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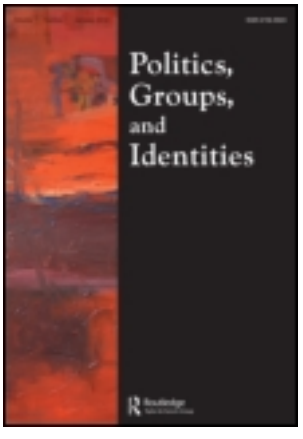

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Implicit attitudes: meaning, measurement, and synergy with political science

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REVIEW ESSAY

Implicit attitudes: meaning, measurement, and synergy with political science

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Introduction

The last quarter-century has witnessed an intellectual revolution in social psychology. Scholars in that field have increasingly come around to the notion that people possess attitudes that are non-verbalized, spontaneously activated, difficult to control, and that can sometimes operate without one's awareness (e.g. Fazio et al. 1986; 1995; Bargh, Chen, and Ambady 1996; Greenwald, McGhee, and Schwartz 1998; Payne et al. 2005). These *implicit* attitudes are often assessed with indirect measures, which – rather than asking people to self-report an attitude – time people's performance in milliseconds on a series of sorting exercises (more on this to follow).

These indirect measures have yielded several lessons, but two stand out: People vary in their degree of implicit attitudes, and these individual differences predict people's judgments and behavior, often independently of explicit attitudes (i.e. self-reported attitudes) (Greenwald et al. 2009). These insights have spurred many psychologists to reconsider what is meant by thinking, with some currently viewing human cognition as being underpinned by two interrelated forms of reasoning. The first is characterized by deliberation and is responsible for explicit attitudes. The second is embodied by impulsiveness and is accountable for implicit attitudes (e.g. Strack and Deutsch 2004; Gawronski and Bodenhausen 2006; Rydell and McConnell 2006).

Given these developments, one would think implicit attitudes have been enthusiastically welcomed by political science, which often draws extensively on psychological concepts and tools. Yet one would be wrong. Our discipline continues to generally view attitudes as evaluations expressed through self-reports. To be sure, some political science scholarship uses insights and methods from implicit cognition (e.g. Malhotra, Margalit, and Mo 2013; Albertson 2011; Pérez 2010; Pasek et al. 2009; Craemer 2008; Arcuri et al. 2008; Kam 2007; Burdein, Lodge, and Taber 2006).[1] But these threads of research have not yet produced a rich tapestry of theory and evidence like other areas of our discipline that vigorously engage psychological research, including the study of heuristics (e.g. Popkin 1991), emotions (e.g. Brader 2006), and personality (e.g. Mondak et al. 2010). Indeed, as Huddy and Feldman (2009, 437) lament: "To date, there are relatively few published studies that report the political effects of implicit attitudes, making it difficult to assess their current payoff for political scientists."

This situation is somewhat understandable. New ideas, especially if imported from another discipline, are likely to meet some resistance. But, on another level, political science's tepid response to implicit attitudes is puzzling. Social psychology and political science have long enjoyed an "intellectual affair" (McGuire 1993, 9). Yet the two are oddly estranged on the idea of implicit attitudes. My goal in this review article is to help mend this rift by explaining what

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implicit attitudes are, how they are measured, and in what specific ways political scientists can help advance the theoretical and methodological frontiers of this concept.

Like most reviews, this one cannot engage all – or even most – scholarship on implicit attitudes. Indeed, if this article is to dissipate some of the fog surrounding this concept, then it must be judicious about which topics are highlighted and which are benignly overlooked. The fledgling nature of implicit attitudes research in political science makes this task more manageable. Political scientists who are curious about implicit attitudes are likely to be interested in first-order questions about this construct. Thus, I center my discussion on the: (a) conceptualization of implicit attitudes; (b) mechanics behind their most popular measures; (c) validity of these measures; and (d) blind spots in our knowledge of implicit attitudes.

Square one: all attitudes are unobserved

Before I delve into the minutiae of implicit attitudes, let me start with a simple but often overlooked point: *all* attitudes are unobserved (i.e. latent) (e.g. Himmelfarb 1993). Formally, an attitude is "… a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly and Chaiken 1993, 1). Indeed, by one influential account, an attitude is simply the mental association between an object and one's (un)favorable evaluation of it (e.g. Fazio 2007; Fazio et al. 1982; 1986).[2] Nevertheless, many scholars sometimes seem to forget that we never directly "see" these evaluations. What we observe are responses to measures of attitudes and, on the basis of those responses, we *infer* the presence of attitudes. This reminds us that assessing attitudes – even explicit ones – is inherently risky. We can read or hear a survey question, yet the underlying evaluation is never seen. In this crucial respect, implicit and explicit attitudes are more similar than different. Thus, telling them apart demands careful conceptualization and validation, a point I consider in more detail below.

The nature of explicit versus implicit attitudes

Political scientists mostly traffic in the study of explicit, or self-reported, attitudes. Many of us, therefore, take for granted what these attitudes are like and how best to capture them. But to better appreciate the potential value of implicit attitudes for political science, it is perhaps useful to make explicit some tacit assumptions about self-reported attitudes.

Explicit attitudes are verbalized evaluations of objects. They are expressed declarations of how one views a particular group, individual, or issue (e.g. Eagly and Chaiken 1993). Explicit attitudes require mental effort to articulate. For instance, actively directing one's thoughts and attention – which occurs in the expression of explicit attitudes – actually reduces blood glucose levels (Gailliot et al. 2007). Explicit attitudes also demand individual control. Articulating an explicit attitude requires active retrieval from memory. And, if one has not developed an explicit attitude toward an object, mental effort is needed to cobble together information to form one (e.g. Zaller 1992; Schwarz 2007). Finally, explicit attitudes entail self-awareness, since voicing an explicit attitude often involves some degree of introspection.

To tap explicit attitudes, political scientists often use self-reports. This has fostered a tight link between the conceptualization and measurement of explicit attitudes. When facing a survey question, for example, respondents must first actively work to interpret the query – what it means and what it is asking for (Tourangeau, Rips, and Rasinski 2000). Based on their interpretation, respondents then organize and report an answer by drawing on the considerations most immediately accessible to their minds and matching this response to the available answer categories (Tourangeau, Rips, and Rasinski 2000; Zaller 1992). These steps alone demand substantial effort, control, and self-awareness.

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In contrast, implicit attitudes are basic affective evaluations of objects (e.g. Smith and Nosek 2011; Ranganath, Tucker Smith, and Nosek 2008; Gawronski and Bodenhausen 2006; Payne et al. 2005; Spence and Townsend 2008). Describing implicit attitudes as "basic" calls attention to the elementary nature of the judgments they entail. In rudimentary fashion, implicit attitudes reflect unspoken judgments of objects as *good/bad*, *favorable/unfavorable*, or *pleasant/ unpleasant*. This parsimony is not a sign of triviality. While unrefined on the surface, simple valenced judgments like these are a quick and crucial way that humans make meaning of their world (e.g. Osgood 1957; Zajonc 1980). In this way, implicit attitudes serve as instant evaluations.

The alacrity of implicit attitudes is traced in part to their affective nature. To label implicit attitudes *affective* is to acknowledge their emotional roots. As Brader (2006, 51) explains, emotions are "… specific sets of physiological and mental dispositions triggered by the brain in response to the perceived significance of a situation or object for an individual's goals (up to and including survival)." Consistent with this definition, implicit attitudes are raw object evaluations that help people resolve – rapidly and without deliberation – the challenge of "approach" and "avoidance;" that is, whether an object poses a possible danger to them.

Here, neuroscientists have shown that implicit (but not explicit) attitudes are tied to activity in the amygdala, a subcortical brain structure associated with emotional responses to negative stimuli (Phelps et al. 2000; see also Cunningham, Raye, and Johnson 2004a; Cunningham et al. 2004b). Critically, the amygdala "… has privileged access to incoming sensory information at a relatively crude level of perceptual analysis – before the results of more accurate, but also more time-consuming, high-level perceptual analyses can enter conscious awareness" (Hofmann and Wilson (2010, 198). This means implicit attitudes are triggered preconsciously, before higher-order mental processes are engaged. This view is consistent with the work of Zajonc and others (Zajonc 1980; Murphy and Zajonc 1993; Lodge and Taber 2005), which shows that affective evaluations are produced without awareness of the stimulus or the reaction it generates.

Finally, implicit attitudes are governed by automatic mental processes. Bargh (1994) explains that automaticity is attended by four "horsemen," or signature traits. First, an automatic process is *unintentional*: people do not voluntarily engage it. Once initiated, an automatic process is often difficult for people to *control*. This relative lack of control over automatic processes can be traced to their *efficiency*, that is, they require minimal mental effort. Finally, automatic processes are often accompanied by a lack of individual *awareness*. To be characterized as automatic, a mental process must contain one or all of these traits (Bargh 1994). Automaticity, then, is a matter of degree. The basic point, however, is that relative to explicit attitudes, the implicit variety display greater automaticity (e.g. Bargh, Chen, and Ambady 1996; Payne 2001).

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The mechanics of indirect measures

At their core, implicit attitudes are *affective* evaluations governed by *automaticity.*[3] And to gauge implicit attitudes, psychologists often use reaction-time measures, which circumvent people's introspective capacities. Unlike self-reports, these indirect measures infer the presence of attitudes, not by what people say, but by the speed with which they complete a set of tasks.

Imagine hypothesizing that a person has positive implicit attitude toward *flowers*. To gauge this attitude, we could present the person with the word *flower* on a computer screen. Then, following this prime, we might present them with a word that has positive or negative connotation (e.g. *wonderful*) and ask them to quickly identify it as pleasant or unpleasant. If this person has positive implicit attitude toward *flower*, then she should quickly identify *wonderful* as positive. And, she should do this more quickly and with fewer errors than when *horrible* is followed by *flower*. Why? Because *flower* and *wonderful* are affectively congruent. One's evaluation of the

former matches the valence of the latter, and this match facilitates the rapid identification of *wonderful* as positive. This basic dynamic underlies three of the most commonly employed implicit attitude measures: Affective Priming (AP); the Implicit Association Test (IAT); and the Affect Misattribution Procedure (AMP).[4] Let us further examine each one in turn.

Affective Priming (AP)

First developed by Russell Fazio and his associates (Fazio et al. 1986; 1995; see also Bargh et al. 1992; Bargh, Chen, and Ambady 1996; Burdein, Lodge, and Taber 2006), this computer-based measure gauges the speed – in milliseconds (ms) – with which people correctly identify the positive or negative connotation of a word presented after a prime. For instance, to tap racial attitudes through AP, researchers prime subjects with single photos of Black or White individuals. After each photo, subjects identify a target word (e.g. *terrible*) as positive or negative using designated computer keys.

Using this approach, Fazio et al. (1995) primed subjects with single photos of Black, White, Asian, and Hispanic individuals. Each photo was presented for 315 ms, followed by a 135 ms interval before the presentation of a target word (e.g. *wonderful*), for a total of 450 ms. This last quantity is formally known as the stimulus onset asynchrony (SOA), or the lag between presentation of a prime and the onset of a target word. SOAs below 500 ms ensure that processing of a prime occurs below awareness, since this window is too brief for humans to consciously recognize and react to a prime (e.g. Bargh et al. 1992; Posner and Snyder 1975).

The quantity of interest yielded by AP is a person's facilitation score, which can be computed in several ways. Ultimately, these scores provide a sense of how much faster one responds to negative stimuli following a prime than positive stimuli following that same prime. For instance, to index implicit attitude toward Blacks, one could: (a) subtract one's mean response to positive words following Black primes from one's mean response to positive words in general; (b) subtract one's average response to negative words following Black primes from one's average response to negative words in general; and (c) subtract (b) from (a). Here, negative scores would indicate more negative attitude toward Blacks (e.g. Kam 2007; see also Fazio et al. 1995).[5]

Implicit Association Test (IAT)

This measure also gauges the speed of responses to valenced stimuli. But with the IAT, people sort stimuli using classification schemes that contrast *two* attitude objects (e.g. Greenwald, McGhee, and Schwartz 1998). Moreover, the IAT exposes people to stimuli supraliminally, rather than subliminally. Thus, people are aware of the stimuli they encounter, though not necessarily of how these affect their thinking (Gawronski, Hofmann, and Wilbur 2006).

Let us say we wish to gauge implicit attitudes toward Blacks (relative to Whites). The IAT does this by having people rapidly classify single words that appear randomly on a computer screen while using one of two classification pairs.[6] The first of these assumes people negatively evaluate Blacks and positively evaluate Whites. Thus, the labels **Black** and **Bad** appear in the upper-left corner of the screen, while the labels **White** and **Good** appear in the upper-right corner (Figure 1a). If the word is a **Black** exemplar (e.g. *Tyrone*) or a word with negative connotation (e.g. *horrible*), people will press the "E" computer key. If the word is a **White** exemplar (e.g. *Preston*) or a word with positive connotation (e.g. *wonderful*), individuals will press the "I" computer key. People sort 40 of these randomly selected words, which allows researchers to compute a person's mean response time to stimuli, with faster times indicating closer correspondence between the classification pair and a person's evaluation of these objects.

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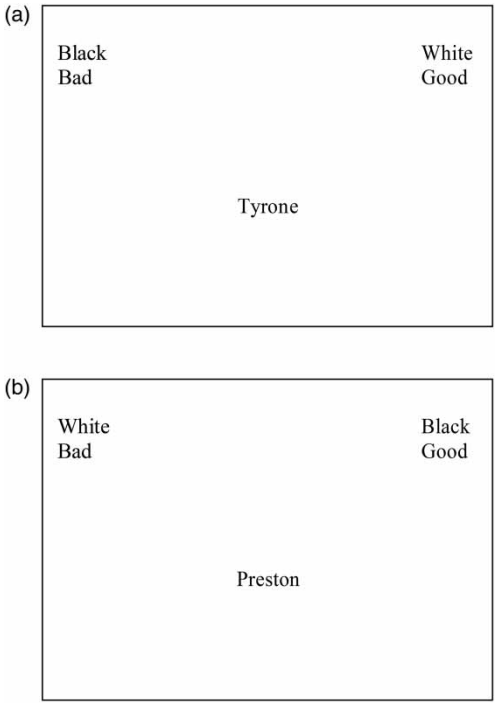

Figure 1. Hypothetical IAT classification scheme: (a) Blacks negatively evaluated and Whites positively evaluated; (b) Whites negatively evaluated and Blacks positively evaluated.

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In the second key exercise, people sort another 40 words, using the same stimuli and instructions. But this time, the classification scheme is *mismatched*, with **White** and **Bad** appearing together in the upper-left corner of the screen, and **Black** and **Good** appearing on the upper-right corner of the screen (Figure 1b). Once again, the quantity of interest is the mean reaction time to words, with faster times suggesting closer agreement between this classification pair and a person's own mental associations.[7]

Armed with the mean response time from each of these two blocks, one can assess the direction and intensity of people's implicit attitudes toward African Americans (relative to Whites). If people, in fact, have negative implicit attitudes toward Blacks, then they should sort stimulus words faster and with fewer errors when using the matched pair (Black|Bad – White|Good) than when using the mismatched pair (White|Bad – Black|Good).

Affect Misattribution Procedure (AMP)

Similar to AP and the IAT, the AMP centers on the affective base of implicit attitudes. However, the AMP calibrates implicit attitudes – not in milliseconds – but by the proportion of stimuli that are judged as positive or negative (Payne et al. 2005; Payne 2009). For example, to gauge implicit attitudes toward Blacks, the AMP instructs people to rate single Chinese pictographs as pleasant or unpleasant. Before each Chinese pictograph, a photo of a Black or White male is flashed as a prime, which people are directed to ignore. The theory behind the AMP is that affective responses to a prime (e.g. a Black face) – a reaction theorized as spontaneous and difficult to control – will seep into people's evaluation of unrelated Chinese characters (e.g. Murphy and Zajonc 1993). Thus, if people possess negative implicit attitudes toward Blacks, then they will rate Chinese

characters unpleasantly in higher proportions when preceded by Black than by White primes. Subtracting pleasantness judgments of Chinese pictographs following Black primes from evaluations of these pictographs after White primes yields individual scores of negative implicit attitudes toward Blacks (Payne et al. 2005).

The validity and reliability of measures of implicit attitudes

Although the preceding measures vary by their structure and produced scores, each claims to tap implicit attitudes. I assess this claim by discussing these measures in terms of their:

(1) operationalization, or link between each measure and the underlying concept, implicit attitude;
(2) reliability, or the precision in measurement of implicit attitudes; and
(3) predictive validity, or how well scores on these measures explain individual differences in judgments and behavior.

As we will see, each measure has advantages and limitations; which is to say, no "perfect" measure of implicit attitudes exists. Thus, selecting an implicit attitudes measure for applied work is perhaps best achieved by balancing one's theoretical goals against the documented tradeoffs of these tests – something that should also guide the use of self-reported measures.

Operationalization

A key attribute of implicit attitudes is their automatic nature. Yet AP, the IAT, and AMP vary by how they engage this automaticity. For example, AP often presents stimuli subliminally. This means people are unaware of the primes eliciting their attitudes (e.g. Fazio et al. 1995; Kam 2007; Burdein, Lodge, and Taber 2006). Consequently, the activation of one's attitude requires minimal cognitive effort (e.g. Fazio et al. 1986; Bargh et al. 1992). AP, therefore, privileges Bargh's (1994) third and fourth horsemen of automaticity: efficiency and awareness.

In contrast, people completing the IAT are aware of the primes and target stimuli they react to. Yet the speed with which stimuli are sorted makes these classifications rather spontaneous. In this way, the IAT emphasizes Bargh's (1994) second horseman of automaticity: control. Indeed, people often find it hard to alter their IAT responses, even when encouraged by researchers (Steffens 2004; Kim 2003; Egloff and Schmukle 2002; Asendorpf, Banse, and Mücke 2002; Banse, Seise, and Zerbes 2001). Individuals can alter IAT scores only if they have recent experience with the IAT *and* are given detailed instructions on how to adjust their test-taking (e.g. slowing responses in the key block one finds easier to perform) (Fiedler and Bluemke 2005). Otherwise, people are generally unable to alter IAT responses on their own.[8]

Finally, similar to the IAT, people completing the AMP are aware of the primes and target stimuli they evaluate (Payne 2009). Moreover, like the IAT, the AMP minimizes control over evaluations of target stimuli (e.g. Chinese pictographs) by directing people to respond quickly (Payne et al. 2005). Yet unlike the IAT and AP, the AMP often instructs people to avoid letting the primes influence their judgments of target objects – that is, to correct an otherwise spontaneous response (Payne et al. 2005). In this way, the AMP provides estimates of implicit attitudes that better reflect their unintentional and uncontrollable aspects, the first and second of Bargh's horsemen of automaticity.

Reliability

Measures of implicit attitudes vary in their reliability, or precision, in measuring an underlying evaluation (Brown 2006). Technically, reliability refers to the proportion of variance attributable

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to the true score of a variable rather than measurement error. Measures like AP, the IAT, and the AMP are vulnerable to low reliability because varied sources of error can affect the quality and speed of response. For instance, an eye blink, a sneeze, or a cough can affect how fast (slow) a person responds to stimuli on a computer screen, *above and beyond* the influence of one's own attitude. Of course, higher reliability is always preferred to lower reliability. Yet displaying the latter does not invalidate an implicit measure (or any measure, for that matter). Rather, low reliability slows the accumulation of evidence by making it harder to detect an attitude and reproducing this finding across studies (DeVellis 2003; Payne et al. 2005: 279).[9]

Of the three measures, AP displays lower reliability than the IAT and AMP on two counts. First, AP often yields low split-half correlations (e.g. Olson and Fazio 2003; Bosson, Swann, Jr., and Pennebaker 2000; see also Kawakami and Dovidio 2001). These are produced by dividing a test into two halves and then correlating (or computing alphas for) their scores. Higher positive correlations (or alphas) indicate greater reliability. Studies of AP have sometimes yielded split-half correlations as low as 0.04 (Olson and Fazio 2003; see also Bosson, Swann, Jr., and Pennebaker 2000). In contrast, split- half correlations of IAT scores typically range from about 0.60 to 0.90 (Schmukle and Egloff 2004; Greenwald and Nosek 2001; Bosson, Swann, Jr., and Pennebaker 2000), while Payne et al. (2005) report that across several independent samples, the AMP yielded an average split-half correlation of 0.88.

Second, the higher reliabilities of the IAT and AMP have enabled these measures to uncover larger effect sizes than those typically found by AP. Large effect sizes allow researchers to reproduce evidence of individual differences in implicit attitudes across samples (e.g. Greenwald et al. 2009; Nosek, Greenwald, Banaji 2005). AP often yields relatively small effect sizes, something IAT and AMP researchers actively sought to address in the development of these latter measures (see Gawronski and Payne 2010; Payne 2009; and Fazio and Olson 2003). Accordingly, scholars who use the IAT and AMP often gauge effect sizes on these measures through Cohen's *d*, which is a mean difference divided by its associated standard deviation. By convention, *d* values around 0.20, 0.50, and 0.80 are considered small, medium, and large, respectively. The IAT and AMP typically yield *d* values above 1.00 (e.g. Nosek, Greenwald, Banaji 2005; Payne et al. 2005).

Predictive validity

Lastly, researchers employing AP, the IAT, and the AMP have yielded evidence of each measure's ability to predict relevant judgments and evaluations. For instance, Fazio and colleagues (1995) showed that negative implicit attitudes toward Blacks (assessed via AP) were associated with people's willingness to attribute greater responsibility for the 1992 LA riots to African Americans. Similarly, scholars have found that individual scores on relevant IATs are positively associated with self-reported attitudes, including explicit attitudes toward racial, religious, and other social groups (e.g. Nosek, Greenwald, and Banaji 2007; Nosek, Banaji, and Greenwald 2002; Jellison, McConnell, and Gabriel 2004; Amodio and Devine 2006); preferences for and usage of consumer products (e.g. soft drinks; e.g. Maison, Greenwald, and Bruin 2004; Brunel, Tietje, and Greenwald 2004); and even individual differences in shyness and anxiety (e.g. Asendorpf et al. 2002; Egloff and Schmukle 2002). Not to be outdone, AMP scholars have also demonstrated that individual scores on this measure are strongly associated with relevant explicit attitudes. Payne et al. (2005), for example, showed that positive attitudes toward George W. Bush (relative to John Kerry) on an AMP were strongly correlated with self-reported intentions to vote for that candidate (see also Pasek et al. 2009).

Equally important, scholars have shown that individual scores yielded by AP, the IAT, and the AMP meaningfully explain individual differences in *behavior*, thus further underlining the merit of these measures (e.g. Ashburn-Nardo, Knowles, and Monteith 2003). For example, Fazio et al.

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(1995) found that negative attitudes toward African Americans (gauged via AP) were positively associated with more unfavorable interactions with a Black research assistant during a study. In a similar vein, Arcuri and colleagues (2008) found that candidate preferences assessed by an IAT a month before an election were associated with eventual vote choice among nominally undecided voters in Italy.[10] Finally, Payne (2009) reports evidence demonstrating that people's attitudes toward alcohol (gauged via an AMP) predicted their choice to drink beer rather than water.

Finally, mounting evidence suggests that the influence of implicit attitudes on relevant judgments and behaviors is independent of explicit attitudes. Greenwald et al.'s (2009) meta-analysis convincingly shows that the association between IAT scores and explicit judgments and behaviors is independent of the influence of explicit attitudes. This suggests implicit attitudes bear unique leverage over people's decisions and actions. Extending this scholarship, some studies find that the influence of implicit attitudes rivals that of other self-reported sources of judgments. For example, Pérez (2010) demonstrates that negative attitudes toward Latino immigrants (measured via the IAT) robustly explain support for exclusionary immigration policy, net of explicit attitudes toward the same group, authoritarianism, conservatism, education, and other explicit sources of public opinion (see also Malhotra, Margalit, and Mo [2013]). In a similar vein, Pasek et al. (2009) report evidence that negative implicit attitudes toward African Americans (elicited via the AMP) helped depress the vote for Obama independently of explicit attitudes toward Blacks, as well as a litany of explicit political and social predispositions (see also Payne et al. 2010; but see Kalmoe and Piston, 2013).

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Dispelling some common misgivings about implicit attitudes

My review of implicit attitudes research has shown that implicit attitudes exist, that they can be measured, and that they do explain individual preferences, judgments, and behaviors. By another name, a concept attended by evidence like this would convince many scholars about its theoretical and empirical import. Yet the incorporation of implicit attitudes into political science research has not been so smooth. Perhaps this is because implicit attitudes are seemingly outside the bounds of conventional wisdom on what attitudes are and how they are measured. Misgivings about implicit attitudes, therefore, persist. I explain two of the more serious ones below. My discussion will reveal that while these criticisms are intuitive and resonate with many researchers, they do not completely square with other evidence concerning implicit attitudes.

Are implicit attitudes really attitudes?

Some social psychologists question whether affective responses captured by indirect measures like the IAT, AMP, and AP necessarily qualify as attitudes *per se*. Rather than reflecting one's endorsed evaluation of an object, critics maintain, these affective responses merely reflect cultural knowledge (e.g. Arkes and Tetlock 2004; Karpinski and Hilton 2001; Olson and Fazio 2004). For example, given negative media portrayals of African Americans (Gilens 1999), one might learn to associate Blacks with negative affect. But this association, critics would say, reflects a cultural bias against Blacks, not one's personal evaluation of the group. Indeed, even people with positive attitudes toward Blacks display knowledge of negative Black stereotypes, which can be called to mind without endorsing their content (Devine 1989).

Although this criticism has gained traction, it is not clear that explicit attitudes are any different. They, too, are acquired through exposure to one's culture (Nosek and Hansen 2008). Even so, scholars rarely fail to characterize explicit attitudes as representing an individual's evaluation of an object. For this reason, Banaji (2001, 139) suggests that the fallacy in thinking about implicit attitudes as cultural residue "… may arise from assuming that there is a bright line separating

one's self from one's culture, an assumption that is becoming less tenable as researchers discover the deep reach of culture into individual minds …" (e.g. Dunham, Baron, and Banaji 2006). In fact, investigation into this matter reveals that knowledge of society's general attitude toward specific objects *fails* to predict one's level of implicit attitude (Nosek and Hansen 2008). Hence, conceding that people might passively learn implicit attitudes through one's culture does not mean the attitude is not a person's own. More important than how an attitude is learned is whether it contains evaluative knowledge (Fazio 2007). And, as I have already noted, implicit attitudes predict *personal* judgments and behavior (e.g. Fazio et al. 1995; Payne et al. 2009; Greenwald et al. 2009), which suggests they contain a high degree of evaluative knowledge.

Are implicit attitudes really different from explicit attitudes?

A second misgiving is whether implicit attitudes really differ from their self-reported analogs (e.g. Fazio and Towles-Schwen 1999; Olson and Fazio 2009). According to this view, implicit and explicit attitudes do not reflect distinct evaluations. Rather, they capture the same evaluation at different points in the cognitive stream. Measures of implicit attitudes capture evaluations early in one's thought process, when attitudes are automatically triggered. Self-reported measures capture the same attitudes further "downstream," after engaging the ability to control one's evaluations. If implicit and explicit attitudes diverge, it is because some people are motivated to edit the initial attitude that tumbles out of their head.

Some research supports these claims. For example, Nosek (2005) and others (e.g. Fazio et al. 1995; Payne 2001) have found that several individual differences shape the degree to which explicit and implicit attitudes correspond. In particular, when concern about self-presentation is low, the correlation between implicit and explicit attitudes increases, suggesting that individual motivations affect relations between implicit and explicit attitudes.

Yet two other lines of research suggest implicit and explicit attitudes are different constructs. Recall that explicit attitudes are gauged by self-report, whereas implicit attitudes are tapped with reaction-time measures. This means there are differences in the structure of these tests (e.g. Payne, Burkley, and Stokes 2008; Olson and Fazio 2003). Thus, while the attitudes in question might be the same, differences can emerge because of how the attitudes are reported, with random measurement error further dampening the correlation between explicit and implicit attitudes. However, once systematic and random measurement error are statistically controlled, explicit and implicit attitudes remain empirically distinct (e.g. Nosek and Smyth 2007; Cunningham, Preacher, and Banaji 2001; Greenwald and Farnham 2000). While corrections of systematic/random measurement error strengthen the link between explicit and implicit attitudes, this enhanced correlation is often not strong enough ($r > 0.80$) to warrant the claim that explicit/implicit attitudes are the *same* trait measured differently (Brown 2006). Of course, it is possible such differences are without distinction; that each attitude overlaps with the other in explaining people's behavior. But if that were true, individual differences in implicit attitudes should not predict individual differences in judgments and behavior *independently* of explicit attitudes (e.g. Greenwald et al. 2009).

Implicit attitudes: synergy with political science

Our discussion so far suggests implicit attitudes are a real phenomenon that can be validly and reliably measured. Of course, questions remain and debates persist. But as Dovidio and colleagues (2009, 171) explain, the "… value of examining implicit measures of attitudes … is now widely acknowledged." Against this backdrop, this last section identifies and explains four areas where political scientists might enhance the value of this research by refining and

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extending our understanding of implicit attitudes. This discussion is not meant to be exhaustive, but rather, illustrative of the types of opportunities for political scientists to create synergy with the psychological study of implicit attitudes.

Implicit attitudes in the mass public: going beyond student subjects in lab settings

A crucial frontier in implicit attitudes research involves how generalizable the inferences about implicit attitudes are beyond student subjects. This is an especially important consideration for political scientists, many of whom study political phenomena within the adult mass public.

The bulk of research on implicit attitudes derives its experimental (or correlational) results from convenience samples comprised of students (e.g. Greenwald, McGhee, and Schwartz 1998; Fazio et al. 1995; Payne et al. 2009), with precious few studies using convenience samples of adults (e.g. Nosek, Banaji, and Greenwald 2002). The challenge with student samples is not that we cannot believe the statistical relationships unearthed from these data. Rather, it is how representative they are beyond the demographic confines of these samples (e.g. Henrich, Heine, and Norenzayan 2010). In his ringing critique of student subject pools, Sears (1986, 520) warned that one inherent risk in this research strategy is that the strength of a relationship between variables – say, y and x – can be mis-estimated: "… x may, in everyday life, not influence y much, and/or other variables may influence it more strongly." This raises the concern that the relevance and strength of implicit attitudes in individual judgment and behavior has been under-/over-estimated by relying too heavily on student subjects.[11]

Political scientists can play a key role in augmenting the external validity of implicit attitudes research. Druckman and Kam's (2011, 42–43) discussion of experimentation with student subjects provides a useful template to guide this endeavor. As they explain, "… external validity is best understood as being assessed over a range of studies on a single topic … Moreover, when it comes to generalization from a series of studies, the goal is to generalize across *multiple* dimensions." These dimensions include generalization across individuals and settings, both of which political scientists can contribute to.

Let us begin with the modal study of implicit attitudes: controlled lab experiments using student subjects. Political scientists can help enhance the external validity of implicit attitudes research by running comparable lab studies with non-student subjects, which are relatively rare in social psychology. Using more variegated samples like these can strengthen the external validity of implicit attitudes research by allowing scholars to increase the scope of their inferences beyond student subjects, *without* sacrificing the convenience offered by student subject pools. To this end, political scientists might consider conducting experiments with university campus staff who, like university students, are conveniently within the reach of researchers. In fact, Kam, Wilking, and Zechmeister (2007) report that a convenience sample of university campus staff displayed few differences in demographic and political characteristics with a parallel sample drawn from the local population surrounding the university.

Political scientists can also help enhance the external validity of implicit attitudes research by studying implicit attitudes in non-lab settings. This can be as straightforward as conducting online survey-experiments, an approach that is already commonly employed by many public opinion scholars (e.g. Mutz 2011). A relevant strength of online survey-experiments is that they are typically administered to adult samples. And, while debate persists over the *degree* to which probability- and non-probability-based Internet samples are representative of the larger adult population (e.g. Berrens et al. 2003; Malhotra and Krosnick 2007; Chang and Krosnick 2009), the increased demographic and political heterogeneity of online samples in and of itself provides a crucial test of external validity by moving beyond student subjects.

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Of course, extending implicit attitudes research to non-lab settings entails some loss of researcher control over aspects of a study, which is one of the strengths of using laboratory experiments to investigate implicit attitudes (e.g. Kraut et al. 2004; Houben and Wiers 2008). For example, lab settings enable researchers to establish and strictly execute standardized protocols. In particular, researchers can ensure that study participants use the same type of computer equipped with the same type of software. Moreover, researchers can directly structure and monitor participants' completion of the actual study. When testing for implicit attitudes through online studies, scholars lose some leverage over these features.

Nevertheless, available evidence suggests tradeoffs like these have small to negligible effects on the quality of online data on implicit attitudes, thus increasing the attractiveness of this study mode. For example, psychologists administering the IAT via a public website have yielded comparable IAT effects to those found inside laboratories (Nosek, Greenwald, Banaji 2005; Nosek, Banaji, and Greenwald 2002), which suggests measures like these are sensitive enough to detect individual differences in implicit attitudes outside of laboratory settings (see also Houben and Wiers 2008).[12] Indeed, in my own work on the connection between implicit attitudes toward Latinos and immigration politics, I have uncovered similar results. Figure 2 displays the mean response-time difference yielded by a Latino immigrant/White immigrant IAT administered in: (1) a 2010 lab study with student subjects ($n = 60$); and (2) a 2008 online survey with adult respondents ($n = 333$).[13] Since the order of the matched/mismatched tasks was randomized across participants, we can compare the magnitude of the average IAT effect across these studies. Figure 2 shows that participants in each study were anywhere from 216 to 256 ms faster at sorting stimuli when using a matched pairing (Latino immigrant|Bad – White immigrant|Good) than when using a mismatched one (White immigrant|Bad – Latino immigrant|Good). Yet strictly speaking, these response-time differences are statistically identical, as evidenced by the overlap in the confidence intervals surrounding each estimate. Taken as a whole, then, the available evidence suggests political scientists can be relatively confident that online examination of implicit attitudes runs a relatively low risk of producing unreliable results, while at the same time helping to expand the generalizability of implicit attitudes findings to a new setting (i.e. online samples of adults).[14]

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Shades of implicit attitudes: going beyond the strong focus on majority racial groups

While implicit attitudes research continues to expand, its substantive theoretical focus remains trained on individuals from *majority* racial groups. In the US, this means Whites.[15] This

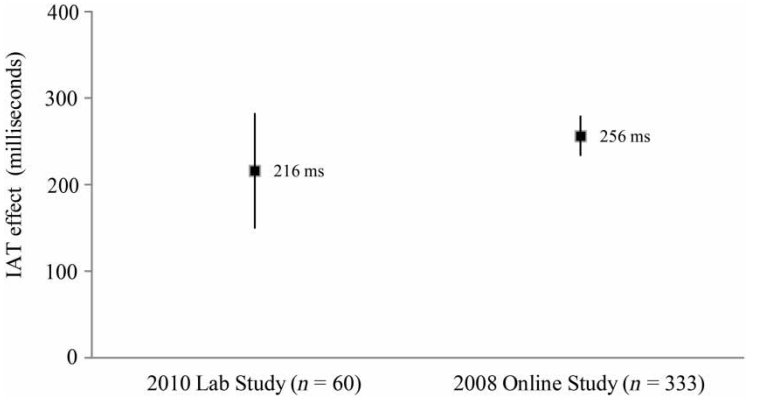

Figure 2. Average IAT effect by study setting.

concentration partly arises from data limitations familiar to many political scientists. Unless scholars invest greater effort and resources, racial minorities comprise much lower proportions of study participants in both convenience samples and mass surveys. Thus, scholars face strong incentives to limit their theorizing and hypothesis-testing to majority groups.

The risk, of course, is that such self-censoring limits the reach and nuance of theories drawing on implicit attitudes. Thus, political scientists – especially those with a substantive focus on race and politics – might help expand the frontiers of implicit attitudes research by studying minority groups. Some hints of promise exist here already. The relatively fewer psychological inquiries into implicit attitudes among racial minorities have yielded tantalizing theoretical insights that political scientists can further elaborate. For example, early efforts to reduce skepticism about the IAT's validity led psychologists to compare the scores of individuals from majority and minority racial groups. In US samples, these efforts often revealed that African American respondents displayed mild (or null) levels of positive implicit attitudes toward Blacks on a Black–White IAT – a pattern that sharply contrasted with the much higher levels of positive self-reported attitudes toward their racial group (Ashburn-Nardo, Knowles, and Monteith 2003; Livingston 2002).

This racial gap in implicit attitudes is not a methodological artifact. Ashburn-Nardo, Knowles, and Monteith (2003), for instance, show that negative implicit attitudes toward African Americans led Black participants to select a White partner for a planned experimental task. In turn, Livingston (2002) has established that Blacks' implicit attitudes toward their own group vary by how much negativity they sense from Whites. Building on results like these, some scholars propose that negative implicit attitude toward one's racial ingroup reflects the internalization of social negativity directed at one's group, which reinforces racial hierarchy in society (i.e. System Justification Theory; e.g. Jost and van der Toorn 2012; Jost, Banaji, and Nosek 2004; see also Lyle 2007).

From my view, potential synergy on this front exists between implicit attitudes research and scholarship on racial/ethnic identity and politics. Consider, for example, the mixed record of evidence in favor of a connection between racial/ethnic identity and political behavior and attitudes (e.g. Leighley and Vedlitz 1999; Lien 1994; Chong and Rogers 2004). If social psychology suggests that racial minorities often display more positive explicit (than implicit) attitudes toward their own group, then this gap hints at strong social desirability pressures to *over-report* the strength of one's racial identity, which makes the null connection between explicit identity and political behavior less surprising. But if true, it also suggests the link between identity and political behavior might be sustained by the impulsive, non-verbalized thoughts one has toward one's group, thus illuminating hidden sources of racial identity.[16]

At the same time, the mismatch in one's explicit and implicit attitudes can be used to further understand *when* and among *whom* within minority communities racial bias affects personal politics. The literature on Latino–Black relations illustrates this possibility. Here, scholars have focused much attention on Latinos' self-reported attitudes toward African Americans, with mixed evidence to boot on the extent of their negativity (e.g. Barreto, Gonzalez, and Sanchez 2011a; Barreto, Sanchez, and Morín 2011b; McClain et al. 2006; 2011). The parallel use of implicit and explicit attitudes might help advance the debate by allowing scholars to further investigate the conditions under which Latinos' racial attitudes actually shape their political judgments and behavior. One possibility is that Latinos' implicit attitudes are decidedly more negative than what is revealed via self-reports. But whether Latinos act on their implicit attitudes might depend on political circumstances (e.g. Fazio and Towles-Schwen 1999; Olson and Fazio 2009). For instance, in some contexts, elected officials might encourage greater reflection on the undesirability of racial attitudes in the public realm. In these conditions, the connection between implicit attitudes and political judgment – especially among those who profess positive attitudes toward Blacks – should attenuate, if not vanish.

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Where do they come from? The origins of mass implicit attitudes

Though scholars have widely documented the influence of implicit attitudes on judgments and behavior, much less is known about the source of implicit attitudes. One reason for this, I suspect, is the yawning gap between standard conceptualizations of implicit attitudes and traditional correlational approaches to exploring the determinants of attitudes. In studies of self-reported attitudes, scholars can (and often do) model variation in one's explicit attitudes as a function of other explicit attitudes to explore the origins of a given dependent variable (e.g. Huddy et al. 2005; Huddy and Khatib 2007). Keeping in mind obvious caveats about simultaneity and omitted variable bias, this framework is typically uncontroversial since the modeled direction of influence goes from one explicit attitude to another. But if implicit attitude is the dependent variable, using this approach imposes an assumption many find problematic. Namely, that explicit attitudes – which involve effort and control – predict implicit attitudes – which are automatic and uncontrollable (e.g. Craemer 2008).

Fortunately, this is not the only way to study where implicit attitudes "come from?" In the interest of space, I discuss two existing approaches I consider promising, especially in terms of their possible synergy with political science scholarship. First, some psychologists have investigated the origins of implicit attitudes by focusing on the role of early developmental experiences (e.g. Dunham, Baron, and Banaji 2008; 2007; 2006; see also Rudman 2004). For instance, using versions of the IAT adapted to children, these scholars have found that individuals as young as 6 years old display implicit attitudes toward racial groups. Tellingly, these implicit attitudes display a level of intensity that resembles that of adults. Researchers working in this tradition have drawn two main conclusions from these results. First, implicit attitudes are learned early in one's development and remain stable across one's life span. Second, implicit attitudes are steeped in children's early internalization of knowledge about social hierarchies. That is, children learn that social groups are ordered in a descending order of status, with some groups more esteemed than others.

Political scientists might further illuminate the developmental origins of implicit attitudes by integrating insights from the study of personality and politics, a growing branch of research in our discipline (e.g. Vecchione and Caprara 2009; Mondak et al. 2010; Gerber et al. 2011). Personality refers to a congeries of stable and durable psychological traits that emerge early in life and broadly structure people's behavior, including politics (e.g. John and Srivastava 1999). For example, people with greater *openness to experience* are more inclined to seek out information and engagement with the world around them, while people with greater degrees of *conscientiousness* are characterized by self-discipline, orderliness, and deliberation.

Since personality also arises early in one's development,[17] variation in these traits might allow political scientists to better understand differences in the psychological roots of implicit attitudes. To illustrate, consider a possible connection between *conscientiousness* and implicit attitude. The former disposes people toward less impulsive behaviors (e.g. John and Srivastava 1999). The latter is theorized to arise from spontaneous processes (e.g. Olson and Fazio 2009). A theoretical marriage between these two constructs would suggest that greater levels of *conscientiousness* discourage the learning of implicit attitudes, thus providing one explanation for why some individuals are more likely than others to develop weak implicit attitudes.

Other scholars, in contrast, have placed greater emphasis on the contextual origins of implicit attitudes, paying particular attention to how information in one's surrounding environment is processed by individuals (Rydell and McConnell 2006; Gregg, Seibt, and Banaji 2006; Olson and Fazio 2002; 2001). As a result of these efforts, researchers have found that people develop implicit attitudes on the basis of valenced information about objects. Dominant patterns win out. If the bulk of information attending an object is negative (positive), people's implicit attitudes

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reflect this prevailing valence (e.g. Rydell and McConnell 2006; Olson and Fazio 2002). Moreover, once these implicit attitudes take hold, they are strongly resistant to counter- attitudinal information (e.g. Gregg, Seibt, and Banaji 2006). Only when there are drastic shifts in the valence of information surrounding an object do implicit attitudes change accordingly.

For political scientists, such insights suggest synergy along at least two lines. First, the emphasis on the information environment suggests a plausible connection to political discourse transmitted through news media. Typically, media studies in political science focus on the short-term effects of communications on self-reported political attitudes (e.g, Iyengar and Kinder 1987; Valentino, Hutchings, and White 2002; Brader 2006). Such designs might be usefully expanded by increasing the volume of communications (within one or across several studies focused on the same individuals) and varying the affective tone of this information to examine their effects on the origins and persistence of implicit attitudes. More precisely, this approach could help pinpoint how much political information, and with what valence, is needed for implicit attitudes to take root and remain intensely held by the mass citizenry.

Second, political scientists might find it productive to integrate the burgeoning literature on emotion and politics to investigate the origins of implicit attitudes (e.g. Marcus, Neuman, and MacKuen 2000; Marcus 2003; Brader 2006). To the extent that emotions condition individuals' response to political stimuli, they might also moderate the extent to which people are sensitive to the type of affective information that encourages the development of implicit attitudes (e.g. Rydell and McConnell 2006; Gregg, Seibt, and Banaji 2006; Olson and Fazio 2002). Indeed, by appending this possibility to our previous discussion on media effects, political scientists can position themselves to further illuminate what types of individuals are more likely to acquire implicit attitudes through sustained political communications. In this regard, scholars might consider exploring the extent to which activation of discrete emotions through political communications (e.g. anxiety versus enthusiasm) modulates the acquisition and strength of implicit attitudes at the individual level (e.g. Huddy et al. 2005; Brader 2006; Huddy, Feldman, and Cassese 2007; Brader, Valentino, and Suhay 2008).

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What do people not know? Implicit attitudes and the boundaries of awareness

A final area ripe for more investigation is the subconscious nature of implicit attitudes. Many scholars describe implicit attitudes as being outside of awareness. Yet this attribution is often vague and, at times, only weakly backed by evidence. As Gawronski, Hofmann, and Wilbur (2006) explain, implicit attitudes can be considered subconscious in at least three ways, though which is meant by researchers is often left unstated. First, implicit attitudes might be subconscious in so far as people have no knowledge about how they acquired them (*source awareness*). Second, implicit attitudes might be subconscious in the sense that people are unaware that they possess them (*content awareness*). And third, implicit attitudes might be subconscious in as much as they shape behavior without one's awareness of this effect (*impact awareness*). For these reasons, Gawronski, Hofmann, and Wilbur (2006, 486) implore scholars to specify and test the subconscious aspect(s) of implicit attitudes. As they explain, whether implicit attitudes are unconscious "… should be treated as an empirical question, rather than as a methodological dictum."

In addition to these helpful insights, I would also add that addressing the subconscious nature of implicit attitudes can benefit from multiple tests under varied circumstances, thus yielding finer-grained knowledge about the boundary conditions of this crucial (but often controversial) aspect of implicit attitudes. Consider the *content awareness* of implicit attitudes. Some scholars view the modest to low correlations that sometimes emerge between implicit and explicit attitudes as evidence that people are unaware about implicit attitudes (e.g. Banaji 2001; Phelps et al. 2000; Rudman et al. 1999). Yet such correlations sometimes strengthen among specific subsets of

individuals. In the realm of racial attitudes, specifically, the association between implicit and explicit attitudes is higher among people who are weakly motivated to be unbiased, whereas the opposite holds for people who are more motivated to remain unprejudiced (Fazio et al. 1995; Fazio and Dunton 1997; Olson and Fazio 2009). This has led scholars like Gawronski, Hofmann, and Wilbur (2006) to suggest that implicit attitudes lack *content awareness*.

Political scientists can help resolve this theoretical impasse by leveraging the fact that implicit and explicit attitudes are non-redundant predictors of judgments and behaviors (see Greenwald et al. 2009). Accordingly, scholars might examine how different types of people make political decisions on the basis of implicit/explicit attitudes under varied types of information. Critical to this endeavor, I believe, is a sustained focus on a *variety* of moderators of implicit and explicit attitudes. Kam (2007), for instance, has shown that implicit attitudes toward Latinos affect preferences for a Hispanic candidate, but only in the absence of partisan cues. Similarly, Mo (2012) finds that when quality differences between female and male candidates are unambiguous, implicit attitudes toward women fail to affect support for a female candidate among those who are not explicitly biased against women. Finally, Pérez (2013) demonstrates that when people focus on non-Latinos, individuals with more education can sever the link between their explicit attitudes toward Latinos and preferences for stricter legal immigration policy. Yet highly educated people cannot suppress their implicit attitudes toward the same group. Taken as a whole, these strands of evidence suggest the subconscious nature of implicit attitudes is a complex affair, one that will not be answered with just a few studies. In this way, these inquiries underline the types of theoretical prospects available to political scientists who are curious about the relationship between implicit attitudes, self-awareness, and political choice.

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Conclusion

Psychologists continue to be intrigued by the study and measurement of implicit attitudes, as evidenced by a vibrant and still expanding literature, replete with new debates and controversies. Indeed, as Gawronski and Payne (2010, 1) write, "[w]ithin the space of two decades, virtually every intellectual question in social psychology … has been shaped by the theories and methods of *implicit social cognition*." But this is not the case within political science, where the imprint of implicit cognition is noticeably smaller. Though the study of implicit attitudes provides a potentially exciting and novel way to gain further insight into the political mind, our discipline's response to this scholarship has been subdued.

To fully seize on this scholarship, more political scientists need to be convinced about the theory behind, and assessment of, implicit attitudes – a concept that clashes (at least on the surface) with conventional wisdom about what attitudes are and how they are measured. To this end, I have tried to appeal to our sensibilities as political *scientists* by reviewing and explaining established facts about implicit attitudes and their measurement, as well as some of the potential opportunities for political scientists to contribute to this evolving line of research. My goal has been to impart a simple but important lesson. True, we have yet to learn even more about the theoretical and methodological boundaries of implicit attitudes. Yet political scientists can be confident that their own ventures into this intellectual frontier will rest on a strong foundation of systematic knowledge about this novel concept.

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Notes

1. In the interest of space, I mostly center on published articles focused on implicit cognition. As of this writing, I am aware of two additional pieces of political science scholarship that will shortly add to this list (i.e. Knoll, forthcoming; Hedrick and Ksiazkiewicz, forthcoming).
2. Thus, if a person has a negative attitude toward, say, Muslims, we could schematically represent their attitude as **Muslim-Bad**, with the dash indicating the actual association and its strength. This parsimonious view of the attitude construct guides my discussion throughout the paper. And, as we will see later, this fundamental view of attitudes as object-evaluation associations has also informed the development and use of many measures of implicit attitude.
3. This is not to say that explicit attitudes cannot be affective or influenced by automaticity (e.g. Ranganath, Tucker Smith, and Nosek 2008). Rather, this characterization is better understood in relative terms and as a matter of degree. For example, feeling thermometer ratings capture affect-laden evaluations of objects. But, since these evaluations are self-reported, they involve a greater degree of introspection and control. Hence, they do not reflect a strictly affective response, nor is this response entirely automatic. In contrast, measures of implicit attitude, as we are about to see, tend to minimize the role of introspection and/or control in the reporting of attitudes, thus yielding affectively richer and more automatic evaluations of objects.
4. These are the most popular and extensively validated measures. Yet there are other tests on the market. For insight into these alternate measures, see Wentura and Degner (2010) and Teige-Mocigemba, Klauer, and Sherman (2010).
5. This general approach to indexing AP scores is typical of many studies, although some variants exist.
6. It is important to note that images can also be used as exemplars of attitude objects.
7. While these two sorting tasks are the crux of the IAT, the full test involves additional exercises that acclimatize people to the measure and the classification exercises involved. In total, the IAT consists of seven (7) blocks, or sets of individual exercises (e.g. Nosek, Greenwald, and Banaji 2007). A streamlined version of this test – the Brief IAT – has recently entered the market, though it is not as extensively validated as the traditional IAT (Sriram and Greenwald 2009).
8. Furthermore, some research finds that "faked" IAT scores can be statistically detected and partially corrected to permit their use in applied analyses (Cvencek et al. 2010).
9. Indeed, a measure can be valid and yet still have low reliability. In other words, a measure can capture what it is meant to capture (i.e. validity), but accomplish this task with suboptimal precision (i.e. low reliability) (Brown 2006; DeVellis 2003).
10. In a similar vein, Hawkins and Nosek (2012) find that self-proclaimed political Independents in the US implicitly identify with Democrats or Republicans via the IAT. Critically, individual differences in implicit partisanship are reliably associated with people's policy preferences (see also Theodoridis 2012).
11. Some scholars have addressed this concern by studying implicit attitudes in samples with richer demographic variation, finding results comparable to those from student studies (e.g. Nosek, Greenwald, and Banaji 2007). But, since these more variegated samples are still comprised by *self-selected* respondents, it remains unclear how representative these relationships are of a larger population, such as the adult mass public (but see Pasek et al. 2009).
12. Typically, the accuracy of latencies in this setting depends on the operating system's clock rate of personal computers (18.2 Hz for Windows-based machines) (Nosek, Greenwald, Banaji 2005, 169). This is not deemed fatal to the use of online IAT data because: (a) the introduced measurement error is random; (b) the IAT elicits strong effects; and (c) the introduced measurement error is significantly reduced by averaging data across trials when calculating IAT scores.
13. The lab study was conducted at an elite university in the American South, while the online survey was administered by YouGovPolimetrix. Lab subjects were, on average, 20 years old and self-identified as ideological moderates (M = 3.75 on 1–7 ideology scale). Some 53% of the lab sample was female. Survey respondents were, on average, 48 years old and also self-identified as ideological moderates (3.27 on 1–5 ideology scale), and 51% of this sample was female.
14. Indeed, the established scientific record on implicit attitudes can be used to further assess the quality of one's implicit attitudes data from online surveys. For example, a scholar embedding the IAT in an Internet survey might compare her yielded effect size against those found in previous studies. While such a comparison would involve a judgment call on the part of a researcher, it would none the less be an *informed* judgment call.
15. More precisely, non-Hispanic Whites.

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16. Indeed, the notion of implicit attitudes can help to study cases where group members are unable or unwilling to report certain identities and preferences. For example, consider members of immigrant-based groups (e.g. Latinos, Asians), who often self-report weak or no identification with Democrats or Republicans (e.g. Hajnal and Lee 2011). By measuring implicit partisanship in addition to its self-reported analog, scholars can further assess the degree to which weak explicit partisanship among immigrant group members arises from social desirability pressures and/or measurement issues that hinder respondents' ability to self-report this identity (e.g. Hawkins and Nosek 2012).
17. In fact, personality has deep roots in one's genetic makeup. By many accounts, about half of the variance in personality traits can be attributed to one's genes; which is to say, personality has a strong hereditary component (e.g. Bouchard and Loehlin 2001; Turkheimer 2000).

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