dependent variables across two different contexts suggests that it is indeed the type of evaluative task, not the nature of the measurement strategy, that produced the double dissociation (see Ranganath et al., 2008). Nevertheless, to be sure that the results of Studies 3 and 4 do not merely reflect a difference between the samples (e.g., psychology students versus speed-daters), we wished to demonstrate both components of the double dissociation within the same sample of participants in Study 5.

Study 5

Study 5 was identical to Study 3 except that after completing the implicit and explicit measures and the photograph rating task, participants engaged in a brief interaction with an opposite-sex confederate and reported their attraction to him or her.⁵ We hypothesized that Study 5 would replicate Study 3 in that participants' (perhaps just men's) explicit preferences for physical attractiveness would significantly moderate the association between physical attractiveness and romantic interest in photographs but implicit preferences would not. We also hypothesized that, as in Study 4, implicit preferences would significantly moderate the association between physical attractiveness and romantic interest in the live potential partner but explicit preferences would not. In other words, we predicted the emergence of a double dissociation in the predictive validity of the implicit and explicit romantic partner preference for physical attractiveness (see Asendorpf et al., 2002; Dovidio et al., 2002).

Method

Participants. Participants were 73 undergraduate students who completed the experiment to fulfill a course requirement. Two participants were removed from analyses because they correctly intuited that the experiment involved romantic partner preferences. The remaining 71 participants (35 men, 36 women) were 18.9 years old on average ($SD = 1.1$ years); the racial breakdown was 23% Asian American, 3% African American, 59% Caucasian, and 15% other or unreported. All participants responded with 7, 8, or 9 to the item "I am exclusively attracted to members of the opposite sex" (1 = *strongly disagree*, 9 = *strongly agree*) at a mass-testing session early in the academic quarter.

Materials. The GNAT implicit measure of romantic partner preference for physical attractiveness was identical to the measure used in Studies 2–4. The explicit measure of romantic partner preference for physical attractiveness was identical to the measure used in Studies 1–3 ($\alpha = .86$) except that the scale ranged from -4 (*highly uncharacteristic*) to 4 (*highly characteristic*). The photographic rating task was identical to the one used in Study 3 except that the measure of romantic interest was expanded to five items (e.g., "This person seems sexually attractive" and "I would be

⁵ We also manipulated the confederate's physical attractiveness using clothing and makeup to generate variability in participants' perceptions of the confederate's attractiveness. Indeed, the natural variance of participants' perceptions of the confederate was large (ranging from 1.2 to 7.8 on a 9-point scale).

interested in going on a date with this person"; $\alpha = .94$) and assessed using a scale from 1 (*strongly disagree*) to 9 (*strongly agree*).

Romantic interest in the opposite-sex confederate was assessed using an eight-item measure (e.g., "My interaction partner seemed sexually attractive" and "I would be interested in going on a date with my interaction partner"; $\alpha = .91$) on a scale from 1 (*strongly disagree*) to 9 (*strongly agree*). Because of time constraints, participants in this study could only evaluate one opposite-sex confederate, not a variety of attractive and unattractive individuals as in the photograph rating task and the speed-dating task in Study 4. Therefore, we assessed each participant's subjective assessment of the confederate's physical attractiveness using a five-item measure (*sexually appealing*, *nice body*, *good looking*, *sexy*, and *gorgeous*; $\alpha = .94$) on a 1 (*not at all*) to 9 (*extremely*) scale ($M = 4.7$, $SD = 1.5$).

Procedure. As in Studies 1–3, participants completed the explicit measure of romantic partner preference for physical attractiveness at a mass-testing session early in the academic quarter. After arriving at the experimental session, they completed the GNAT implicit measure of romantic partner preference for physical attractiveness as in Studies 2–4 and completed the photograph romantic interest ratings as in Study 3.

Next, participants were told that they would be having an interaction with an opposite-sex participant (actually a confederate) and that they should try to determine whether they would like this person as a romantic partner (for a similar procedure, see Eastwick et al., 2011; Eastwick, Richeson, Son, & Finkel, 2009). The experimenter led the participant to a separate room where the opposite-sex confederate was waiting. During the interaction, the participant and the confederate took turns describing a set of eight Thematic Apperception Test (Murray, 1971) cards for each other (four per person). Both the confederate and the participant took turns describing a card for approximately 30 s until they both had described their four pictures. The confederate's four descriptions were scripted; by constraining the topic of conversation in this manner, we maintained tight experimental control regarding the information that the participant received about the confederate. After the interaction was completed, the experimenter led the participant to another room, administered the romantic interest and physical attractiveness measures regarding the confederate, and then debriefed and dismissed the participant.

One male and one female research assistant conducted this study together. The research assistant of the same sex as the participant served as the experimenter and the opposite-sex research assistant served as the confederate.

Results

Studies 1–4 replication. As in Studies 1–4, we first examined participants' performance on the GNAT measure. Replicating results from Studies 2–4, participants were faster at the GNAT task in the "I like" block ($M = 587$ ms, $SD = 41$) versus the "I don't like" block ($M = 618$ ms, $SD = 47$), $t(70) = -5.78$, $p < .001$, $d = 0.70$. As in Studies 1–4, the strength of participants' implicit preference for physical attractiveness (calculated as in Studies 1–4) did not significantly correlate with their explicit preferences, $r(69) = .00$, $p = .992$. As expected, men reported a greater explicit preference for physical attractiveness than did

women, $M_{\text{men}} = 3.06$, $M_{\text{women}} = 2.57$, $t(69) = 2.42$, $p = .018$. As in Studies 1–4, men and women did not significantly differ in their implicit preferences, $M_{\text{men}} = 28.9$, $M_{\text{women}} = 32.5$, $t(69) = -0.34$, $p = .734$.

Predictive validity of explicit and implicit preferences on the photograph rating task. As in Study 3, we examined whether participants' explicit preferences had predictive validity on the photographic rating task. Once again, the Explicit Preference \times Attractiveness interaction was significant, $\beta = .10$, $B = 0.19$, $t(779) = 2.44$, $p = .015$. Predicted means are plotted in Figure 3. Although participants with weak (-1 standard deviation) preferences for a physically attractive partner expressed more romantic interest in the attractive versus unattractive photographs, $\beta = .38$, $B = 0.75$, $t(779) = 7.38$, $p < .001$, this association was even larger among participants with strong ($+1$ standard deviation) preferences, $\beta = .57$, $B = 1.13$, $t(779) = 11.39$, $p < .001$. Again as in Study 3, the Explicit Preference \times Attractiveness interaction was significantly moderated by sex, $\beta = -.10$, $B = -0.39$, $t(777) = -3.34$, $p < .001$. Among men, the Explicit Preference \times Attractiveness interaction was strong and significant, $\beta = .18$, $B = 0.38$, $t(383) = 4.52$, $p < .001$. Although men with weak preferences for a physically attractive partner expressed more romantic interest in the attractive versus unattractive photographs, $\beta = .36$, $B = 0.56$, $t(383) = 4.57$, $p < .001$, this association was even larger among men with strong preferences, $\beta = .72$, $B = 1.32$, $t(383) = 12.18$, $p < .001$. The Explicit Preference \times Attractiveness interaction was nonsignificant for women, $\beta = .00$, $B = -0.01$, $t(394) = -0.11$, $p = .911$. Also as in Study 3, the Implicit Preference \times Attractiveness interaction was nonsignificant, $\beta = .05$, $B = 0.10$, $t(779) = 1.55$, $p = .122$, and this interaction was not moderated by participant sex, $\beta = -.03$, $B = -0.11$, $t(777) = -0.93$, $p = .354$.

Predictive validity of explicit and implicit preferences on the confederate rating task. We also examined whether explicit and implicit preferences for physical attractiveness moderated the extent to which participants' judgments of the confederate's attractiveness (standardized to $M = 0$, $SD = 1$) predicted romantic

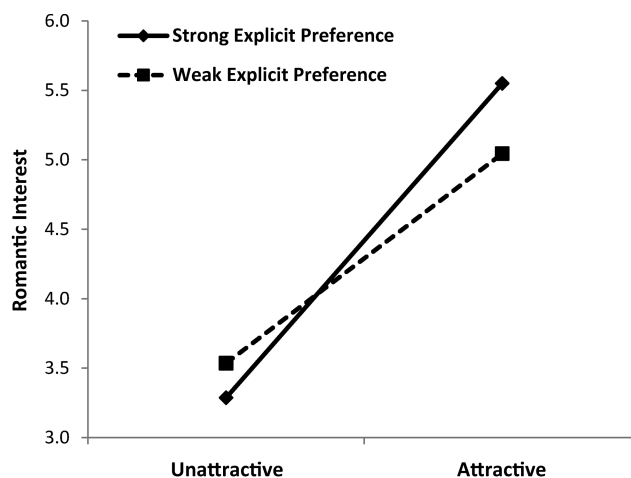


Figure 3. Study 5: Regression slopes predicting romantic interest from the attractiveness of people in photographs for all participants. Slopes are presented separately for participants with strong ($+1$ standard deviation) and weak (-1 standard deviation) explicit romantic partner preferences for physical attractiveness.

interest in him or her. For the explicit preference for physical attractiveness, the Explicit Preference \times Attractiveness interaction was nonsignificant as in Study 4, $\beta = .09, B = 0.12, t(67) = 1.27, p = .208$. Furthermore, this association was not moderated by participant sex, $\beta = -.12, B = -0.30, t(63) = -1.59, p = .118$. However, consistent with hypotheses and the results of Study 4, the Implicit Preference \times Attractiveness interaction significantly predicted romantic interest in the confederate, $\beta = .15, B = 0.19, t(67) = 2.11, p = .039$; predicted means are plotted in Figure 4. Although participants with weak (-1 standard deviation) implicit preferences for a physically attractive partner expressed more romantic interest in the confederate to the extent they thought the confederate was attractive, $\beta = .62, B = 0.80, t(67) = 5.81, p < .001$, this association was even stronger among participants with strong ($+1$ standard deviation) implicit preferences, $\beta = .92, B = 1.18, t(67) = 9.64, p < .001$. The Implicit Preference \times Attractiveness interaction was not moderated by participant sex, $\beta = -.01, B = -0.02, t(63) = -0.08, p = .935$.⁶

Discussion

The results of Study 5 again replicated the finding that participants were faster at completing the GNAT when physical attractiveness was paired with liked versus disliked objects, and again implicit preferences did not correlate with explicit preferences. In addition, the results from the photograph rating task in this study replicated the findings of Study 3: A reliable Explicit Preference \times Attractiveness interaction emerged, along with a sex difference such that men’s but not women’s explicit preferences for physical attractiveness had predictive validity. Implicit preferences again did not predict the extent to which physical attractiveness was associated with participants’ romantic interest in the photographic targets.

In addition, Study 5 replicated the Study 4 finding that implicit preferences significantly moderated the extent to which partici-

pants’ subjective perception of a confederate’s physical attractiveness predicted their romantic interest in the confederate. That is, physical attractiveness was a stronger predictor of romantic interest to the extent that participants possessed an implicit preference for physical attractiveness; this moderational effect did not differ by participant sex, as in Study 4. Explicit preferences did not have predictive validity on this live interaction task, replicating Study 4 as well as prior research (Eastwick & Finkel, 2008; Todd et al., 2007). In summary, Study 5 revealed the predicted double dissociation: Explicit (but not implicit) preferences for physical attractiveness predicted romantic interest in photographs (primarily for men), whereas implicit (but not explicit) preferences predicted romantic interest in the live confederate.

General Discussion

In this article, we imported attitudinal theory and modern social cognitive methods into the domain of romantic partner preferences to determine whether implicit measures could shed light on the qualities that people desire in a romantic partner. Three central hypotheses generally received support across studies. The first was that participants would reveal an implicit preference (i.e., a positive spontaneous affective reaction) for physical attractiveness in a romantic partner. Such a preference was evidenced by the fact that participants were more likely to associate physical attractiveness with an ideal romantic partner than a nonideal partner and with liked attitude objects than disliked objects. The second hypothesis was that implicit assessments of the preference for physical attractiveness would exhibit small correlations with explicit assessments. This hypothesis derived from prior work suggesting that (a) implicit measures reflect spontaneous affect (Gawronski & Bodenhausen, in press) and correlate poorly with explicit measures that are based on reasons (Gawronski & LeBel, 2008) and (b) explicit romantic partner preferences partially reflect participants’ propositional beliefs about the reasons why they might like or dislike a romantic partner (Eastwick & Finkel, 2008). Consistent with this logic, the implicit–explicit association was nonsignificant across studies (average $r = .00$). The third hypothesis concerned the predictive validity of explicit and implicit measures of partner preferences. As in previous research (e.g., Wood & Brumbaugh, 2009), the explicit preference for physical attractiveness predicted the extent to which participants expressed romantic interest in attractive versus unattractive people of the opposite sex seen in photographs. In contrast, the implicit preference predicted the extent to which participants expressed romantic interest in attractive versus unattractive real-life potential romantic partners (speed-daters and confederates). Explicit preferences were not relevant to the speed-dater and confederate ratings, nor were

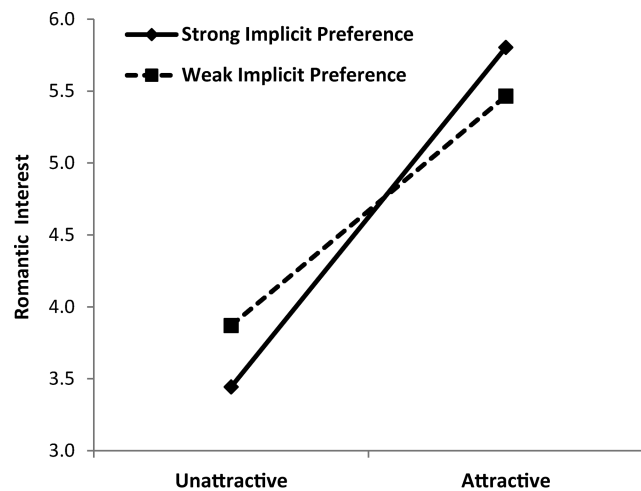


Figure 4. Study 5: Regression slopes predicting romantic interest from confederate attractiveness for all participants. Slopes are presented separately for participants with strong ($+1$ standard deviation) and weak (-1 standard deviation) implicit romantic partner preferences for physical attractiveness.

⁶ In Studies 4 and 5, an item assessing sexual attraction was included in each romantic interest dependent variable, and this item is conceptually related to the subjective attractiveness independent variable. However, hypothesis tests and the overall pattern of findings do not change if this item were deleted from the dependent variable: Explicit (but not implicit) preferences moderated the association between physical attractiveness and romantic interest in photographic targets (for men only), and implicit (but not explicit) preferences moderated the association between physical attractiveness and romantic interest in live targets (for either men only or the full sample).

implicit preferences relevant to the photograph ratings. Overall, these data—especially the success of the implicit measure in predicting romantic attraction following a live interaction—suggest that the implicit romantic partner preference construct can illuminate the often mysterious processes underlying romantic attraction.

The most novel and exciting contribution of the present research is the double dissociation in predictive validity: Explicit preferences predicted participants' romantic interest in people of the opposite sex seen in photographs but not a live interaction partner, whereas implicit preferences predicted participants' romantic interest in a live partner but not people shown in photographs. Why did this double dissociation emerge? One promising explanation draws from the associative–propositional evaluation model (Gawronski & Bodenhausen, *in press*) and other contemporary perspectives on attitudes (Dovidio et al., 2002; Wilson et al., 2000). Implicit measures, on the one hand, assess spontaneous affect and are likely to predict behavior (a) that reflects momentary feelings or gut reactions (e.g., Ranganath et al., 2008) and/or (b) when the situation is ambiguous or complex and a variety of interpretations are available (e.g., Gawronski et al., 2003). The evaluation of a live potential romantic partner has precisely these two features: People generally believe that it is appropriate to use affect when making romantic decisions (e.g., Simpson et al., 1986), and live interactions are undoubtedly complex, as real human beings possess countless traits that interact in a variety of ways (Asch, 1946; Eastwick et al., 2011). Explicit measures, on the other hand, assess propositional beliefs about the truth or falsity of a statement. Therefore, when people evaluate photographs or other simple stimuli, they rely on propositional beliefs to make their evaluations, as in the current study (see also Sritharan et al., 2010).

This implicit–explicit double dissociation emerged even though the dependent variables in the two situational contexts were similar self-report measures of romantic interest; this pattern may seem unusual in light of prior double dissociations that have examined very different dependent variables in the same context (e.g., verbal vs. nonverbal behavior in the same situation; Asendorpf et al., 2002; Dovidio et al., 2002). Nevertheless, our results are consistent with recent suggestions that even some self-report variables may be more relevant to implicit than explicit processes (e.g., Ranganath et al., 2008). In fact, the present research reflects a classic person–situation approach in that we examined two different situations to find a double dissociation, not two different dependent variables in the same situation (see also Robinson & Clore, 2002). Thus, the present double dissociation in predictive validity is unlikely to reflect mere similarities in variable measurement (direct vs. indirect; Ranganath et al., 2008) but rather a difference in the way people process information and make judgments between the photograph and live evaluation contexts.

Of course, romantic partners are more than simple attitude objects, and the present research focused only on participants' initial impressions in a relationship initiation context, not their evaluations of enduring relationship partners. A relationships research perspective is sure to inform this line of work: Given that people spend considerable time and energy thinking about their relationship partners (Acitelli, 1992), it is plausible that much of this thought is deliberative and provides an opportunity for explicit preferences to affect people's judgments and evaluations. For

example, consider the hypothesis advanced by Gagné and Lydon (2004) that people tend to engage in deliberative forms of processing when they face significant transitions or choice points in their relationships (see also Fletcher & Simpson, 2000). In fact, explicit preferences do predict relationship outcomes in dating and marital relationships when examined as a pattern (i.e., a within-person correlation across several traits; Eastwick & Neff, 2011; Fletcher, Simpson, & Thomas, 2000; Fletcher, Simpson, Thomas, & Giles, 1999). By identifying specific choice points in a relationship, researchers might be able to pinpoint the moments at which participants' explicit preferences complement or even dominate their implicit preferences in predicting behavior. In contrast, perhaps participants' implicit preferences would complement or even dominate their explicit preferences if participants were encouraged to go with their gut reaction on a photographic evaluation task or if the task itself were more complex (e.g., the photographs depicted a large amount of ambiguous information). Although the present article achieved many goals in identifying the implicit partner preference, examining its association with explicit preferences, and demonstrating its predictive validity in a live attraction context, additional research will be required to determine whether this same double dissociation emerges across other evaluation tasks and in different stages of relationships.

Also noteworthy was the pattern of sex differences across studies (see fixed effect meta-analytic effect sizes in Table 1). Consistent with prior research (e.g., Buss, 1989), men were more likely than women to explicitly desire physical attractiveness in a romantic partner (significantly so in four out of five studies). However, no sex differences emerged for implicit preferences—that is, men and women demonstrated approximately identical tendencies to associate physical attractiveness with the concept of an ideal romantic partner and with liked attitude objects. At first glance, it may seem strange that the implicit measure revealed no sex differences; after all, many psychology textbooks assert without qualification that men and women differ in their preference for physical attractiveness in a partner (e.g., Gazzaniga, Heatherton, & Halpern, 2009; Passer & Smith, 2007). Thus, that any measure of the preference for physical attractiveness would fail to demonstrate a sex difference might call into question the validity of the measure itself. However, sex differences in the importance of physical attractiveness consistently fail to emerge when participants evaluate live potential romantic partners (Eastwick & Finkel, 2008; Feingold, 1990), and it is precisely this behavior that was predicted by implicit but not explicit preferences in the current study. In light of these findings, the lack of sex differences in implicit preferences is not surprising.

Less predictable a priori were the sex differences in predictive validity. In both Study 3 and Study 5, explicit preferences predicted attraction to photographic targets better for men than for women. That is, individual differences in the explicit preference for physical attractiveness were relevant to men's romantic interest in the attractive versus unattractive photos, but individual differences in explicit preferences were more or less irrelevant to the task for women. Wood and Brumbaugh (2009) did not find such a sex difference on a similar photographic rating task, but Hitsch et al. (2010) did find that men's but not women's explicit same-race preferences predicted their interest in dating partners of other races on a dating website. This sex difference is potentially consistent with a response masking account: If some women are downplaying

their explicit reports to adhere to gender-role norms requiring greater sexual restraint for women (Crawford & Popp, 2003) or greater emphasis on other attributes (e.g., earning prospects; Eagly & Wood, 1999), then women's explicit preferences for physical attractiveness might have less predictive validity in general. However, this account cannot explain the sex difference in the predictive validity of implicit preferences that emerged in Study 4 using the objective (but not subjective) measure of physical attractiveness. We hesitate to conclude that this sex difference is reliable given that two of the three significant implicit predictive effects documented in this article did not differ by sex. Nevertheless, sex differences in the predictive validity of explicit and implicit partner preferences should be examined closely in future research.

One additional possibility worthy of consideration is that preferences (implicit and explicit) have stronger predictive validity for men when the measure of physical attractiveness is objective, but the predictive effect is roughly equivalent for men and women using subjective measures. Unfortunately, these studies were not designed to examine this question—for example, the Study 5 confederate rating task necessitated a subjective measure because of the logistical complexity of introducing participants to multiple live confederates—and therefore it is difficult to draw definitive conclusions on the basis of the current data. Nevertheless, the finding that predictive validity is weaker for women using an objective measure of physical attractiveness would be consistent with social relations model findings suggesting that women's consensus regarding men's physical attractiveness is generally weaker than men's consensus regarding women's attractiveness (Kenny, 2010; see also Wood & Brumbaugh, 2009). Future research should examine this possibility as well.

Strengths and Limitations

The current set of studies documented (a) that partner preferences can be measured implicitly, (b) the relative independence of implicit and explicit measures of the partner preference for physical attractiveness, and (c) a double dissociation in the predictive validity of implicit and explicit measures. This was a tall order for a single package of studies: After the publication of the IAT (Greenwald et al., 1998), it took several additional empirical efforts before researchers were documenting double dissociations (e.g., Asendorpf et al., 2002; Bosson, Swann, & Pennebaker, 2000). Furthermore, we detected the double dissociation across two different contexts, not two different dependent variables, which reduces the concern that the dissociation might be linked to measurement overlap (Ranganath et al., 2008). Researchers in both the romantic relationships and the social cognition domains should find value in the concept of the implicit partner preference as detailed in this article.

Nevertheless, these studies also have some limitations. First, these data provide little insight into why people differ in their implicit partner preferences. On the one hand, implicit preferences could reflect early experiences: Perhaps people have stronger implicit preferences for physical attractiveness if they internalize the cultural stereotype that beautiful princesses and handsome princes attain positive outcomes or if their formative adolescent experiences involve extremely attractive potential partners. On the other hand, implicit preferences could reflect contextually activated information such that stronger implicit preferences emerge

in situations where physical attractiveness is highly salient, such as in a bar or club or during ovulation for women. In this sense, questions about the origin and development of implicit partner preferences fit squarely within current theoretical debates about the formation of implicit associations (e.g., Rydell & Gawronski, 2009); scholars who draw from a relationships approach to document predictors of implicit partner preferences are sure to inform this attitudinal perspective and vice versa.

Second, these studies did not address the difference between short-term and long-term mating strategies, a central distinction in evolutionary psychology (Buss & Schmitt, 1993). The photographic rating task and the confederate rating task were not specifically relevant to either short-term or long-term mating, although alternative tasks could be framed as such (e.g., "consider these potential partners for a one-night stand vs. for marriage"). In addition, it would be possible in principle to construct an implicit task that measured associations between physical attractiveness and the concept of a short-term or a long-term partner, and perhaps implicit short-term preferences would be especially relevant to short-term selection tasks and implicit long-term preferences would be especially relevant to long-term selection tasks. Another approach to this topic would explore the relevance of attachment processes, as the key evolutionary question of interest is not how a trait like physical attractiveness is related to the projected length of a relationship but rather how characteristics are more or less desirable depending on whether the relationship has attachment potential (Eastwick, 2009). It would be fascinating to examine how the processes documented in this report intersect with the normative and individual difference components of attachment theory (Mikulincer & Shaver, 2007).

Third, these data revealed consistent effects for the reaction time implicit measure but not for the d' implicit measure (see footnote 3). Curiously, out of the 29 articles we located in which the authors had used the GNAT since Nosek and Banaji's (2001) seminal article, only one reported results for both the reaction time and d' measures. Therefore, it is difficult to know how common this lack of correspondence is. Perhaps this finding reflects a speed-accuracy trade-off such that the average participant sacrificed speed on the task to minimize errors (cf. Förster, Higgins, & Bianco, 2003). If our GNAT task had been more difficult (e.g., with a shorter response window) or if participants had been primed with a promotion mindset, perhaps the d' measure and not the reaction time measure would have differed between the compatible and incompatible blocks. Learning how these two measures relate to each other and to underlying cognitive processes is an important direction for future research.

Fourth, these studies did not focus on implicit preferences for other traits that are important in romantic partners, such as warmth or intelligence, although it would not be difficult to adapt the GNAT to create such measures. However, the photographic rating task in Studies 3 and 5 may not be appropriate for examining double dissociations in predictive validity for these other qualities, as photographs only weakly convey reliable information about such nonobservable traits (Wood & Brumbaugh, 2009). Because photographs do convey reliable information about physical attractiveness, this quality seemed to be a logical starting point to explore double dissociations in implicit partner preferences, although other offline evaluation tasks could certainly be used to convey warmth or intelligence (e.g., a dating profile).

Conclusion

Through the simultaneous use of implicit and explicit measures, researchers have made great contributions to a wide variety of social psychological topics, from attitudes (Wilson et al., 2000) to intergroup relations (Dovidio et al., 2002) to the self-concept (Asendorpf et al., 2002). The present research drew from this tradition in an attempt to better understand why people are attracted to certain potential romantic partners instead of others. Participants' consciously accessible explicit preferences for physical attractiveness in a romantic partner predicted their romantic interest in individuals depicted in photographs, but it was the newly developed implicit measure that predicted the more critical, externally valid dependent measure: attraction to a live opposite-sex individual. This finding has the potential to be a major advance, as no study has yet demonstrated that any preference for a single characteristic predicts the extent to which that characteristic inspires romantic interest in a live target. At a broader level, in adapting social psychological methods (e.g., Nosek & Banaji, 2001) and theoretical perspectives (e.g., Gawronski & Bodenhausen, in press) to the study of mating and romantic relationships, the present studies demonstrate that mating processes are fundamentally intertwined with the rest of our social psyche (Lenton & Francesconi, 2010; Maner, Gailliot, Rouby, & Miller, 2007) and hint at future productive exchanges among researchers who study these topics.

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(Appendices follow)

Appendix A

Main Effects

Study	Preference type	Target	Attractiveness measure	Simultaneous			Separate		
				Preference	Attractiveness	Sex	Preference	Attractiveness	Sex
Study 3	Explicit	Photograph	Objective	.01	0.69***	-.41	.05	0.69***	-.41
Study 3	Implicit	Photograph	Objective	.00	0.69***	-.41	.00	0.69***	-.41
Study 4	Explicit	Speed-dater	Subjective	-.07	1.78***	-.03	.10	1.78***	-.12
Study 4	Implicit	Speed-dater	Subjective	.01	1.78***	.00	.03	1.78***	-.12
Study 4	Explicit	Speed-dater	Objective	.07	1.10***	.40*	.10	1.10***	-.12
Study 4	Implicit	Speed-dater	Objective	.05	1.10***	.38*	.03	1.10***	-.12
Study 5	Explicit	Photograph	Objective	.01	0.94***	-.38	.06	0.94***	-.38
Study 5	Implicit	Photograph	Objective	-.18	0.94***	-.37	-.19	0.94***	-.38
Study 5	Explicit	Confederate	Subjective	-.19*	1.01***	-.10	-.21	1.01***	.25
Study 5	Implicit	Confederate	Subjective	-.02	1.01***	.00	-.02	1.01***	.25

Note. Main effects (unstandardized *B*s) of preference (explicit or implicit), attractiveness (objective or subjective), and sex predicting romantic interest judgments for all predictive validity analyses in Studies 3–5. Preference ratings were standardized ($M = 0, SD = 1$), attractiveness ratings for speed-daters and confederates were standardized, attractiveness ratings for photographs were coded $-1 =$ unattractive, $1 =$ attractive, and sex was coded $-.5 =$ male, $.5 =$ female. The three predictors were examined simultaneously in one regression analysis or separately in three regression analyses. All romantic interest dependent variables were assessed on a 1–9 scale.

* $p < .05$. *** $p < .001$.

Appendix B

Simple Effects

Study	Preference type	Target	Attractiveness measure	Participants	Attractiveness at +1 <i>SD</i> preference	Attractiveness at -1 <i>SD</i> preference	Preference at +1 <i>SD</i> attractiveness	Preference at -1 <i>SD</i> attractiveness
Study 3	Explicit	Photograph	Objective	All	0.84***	0.55***	0.20	-0.09
Study 3	Explicit	Photograph	Objective	Men	1.11***	0.42**	0.57***	-0.12
Study 4	Implicit	Speed-dater	Subjective	All	1.72***	1.84***	0.07	-0.04
Study 4	Implicit	Speed-dater	Objective	Men	1.06***	0.78***	0.14	-0.14
Study 5	Explicit	Photograph	Objective	All	1.13***	0.75***	0.25	-0.12
Study 5	Explicit	Photograph	Objective	Men	1.32***	0.56***	0.07	-0.70***
Study 5	Implicit	Confederate	Subjective	All	1.18***	0.80***	0.17	-0.21

Note. Simple effects (unstandardized *B*s) at high (+1 standard deviation) and low (-1 standard deviation) levels of partner preference (explicit vs. implicit) and attractiveness (objective vs. subjective) for all significant interactions reported in Studies 3–5. All romantic interest dependent variables were assessed on a 1–9 scale.

** $p < .01$. *** $p < .001$.

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