Polit Behav (2010) 32:517–545
DOI 10.1007/s11109-010-9115-z

ORIGINAL PAPER

# Explicit Evidence on the Import of Implicit Attitudes: The IAT and Immigration Policy Judgments

**Efrén O. Pérez**

Published online: 1 May 2010


**Abstract** The implicit association test (IAT) is increasingly used to detect automatic attitudes. Yet a fundamental question remains about this measure: How well can it predict individual judgments? Though studies find that IAT scores shape individual evaluations, these inquiries do not account for an array of well-validated, theoretically relevant variables, thus raising the challenge of omitted variable bias. For scholars using the IAT, the risk here is one of misattributing to implicit attitudes what can be better explained by alternate and rigorous self-reports of explicit constructs. This paper examines the IAT's performance in the context of U.S. immigration politics. Using a representative web survey of adults, I demonstrate the IAT effectively captures implicit attitude toward Latino immigrants. Critically, I then show these attitudes substantively mold individual preferences for illegal *and* legal immigration policy, net of political ideology, socio-economic concerns, and well-established measures of intolerance toward immigrants, such as authoritarianism and ethnocentrism. Combined, these results suggest the IAT measures attitudes that are non-redundant and potent predictors of individual political judgments.

**Keywords** Implicit association test (IAT) · Implicit attitudes · Automaticity · Immigration · Latino immigrants

It is increasingly charged that attitudes lurk in our subconscious, ready to color our judgments without our control or awareness (e.g., Banaji et al. 1995; Greenwald et al. 1998; Banaji et al. 2001). And to measure these implicit attitudes, many scholars have relied on the implicit association test (IAT): A computer-based

E. O. Pérez (✉)
Department of Political Science, Vanderbilt University, VU Station B #351817,
2301 Vanderbilt Place, Nashville, TN 37235-1817, USA
e-mail: efren.o.perez@vanderbilt.edu

measure that gauges response times to exemplars of different categories and attributes (e.g., Greenwald et al. 1998).[1] Scholars have used the IAT to assess implicit attitudes toward a variety of social categories, including African Americans, Native Americans, Muslims, Women, and Homosexuals (e.g., Albertson 2008; Lyle 2008; Nosek et al. 2007; Jellison et al. 2004). These implicit attitudes, moreover, have been detected and replicated across several studies, with scholars commonly finding that one's implicit attitude can contradict one's self-reported view toward the same target (e.g., Devos and Banaji 2005; Arcuri et al. 2008). Yet despite these arresting empirical patterns, one fundamental question continues to swirl around the IAT: How well does it explain individual judgments?

This question cuts to the heart of this measure's predictive validity. Whether in lab or non-lab settings, the relationship between implicit attitudes and individual judgments remains tenuous, as both types of studies do not control for an array of crucial demographic variables *and* additional, theoretically relevant predictors. To be sure, single studies as well as meta-analyses suggest that implicit attitudes are associated with several types of individual evaluations, even after accounting for the self-reported analogs of implicit attitudes (e.g., Greenwald et al. 2009; Nosek et al. 2007). This approach teaches us that implicit attitudes *can* affect individual judgments. But what it does not tell us is how robust this relationship is to other critical factors. Indeed, it is plausible that implicit attitudes are nothing more than flotsam around decisions that are ultimately better explained by attitudes and beliefs that fall under one's full and conscious control. In this paper, I address these concerns about the predictive validity of the IAT by examining this measure's performance in the context of U.S. immigration politics.

The issue of immigration is one where intolerance toward foreigners plays a key role. From one perspective, opposition to immigration is implicitly colored by one's negative attitude toward Latino immigrants. Because public discourse presents this group in an unfavorable light, individuals hold Latino immigrants in low regard and automatically rely on this attitude to arrive at judgments of immigration policies (e.g., Huntington 2004; Chavez 2001). However, other perspectives caution against this view. For instance, some research demonstrates that so far as one dislikes one set of immigrants, one is inclined to dislike a broad array of them (e.g., Kam and Kinder 2007; Sniderman et al. 2000). Accordingly, anti-Latino attitude is nothing more than one component of a more general phenomenon: namely, ethnocentrism (Kinder and Kam 2009). Furthermore, research on authoritarianism suggests opposition to immigration stems less from intolerance toward a specific group of foreigners, and more from intolerance of difference, regardless of the immigrants in question (e.g., Feldman 2003). Thus, to the extent that implicit attitudes toward Latino immigrants exist, they must, at minimum, be empirically distinct from these other well-validated constructs of intolerance toward immigrants, and they must influence political decision-making above and beyond them.

[1] There is a large family of implicit attitude measures (e.g., Fazio et al. 1995; Burdein et al. 2006; Kam 2007). The IAT is only one of them. That being said, it is one of the more popular and extensively used by researchers (e.g., Greenwald et al. 2009), as well as one of the more controversial (Fazio and Olson 2003). For these reasons, it is the focus of this paper.

To these ends, I designed an immigrant IAT to capture automatic attitude toward Latino immigrants. Using a representative web survey, I compare this IAT's performance to validated measures of authoritarianism (Stenner 2005) and ethnocentrism (Kam and Kinder 2007). My analysis confirms the IAT's ability to measure an automatic attitude toward Latino immigrants that is predictive of judgments related to immigration policy. First, I find that implicit attitudes toward Latino immigrants are empirically distinct from alternate measures of intolerance toward foreigners. Second, I demonstrate this measure's ability to mold public support for illegal *and* legal immigration policy, net of demographic and political controls as well as robust measures of intolerance toward foreigners. The evidence thus suggests that individual support for immigration policies is influenced by implicit attitude toward Latino immigrants, even though these policies potentially affect more than just this group.

## Implicit Attitudes and the IAT

Scholars have long theorized that individuals possess a repository of attitudes that are generally beyond their immediate introspection and control (e.g., Fazio et al. 1986; Banaji et al. 1995). These implicit attitudes, it is argued, are shaped by psychological processes that are involuntary and relatively effortless in terms of cognitive resources (Bargh 1997). Thus, implicit attitudes are characterized as relatively subconscious because they can influence one's judgments and evaluations automatically, that is, outside of one's control or awareness (Greenwald et al. 1998; Neumann et al. 2004). The potency of these attitudes is traced to their stability as chronically accessible, well-rehearsed attitudes (e.g., Fazio et al. 1986). As Wilson et al. (2000) explain: "[b]ecause the implicit attitude is habitual…, it is the default response that is expressed… (p. 104)." Implicit attitudes can therefore be characterized as well-crystallized attitudes that are spontaneous and uncontrollable in nature.[2]

At a fundamental level, an attitude—whether implicit or not—is a memory-based association between a concept and an evaluation of it (Fazio et al. 1982). Implicit attitudes, therefore, are nothing more than the learned associations of a concept (e.g., Latino immigrants) that are *spontaneously* activated. To tap into these automatic attitudes, psychologists have increasingly relied on the IAT, a computer-based measure involving the rapid sorting of stimuli in two key blocks (e.g., Greenwald et al. 2009). The IAT's attractiveness as a research tool stems, in part, from its correspondence to the nature of the trait it purports to measure. By relying on rapid sorting of stimuli, it circumvents respondents' ability to edit their responses

[2] To say that implicit attitudes are well-crystallized is not the same thing as saying that they are not malleable. Indeed, several researchers have examined the influence of contextual features on IAT responses, such as the type of information one is exposed to prior to completion of the IAT (e.g., Dasgupta and Greenwald 2001; Lowery et al. 2001; Richeson and Nussbaum 2004). In this way, implicit attitudes are similar to explicit attitudes insofar as both can, and sometimes do, respond to features in one's immediate decision environments.

to the measure. In this way, the IAT grants researchers access—however limited—to an attitude that is theorized to be spontaneous and uncontrollable.

Detection of implicit attitudes via the IAT occurs through two key blocks of sorting exercises. In each block, subjects complete 40 trials, where each trial involves the sorting of an individual stimulus item. Consider the prototypical race IAT, where Black and White serve as contrasting racial categories (e.g., Greenwald et al. 1998; Lyle 2008). In the first block, subjects quickly classify stimuli using a pair of combinations where "Black" and "Good" go together, and "White" and "Bad" go together. Stimuli consist of facial images of Blacks, facial images of Whites, words with negative valence, and words with positive valence. These stimuli appear randomly and individually on the center of the computer screen, and as each stimulus appears, subjects use the 'E' or 'I' key on a computer keyboard to quickly sort the word into the appropriate pairing (e.g., Black + Good | White + Bad).

In the second block, subjects perform a similar sorting task while using a slightly modified pair of combinations, where "White" and "Good" go together, while "Black" and "Bad" go together. The stimuli are the same as before, and again, subjects use the 'E' and 'I' keys to rapidly sort these items into the appropriate categories as they randomly and individually appear on the center of the computer screen. If subjects display faster average sorting times for the first block (i.e., Black + Good | White + Bad) than for the second (i.e., White + Good | Black + Bad), one infers that subjects possess a positive implicit attitude toward African Americans (relative to White Americans).[3]

## The IAT and Its Predictive Validity

Research employing the IAT has discovered and replicated the existence of implicit attitudes across several domains, including attitudes toward racial and religious minorities (e.g., African Americans, Muslims), attitudes toward gender and sexual orientation groups (e.g., Women and Homosexuals), and even attitudes toward political candidates (e.g., George W. Bush, John Kerry) (Nosek et al. 2007). One of the more intriguing and consistently documented patterns from these efforts is the degree of dissociation between one's self-reported view and one's implicit attitude toward the same target. In one example, Devos and Banaji (2005) find that individuals self-report Whites and African Americans as having strong ties to American culture. These same individuals, however, reveal stronger implicit associations between Whites and the concept "American" than Blacks and the same concept, thus underlining a divergence between one's self-reported and implicit attitude in this realm.[4]

[3] The order of these blocks is counterbalanced across participants (Nosek et al. 2005). Individuals also complete shorter practice trials to acclimate them to the measure. See Greenwald et al. (1998) for details on the IAT described above.

[4] This dissociation varies by domain (see Nosek et al. 2002; Nosek 2005).

Building on these insights, scholars have documented the extent to which implicit attitudes contribute to individual judgments and evaluations, including political preferences (e.g., Albertson 2008; Olson and Fazio 2004), views toward racial and sexual orientation minorities (Lyle 2008; Jellison et al. 2004; Gawronski et al. 2003), consumer tastes (Maison et al. 2004), and personal reactions to failure (Greenwald and Farnham 2000). For instance, Gawronski et al. (2003) find that implicit attitudes toward Turks led subjects to rate the behavior of Turks more negatively than the behavior of Germans portrayed in ambiguous situations. Similarly, Maison et al. (2004) show that implicit attitudes toward cola drinks shape one's preferences toward a particular brand (i.e., Coca-Cola or Pepsi). Specifically, these authors show that implicit attitudes toward consumer products that are difficult to differentiate—such as Pepsi and Coke—are indeed associated with preferences for and use of those products. Finally, Arcuri et al. (2008) discover that IAT scores predicted vote choice among a sample of undecided Italian voters across two distinct elections. In particular, these scholars demonstrate that among subjects who had indicated they were undecided one month prior to an election, their IAT scores at time $t$ predicted their self-reported vote choice at $t + 1$. This suggests that one's implicit attitude toward a candidate can influence one's self-reported vote even if one explicitly indicates political indecision.

Yet notwithstanding this important pattern of findings, research on the IAT is attended by two important caveats. The first concerns the IAT's predictive prowess. Several studies have marshaled evidence showing that scores on the IAT are consequential for individual decision-making (e.g., Greenwald et al. 2009). These findings, however, are open to a charge of omitted variable bias, since they are typically yielded through statistical analyses that do not control for standard demographics and theoretically relevant social and political variables. For instance, we know that scores on the Black/White race IAT are associated with ratings and judgments of African Americans (e.g., Greenwald et al. 2009). And, we know that this relationship obtains even after self-reported racial attitudes are controlled for. However, it is plausible that researchers have found evidence of a statistical relationship between implicit attitudes and relevant judgments, precisely because other plausible explanations are unaccounted for.

Some IAT critics have gone one step further by arguing that the strong performance of the IAT in these types of studies is due to the fact that this instrument is pitted against related self-reported measures of dubitable quality; as in the comparison of the race IAT with the Modern Racism Scale, a measure now held in disrepute by some (e.g., Sniderman and Tetlock 1986; Arkes and Tetlock 2004). These critiques charge that the findings shoring up strong claims about the IAT's predictive validity rest on research designs that set up a straw man.

Moreover, though scholars generally treat implicit attitudes as distinct phenomena that directly affect judgments and evaluations, it is theoretically plausible that implicit attitudes also exert their influence indirectly through explicit attitudes (e.g., Krosnick et al. 2009). Fazio and his associates, for instance, argue that judgments and evaluations can be affected by a mix of spontaneously activated attitudes (i.e., implicit) as well as attitudes formed through more controlled deliberation (i.e., explicit) (e.g., Fazio and Olson 2003; Fazio and Towles-Schwen 1999; and Fazio

et al. 1986). While this view is consistent with the claim that implicit attitudes have a direct influence on explicit judgments and evaluations, it is also consistent with the view that the influence of implicit attitudes is mediated by related explicit constructs (e.g., ethnocentrism) (Baron and Kenny 1986). Thus, to increase confidence in the IAT's predictive validity, one must not only account for a variety of theoretically relevant attitudes that might outperform implicit attitudes, but also examine the direct and indirect mechanisms through which implicit attitudes might operate.

A second caveat regarding IAT research is its strong reliance on student subjects or other samples of convenience. This is an important consideration, especially when research warns us against being too cavalier about the lability of student subjects in attitudinal research (Sears 1986). An overreliance on student samples raises the concern that the IAT's effectiveness in tapping implicit attitudes is largely based on its application among students, who generally tend to have more malleable attitudes. Thus, IAT research may overestimate the preponderance of implicit attitudes in society. To cut against this critique, some scholars have employed the IAT in large non-student samples. Nosek and colleagues, for example, have used an IAT demonstration web site to generate datasets with more variation in terms of age, gender, race, and education (Nosek et al. 2002, 2007). These authors take extra caution to ensure verisimilitude between their sample and their population of interest. Nevertheless, one cannot completely rule out that these findings are strongly conditioned by factors associated with these subjects' propensity to visit this web site. Therefore, to allay these concerns and increase greater confidence in the IAT, it is important to gauge how well IAT effects replicate in other settings, such as public opinion surveys, where sample representativeness is optimized.

## The IAT and the Case of U.S. Opposition to Immigration

As a political issue, immigration stimulates various individual predispositions, including one's economic concerns, ideological principles, and commitments to legal norms (e.g., Lee and Ottati 2002; Citrin et al. 1997). Yet immigration is also an arena where intolerance toward foreigners plays a critical role in motivating opposition to immigration (Sniderman et al. 2004; Lee and Ottati 2002; Sniderman et al. 2000; Citrin et al. 1997). By one account, this xenophobic stance is stimulated by negative attitude toward a specific group: Latino immigrants. Public discourse on immigration, whether through media reports (e.g., Chavez 2001) or academic scholarship (e.g., Huntington 2004), showcases this group as one whose presence imperils national culture and the well-being of native-born workers, among other things. Indeed, recent work by Brader et al. (2008) demonstrates that news reports cueing Latino immigrants are more likely to boost public opposition to immigration. Moreover, by highlighting this group's contribution to undocumented immigration, this discourse presents Latino immigrants as a force that subverts law and order (e.g., Waldman et al. 2008; Chavez 2001). All of which is to say that it is not unreasonable to expect Americans to automatically hold Latino immigrants in low

regard.[5] According to this view, then, judgments of immigration policy are implicitly shaped by one's attitude toward Latino immigrants.[6]

Yet there are other compelling perspectives about the nature of intolerance toward foreigners. And while not mutually exclusive of the implicit view of intolerance toward Latino immigrants, they nevertheless raise questions about the extent to which attitudes toward Latino immigrants are distinct from attitudes toward other immigrant groups. The first of these perspectives is that while negative attitude toward Latino immigrants might exist, it is only one component of a more general negative attitude toward foreigners, namely, ethnocentrism (e.g., Levinson 1950). In other words, inasmuch as one derogates Latino immigrants, one is likely to derogate other groups of foreigners as well, such as Asian immigrants (e.g., Sniderman et al. 2000; see also Allport 1954). As Kam and Kinder (2007) explain, ethnocentrism is a way of viewing the world and the social groups within it. In particular, this mode of thinking is theorized to produce contemptuous and denigrating views of outgroups, including immigrants. Indeed, these authors demonstrate that ethnocentrism is a strong determinant of individual support for immigration policy proposals, such as decreasing overall immigration levels, requiring immigrants to wait for government benefits (e.g., Medicaid), and making English the official language of the U.S. (Kinder and Kam 2009). These insights therefore suggest that it is not so much negative attitude toward Latino immigrants, specifically, but rather, negative attitude toward a gamut of foreigners, which propels opposition to immigration.

The second perspective traces one's opposition to immigration to authoritarianism, a more fundamental predisposition to be intolerant toward a variety of outgroups, not the least of which is immigrants (Altemeyer 1996). According to Stenner (2005), Feldman (2003), and others, authoritarianism inclines individuals to favor conformity and uniformity with respect to a normative order. In the context of immigration, it is easy to see how foreigners violate these twin ends just by their sheer presence: As cultural outsiders, their difference marks them in contradistinction to the homogenous cultural order the authoritarian values. It is therefore unsurprising that authoritarianism is a powerful determinant of opposition to immigration (Hetherington and Weiler 2009). And given its potency, it is important to determine the extent to which preferences for immigration policy are driven more by a value predisposition rather than a set of learned attitudes toward a specific group (or set of groups).

For these reasons, the case of U.S. opposition to immigration provides a rigorous test of key claims about the IAT's predictive validity. More precisely, it permits a strong test of three hypotheses derived from the larger literature on the IAT and extended to the domain of U.S. immigration politics. The first is that individuals

[5] Indeed, in concurrent experimental work (Pérez 2010), I find that implicit attitude toward Latino immigrants heightens opposition to immigration, even if one directs people's attention to non-Latino immigrants.

[6] The latest figures from the Department of Homeland Security's Office of Immigration Statistics reveal that in 2006, 65% of illegal immigrants came from three Latin American countries: Mexico, El Salvador, and Guatemala. Those same three countries contributed only 18% of the total flow of legal immigrants to the U.S. during 2006.

possess an implicit attitude toward Latino immigrants (H1). That is, in line with previous research on the IAT, it is hypothesized that at an automatic level, individuals hold Latino immigrants in low regard.[7] The second hypothesis builds on the first by examining whether this implicit attitude is a substantive predictor of individual opposition to immigration, net of other equally plausible and rigorously measured alternatives, such as authoritarianism and ethnocentrism (H2). Finally, the third hypothesis (H3) assesses the extent to which the influence of implicit attitudes on policy judgments is mediated by explicit (i.e., self-reported) attitudes. That is, I test the degree to which the influence of implicit attitudes on immigration policy preferences is *indirectly channeled* by explicit attitudes associated with these judgments. These three hypotheses are self-reinforcing, for while an implicit attitude may exist, it may be fleeting in nature and inconsequential for individual evaluations, particularly when well-specified models are leveraged to assess the plausible direct and indirect effects of implicit attitudes.

## Data

Data for this inquiry is drawn from two studies: (1) a student-based study, and (2) a web-based survey. The student study served to pilot the IAT designed for this analysis, which contrasted Latino immigrants to White immigrants. The pilot study was performed at an elite Southern university during July 2007. Subjects were recruited to the study through advertisements placed throughout campus. Each subject received $5 for their participation. These efforts generated 44 non-Hispanic White subjects. Thirty-four percent of these subjects were female. The median subject was 21 years of age, with 3 years of college education, and a moderate ideological orientation.[8]

The Internet survey replicated and extended the initial findings of the pilot study. This survey was administered by YouGovPolimetrix during July 16–July 26, 2008. YouGovPolimetrix employs sample matching techniques to build representative web samples through its pool of opt-in respondents (see Rivers 2008). Studies that

[7] It may be reasonably argued that (H1) is not a hypothesis, but rather a descriptive observation. Yet I describe the claim that individuals possess an implicit attitude toward Latino immigrants as a hypothesis because it is a claim that can be falsified. From a measurement perspective, a latent implicit attitude is theorized to "cause" individuals' responses on the IAT, net of measurement error (e.g., Brown 2007). If, indeed, those responses reflect an implicit attitude, responses on the matched task should be faster than those on the mismatched task. In contrast, if individuals do not possess this implicit attitude, they should score at comparable speeds across both tasks. Furthermore, it is important to consider that while the IAT has been around since 1998, this version of it did not exist until now; which is to say, there is a very real possibility that it fails to measure its intended construct. And if it fails, one logical conclusion would be that implicit attitudes toward Latino immigrants do not exist. Thus, for these reasons, I believe it is appropriate to describe hypothesis 1 as an actual hypothesis rather than a descriptive statement.

[8] Twenty-two (22) Asian American and seven (7) Hispanic subjects also completed the study. They are generally excluded from the analysis to ensure comparability between the pilot study and the web survey, which focused on non-Hispanic Whites. Nevertheless, I do use the data for non-White subjects to provide evidence for the IAT's validity as an indicator of individual attitude. I explicitly discuss this evidence in the results section. The substantive findings from the pilot study remain unchanged if non-White subjects are included.

use representative samples yielded this way find that their quality meets, and sometimes exceeds, the quality of samples yielded through more traditional survey techniques (Berrens et al. 2003; Sanders et al. 2007; but see Malhotra and Krosnick 2007). This survey produced a sample ($n = 350$) of non-Hispanic Whites. Fifty-one percent of the sample was female. The median survey respondent was 49 years old, with some college education, a household income of $50,000, and a moderate ideological outlook toward politics.

## Measures

To test the first hypothesis, I designed an IAT to measure automatic attitude toward Latino immigrants, relative to White immigrants. The choice of White immigrants as a contrast category is theoretically driven, per the recommendations of IAT researchers (e.g., Pinter and Greenwald 2005). Historians have richly documented the general tendency of Americans to evaluate new immigrant groups relative to White immigrants from Europe (e.g., King 2000; Jacobson 1998; Higham 1981). Latino immigrants provide only the most recent of these comparisons, since this group is generally viewed by academics and the general public as non-White (e.g., Alba and Nee 2003). Thus, while I could have compared Latino immigrants with White immigrants from Europe, I decided in favor of the less cumbersome contrast of Latino immigrants with White immigrants.[9]

Similar to other IATs, this one is a computer-based measure involving the rapid classification of stimuli in two key blocks. The order of these blocks was manipulated as a within subjects factor.[10] In each block, subjects completed 40 trials. Each trial involved the sorting of an individual stimulus item. In the first block, subjects rapidly sorted individual stimuli using a theoretically *mismatched* pair of combinations, where "White Immigrant" and "Bad" go together, and "Latino Immigrant" and "Good" go together. Stimuli were comprised of Latino surnames, White surnames, words with negative connotation, and words with positive connotation. In the second block, subjects performed a second sorting task using a theoretically *matched* pair of combinations, where "Latino Immigrant" and "Bad" go together, and "White Immigrant" and "Good" go together. Once again, stimuli included Latino and White surnames, words connoting good, and words connoting bad. The sequence of this IAT and its attendant stimuli is provided in Appendix 1.

Evidence of implicit attitude toward Latino immigrants is initially provided by a statistically significant difference in average response times between both blocks. If this difference in sorting times is not produced, it suggests that subjects do not display an automatic attitude toward Latino immigrants, since they rapidly classified

[9] While it is true that, as far as the U.S. census is concerned, Latino immigrants can and do self-identify themselves as White in racial terms (e.g., Hattham 2007), it is likely that to non-Hispanics, the former category is generally not perceived as White (e.g., Devos and Banaji 2005).

[10] A practice block precedes each key block. These practice blocks yield information similar to the key blocks, and thus, are used to compute IAT scores in line with previous research (Greenwald et al. 2003). The full sequence of the IAT for this paper is detailed in Appendix 1.

stimuli at comparable rates across both blocks. To the extent this difference exists, however, the formula below is used to subtract the average response times from each other. This formula yields our "IAT effect", where positive scores indicate an automatic negative attitude toward Latino immigrants (relative to White immigrants).

$$(\text{Avg. response time}_{\text{mismatched task}}) - (\text{Avg. response time}_{\text{matched task}}) = \text{IAT}_{\text{effect}} \quad (1)$$

Of course, it can be reasonably argued that the IAT's focus on immigrants rather than broader racial groups might be too narrow in scope. In other words, a more precise pairing would have contrasted Latinos and Whites, without labeling them as immigrants. It is important to recall, however, that the stimuli used in the IAT (i.e., surnames) can, in theory, be equally sorted into pairings that refer to Latinos and Whites *with* or *without* the immigrant label. Thus, it is likely that attitudes toward, say, Latinos and Latino immigrants, are essentially the same construct. According to this logic, then, what differs is the measure, not the underlying attitude. Nevertheless, I decided to use the pairing with immigrant labels given the project's larger focus on immigration policy preferences. Yet inasmuch as one believes this pairing is affected by non-random error—because the label "immigrant" is applied to both contrasted groups in the IAT—this feature should bias estimates of the true IAT effect downward, which actually militates against uncovering any relationship between this IAT and immigration policy preferences.[11]

To assess the second hypothesis, I estimated the IAT's effect on individual support for immigration policy. Public discourse on immigration tends to distinguish between legal and illegal flows of immigrants to the US (e.g., Simon and Alexander 1993; Chavez 2001). Yet it is often taken for granted that such a distinction exists in the public's mind. To that end, the web survey fields various policy items addressing both legal and illegal immigration, thus allowing me to empirically verify the structure of individuals' policy preferences. To gauge preferences for illegal immigration policy, respondents used a 7-point scale to indicate their support for three specific policy proposals: (1) greater U.S. efforts to stop illegal immigration, (2) making it easier for illegal immigrants to obtain welfare; and (3) making it more difficult for undocumented immigrants to become U.S. citizens. For legal immigration policy, respondents registered their support for three proposals: (1) decreasing the annual number of legal immigrants; (2) making it harder for legal immigrants to become citizens; and (3) increasing the number of visas available to legal immigrants.

After verifying the structure of immigration policy preferences, I model the resulting policy factor(s) as a function of several demographic and political variables, as well as variables gauging intolerance toward immigrants. Demographic

[11] This is likely to be true if, for instance, attitudes toward all immigrant groups are similar and equally predictive of immigration policy preferences—as is suggested by some research on ethnocentric attitudes toward immigrants (e.g., Sniderman et al. 2000). Inasmuch as this is true, a comparison between Latino and White immigrants should return small differences in IAT sorting times, which cuts against a possible relationship between the IAT and immigration policy preferences. I thank an anonymous reviewer for this line of reasoning.

controls include gender, age, level of education, and reported income.[12] These have typically been used in order to account for plausible individual-level differences that are not political (e.g., conservatism) or racial (e.g., ethnocentrism) in nature, thereby allowing one to obtain more precise estimates of the latter (e.g., Citrin et al. 1997; Scheve and Slaughter 2001).[13] In addition, I estimate the influence of individuals' level of conservatism (e.g., Citrin et al. 1997) as well as their socio-economic concerns (e.g., Sniderman et al. 2004). The former is expected to increase opposition to immigration out of a principled commitment to the status quo (e.g., Jost et al. 2003; Citrin et al. 1997). The latter is expected to increase opposition to immigration due to one's perception that certain social and economic domains are under stress (e.g., Marcus et al. 1995; Sniderman et al. 2004). Individual conservatism is tapped with a two-item scale comprised of one's self-reported level of conservatism and one's self-reported partisan identification ($\alpha = .70$). Socio-economic concerns were assessed by four items gauging individuals' concern about crime and lawlessness, school overcrowding, the job prospects of Americans, and the state of U.S. culture. Responses to these items were then combined into a "counter" variable that tallied the number and intensity of concerns about these four socio-economic domains. Critically, these four items make no reference to immigrants, so as to avoid conflating a sincere concern about these domains with feelings or attitudes about immigrants themselves (Sniderman et al. 2004).[14]

Finally, three measures of intolerance toward immigrants are included as predictors of immigration policy preferences: authoritarianism, ethnocentrism, and implicit attitude toward Latino immigrants. I tapped authoritarianism using a three-item scale comprised of questions probing respondent's preference for child-rearing values, such as encouraging a child to "follow the rules" ($\alpha = .69$) (Stenner 2005). I measured ethnocentrism using a five-item scale comprised of feeling thermometer

[12] Gender is measured with a dummy variable, where female is the baseline category. Age is assessed through age in years. Education is assessed through a 6-point scale, ranging from no high school to post-graduate education. Income was gauged via a 14-point scale running from less than $10,000 to $150,000 or more.

[13] These studies find that the effects of these demographic controls can sometimes depend on the type of policy being assessed and the year the survey data used were collected. This mixed pattern of evidence thus prevents one from making firm predictions about the effects of these demographic controls. However, since other scholars have deemed these demographic controls important enough to control, I do as well. For instance, Citrin et al.'s (1997) analysis of 1994 ANES data show that older age and higher levels of education both decreased opposition to immigration, though only the latter achieved statistical significance. In turn, being female and having higher levels of income were both associated with higher levels of opposition to immigration, though only income achieved significance. Scheve and Slaugher's (2001) analysis of the same data for the years 1992, 1994, and 1996 find that education has a consistently negative and reliable effect on opposition to immigration across these years, but the other demographic controls do not. It is important to point out, however, that if these demographic controls are excluded, the substantive conclusions of the pending analysis remain virtually unchanged.

[14] In their pioneering study, Sniderman et al. (2004) find that items such as these are "double-barreled" when they directly mention immigrants. That is, they confound one's attitude about immigrants with one's attitude toward a specific social or economic domain. Before fielding this study, I anticipated administering at least two measures of attitude toward immigrants: (1) ethnocentrism items and (2) the IAT. What I needed, then, was a set of items that more directly assessed people's concerns about crime, jobs, schools, and culture without confounding these concerns with attitude toward immigrants.

ratings of White immigrants, Asian immigrants, Latino immigrants, Middle Eastern immigrants, and Illegal immigrants ($\alpha = .82$).

Finally, in all the correlation and regression analyses that follow, I calculate one's implicit attitude toward Latino immigrants by using the algorithm conventionally used by IAT researchers (see Greenwald et al. 2003). This results in IAT *D* scores, which measure the direction and strength of the automatic associations in the matched task of the IAT (i.e., "Latino immigrant" associated with "Bad"). Scores on this index are generated by: (1) using raw scores from the practice blocks and key blocks; (2) dividing each set of scores by its associated standard deviation; and (3) averaging both resulting quotients. This algorithm has the advantage of assessing a penalty for respondent errors, thereby ensuring that scores are not driven by slower scores produced when sorting errors are committed. Moreover, since this algorithm divides the difference in block means by the standard deviation of all latencies, it adjusts these mean differences for the underlying variability in latencies. In these ways, the algorithm produces a measure of implicit attitude with more desirable psychometric properties (Greenwald et al. 2003).[15] By convention, scores of .2, .5, and .8 are considered small, moderate, and large, respectively (Nosek et al. 2005; Cohen 1988). For the web-based survey, IAT $D = 1.65$, which indicates a large effect.[16]

## Results

I begin by assessing whether individuals possess an implicit attitude toward Latino immigrants (H1). This is a crucial hypothesis, for the remainder of the analysis hinges on whether this implicit attitude exists. And since IAT research has not been extended to this domain, failure to reject the null hypothesis is very plausible. Thus, I examine the results of the IAT in both the student- and web-based study. These results are visually displayed in Fig. 1 below. For ease of interpretation, they are left in their raw metric (i.e., milliseconds).

Recall that in this IAT, subjects rapidly sorted stimulus items (i.e., Latino surnames, White surnames, good words, and bad words) on an individual and random basis in two blocks. Here we are looking for whether subjects sorted stimuli at faster rates when using a matched pair of combinations (i.e., Latino Immigrant is associated with Bad, and White Immigrant is associated with Good) than when using a mismatched pair of combinations (i.e., White Immigrant is associated with Bad and Latino Immigrant is associated with Good).

Figure 1 confirms this expectation. Participants in both studies displayed faster average sorting times when sorting stimuli using the matched pair of combinations than when using the mismatched pair. This convergence of evidence across both studies assuages concerns that student-based studies overestimate the preponderance

[15] The anticipated IAT effects emerge both in the raw and transformed data.

[16] This effect is large, but not atypical. Nosek et al. (2005), for instance, uncover very large IAT *D* scores for several IATs, including those involving "young people" and "old people" as contrast categories (IAT $D = 1.35$).

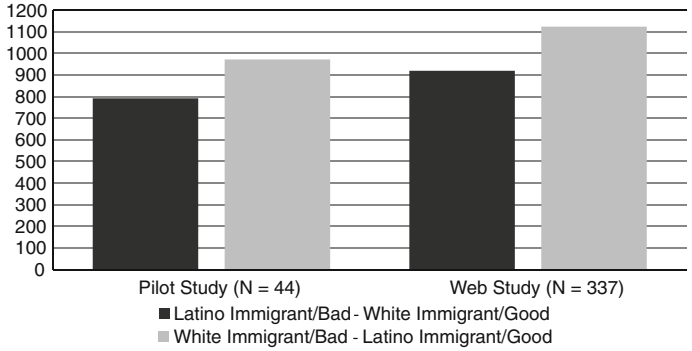


**Fig. 1** Mean response times by key block. *Note*: Subjects in each study are non-Hispanic Whites. Response times are indexed in milliseconds. Differences in response times within each study are significant at the 5% level or better

of implicit attitudes. The student-based study yielded an average 180 ms differential in response times between both key blocks, while the web-based study produced an average 204 ms differential in response times. These differences in average sorting times are statistically significant ($p < .001$), which means we can subtract the scores from each other to create individual IAT scores. Doing so yields positive IAT scores, which reflect a negative implicit attitude toward Latino immigrants (relative to White immigrants). The distributions for these IAT effects are displayed in Fig. 2 below. These results, replicated across two samples, inspire confidence in the claim that individuals possess a negative implicit attitude toward Latino immigrants.

But does this IAT effect emerge even if we change contrast categories, or is the effect dependent on the use of White immigrants as an opposing group? To explore this possibility, subjects in the student study completed a second IAT immediately following the first one. This time, however, the contrast category was Asian immigrants. And, because this second IAT immediately followed the first one, it is possible that subjects might adjust their performance to this second IAT in light of completing one already (Kim 2003; Fiedler and Bluemke 2005).

Nevertheless, analysis of this second IAT suggests that it, too, captured an implicit attitude toward Latino immigrants (relative to Asian immigrants). Although the difference in average sorting times between both blocks is reduced to 58 ms, it is nevertheless significant at the 5% level. This evidence suggests an IAT effect emerges even if we change the contrast category.

Further evidence of the validity of this measure comes from three quarters. First, a reasonable critique of the IAT is that it captures cultural knowledge about social groups rather than individual attitudes (e.g., Arkes and Tetlock 2004).[17] Thus, these effects emerge, not because individuals negatively esteem Latino immigrants, but because individuals know that society collectively holds this group in low regard. One way to address this is to examine whether Latino and Asian American subjects

[17] In other words, how do we know that the IAT is capturing negative attitude toward Latino immigrants, rather than knowledge that society holds Latino immigrants in lower regard than White immigrants and Asian immigrants? For compelling evidence against this interpretation, see Nosek and Hansen (2008).

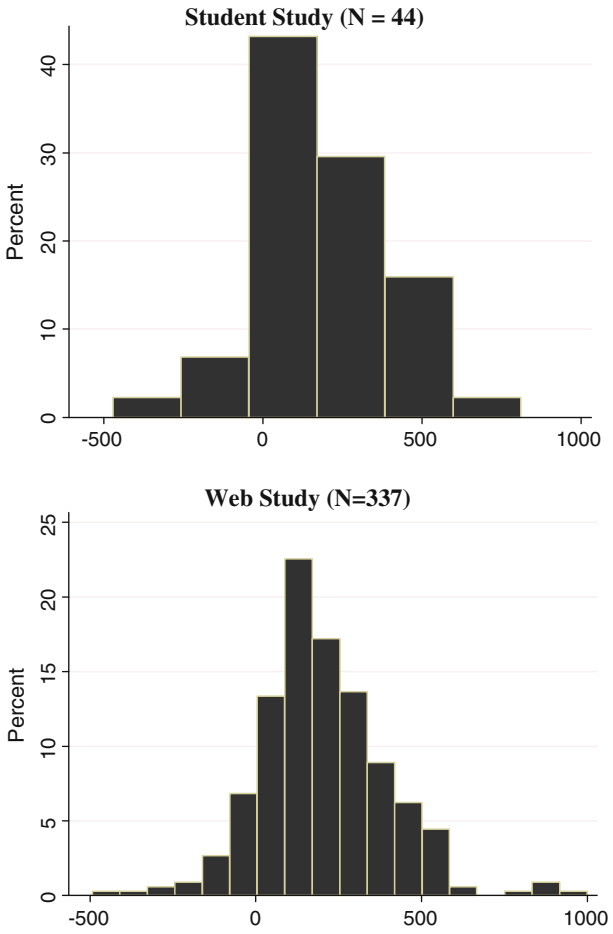


**Fig. 2** Distribution of IAT effect by study

display different scores on the IAT than their White counterparts when the former's co-ethnics serve as a contrast category. These differences in scores would be inconsistent with the view of the IAT as a measure of cultural knowledge, since they would suggest that such knowledge is not uniformly shared.

To this end, I compared the IAT effects for non-Hispanic Whites ($n = 44$) to those subjects who self-identified as Hispanic ($n = 7$) or Asian American ($n = 22$) in the student study (see footnote 8). In the Latino immigrant-White immigrant IAT, Hispanic subjects generated *negative* average IAT scores. This suggests they possess a positive implicit attitude toward Latino immigrants (relative to White immigrants), an indication that these learned automatic associations are not uniformly shared by individuals. Moreover, in the second IAT, Asian American subjects produced average scores that were also negative relative to non-Hispanic

Whites.[18] This evidence helps to increase confidence in the validity of this non-traditional instrument as a measure of individual attitude, since it appears to capture some expected variability in the level of attitude among people from different racial segments of the population.

Second, it might be argued that this measure does nothing more than capture intolerance toward immigrants, but with less error. In other words, given the indirect nature of the IAT, what we have here is a measure of intolerance toward foreigners, minus the effects of social desirability concerns that sometimes plague self-reports. If that is the case, then we should observe high and significant correlations between the IAT and the other measures of intolerance. To this end, I correlated one's IAT *D* score with one's score on the authoritarianism and ethnocentrism scales.[19] Yet the associations between one's implicit attitude and authoritarianism and ethnocentrism are striking for their modesty: $r = .14$ and .13, respectively.[20] This evidence thus reassures us that IAT scores are not empirically redundant with other key measures of intolerance toward immigrants.

Finally, despite the relative nature of the IAT, responses on this measure are theorized to be primarily associated with one's attitude toward Latino immigrants. Because the web survey contains feeling thermometer ratings of Latino and White immigrants, I assess the extent to which each attitudinal measure is related to one's IAT scores. I find that while both feeling thermometer ratings are positively and strongly related to each other ($r = .51$, $p < .01$), only the Latino immigrant rating is positively and significantly associated with IAT scores ($r = .14$, $p < .01$). The correlation between White immigrant ratings and IAT scores is negative and statistically insignificant ($r = -.07$, $p < .18$). This evidence is consistent with the claim that the IAT is capturing negative implicit attitude toward Latino immigrants (relative to White immigrants).

## Do Implicit Attitudes Influence Immigration Policy Judgments?

I now turn to whether this implicit attitude in fact influences policy judgments concerning immigration. I begin by first ascertaining the extent to which the public makes an individual distinction between policies addressing illegal immigration and those touching on legal immigration. For inasmuch as there is a nominal distinction between these types of policies, it is possible that, empirically, individuals do not

[18] In the Latino immigrant-White immigrant IAT, the difference in means between Hispanic and non-Hispanic White subjects is significant at the 1% level (one-tailed). In the Latino immigrant-Asian immigrant IAT, the difference in means between Asian and non-Hispanic White subjects is significant at the 5% level (one-tailed).

[19] Each recoded from 0 to 1.

[20] These correlations are disattenuated for measurement error. The correlation between IAT scores and authoritarianism is significant at $p < .10$. The correlation between IAT scores and ethnocentrism is significant at $p < .05$. In concurrent work (Pérez 2010), I show that a measurement model where indicators of authoritarianism, ethnocentrism, and implicit attitude measure their intended construct yields an excellent fit (CFI = .92; TLI = .93; RMSEA = .07), whereas a model where these indicators are modeled as measures of the same underlying trait produces a poor fit (CFI = .12; TLI = .28; RMSEA = .24).

**Table 1** Factor structure of illegal and legal immigration policy items

| | Illegal immigration | Legal immigration |
|---|---|---|
| Stop illegal immigrants | 1.00 | – |
| Welfare for illegal immigrants | 1.049 (.779) | – |
| Citizenship for illegal immigrants | 1.036 (.770) | – |
| Decrease legal immigrants | – | 1.00 |
| Citizenship for legal immigrants | – | 1.009 (.869) |
| More visas for legal immigrants | – | .856 (.737) |
| CFI | .985 | |
| TLI | .987 | |
| RMSEA | .097 | |
| | | Inter-factor correlation |
| | | .66 |

*Note*: Weighted least squares estimates. $N = 345$. One item loading per factor is constrained to 1.00 to identify model. Cells contain unstandardized factor loadings with standardized estimates in parentheses. Item loadings and inter-factor correlation are significant at the 5% level or better

distinguish between these two realms of immigration. Indeed, this plausible difference between legal and illegal immigration preferences is typically unexamined by researchers. More often than not, questions tapping immigration policy preferences do not distinguish between its legal and illegal components. In the *American National Election Studies*, for instance, a fairly regular question on immigration since 1992 asks whether the number of immigrants should be increased, decreased, or kept the same. Nevertheless, this question does not clarify whether the immigrants are legal or illegal, thereby limiting our ability to determine whether such a distinction matters from a measurement perspective. An instructive case here is the empirical distinction between nationalism and national identity. Though both of these constructs are highly interrelated, they are nevertheless distinct manifestations of national attachment with different implications for politics (Huddy and Khatib 2007). In a similar way, the pending analysis examines the extent to which indicators of illegal and legal immigration policy capture two sets of distinct yet interrelated preferences. I then leverage these findings to ascertain how implicit attitudes affect these policy preferences.

Table 1 provides the results of a Confirmatory Factor Analysis (CFA) which models these immigration policy items as indicators of two distinct latent factors: illegal and legal immigration preferences. The CFA was produced through Mplus©, which contains robust estimators for models containing categorical indicators. In this case, the model was estimated via weighted least squares, which is recommended when using discrete indicators like those here (Finney and DiStefano 2006). Looking at the results of the CFA in Table 1, we find that this model fits the data well: CFI = .985, TLI = .987, and RMSEA = .097. Moreover, the items load positively on their theorized factor and fall below the conventional 5% level of significance. Finally, we discover that while empirically distinct, this set of immigration policy preferences is highly interrelated, as evidenced by the inter-

**Table 2** Implicit attitude's effect on opposition to illegal and legal immigration policy

| | Illegal immigration | | Legal immigration | |
|---|---|---|---|---|
| | Unstandardized | Standardized | Unstandardized | Standardized |
| Implicit: Latino Immig. | 1.144* (.570) | .119 | 1.605* (.549) | .145 |
| Ethnocentrism | 1.905* (.354) | .354 | 2.854* (.313) | .458 |
| Authoritarianism | .291 (.236) | .074 | .323 (.225) | .071 |
| Socio-economic concerns | .621* (.327) | .126 | 1.140* (.257) | .199 |
| Conservatism | 1.215* (.227) | .363 | .391* (.198) | .101 |
| Education | −.438* (.210) | −.133 | −.366* (.197) | −.096 |
| Gender | .359* (.125) | .182 | −.207* (.114) | −.091 |
| Age | .084 (.264) | .019 | −.189 (.234) | −.037 |
| Income | .143 (.259) | .038 | −.045 (.231) | −.010 |
| Estimated $R^2$ | .462 | | .445 | |
| $N$ | 333 | | 333 | |

*Notes*: Immig. = Immigrant. Coefficients are weighted least squares estimates for the latent policy factors in Table 1. Standard errors in parentheses. All predictors are coded 0–1. * $p < .05$ (one-tailed test)

factor correlation of .66. In this way, these findings echo those obtained in the study of national attachments, where evidence shows that constructs like nationalism, national identity, and patriotism are highly related yet empirically distinct phenomena (i.e., inter-factor correlations >.60; see Huddy and Khatib 2007). What this evidence shows, then, is that individuals empirically distinguish between their preferences for illegal and legal immigration. Although the two might be related, they are not the same. Further evidence of the distinction between legal and illegal immigration policy preferences is provided by examining their determinants, an exercise I pursue below.[21]

I model each latent policy factor as a function of several covariates, including standard demographic and political controls, validated measures of intolerance toward immigrants, and individual IAT $D$ scores. Table 2 reports these results, where each predictor is coded 0–1. Generally, one's implicit attitude toward Latino immigrants significantly predicts one's opposition to illegal and legal immigration net of (1) robust measures of intolerance toward immigrants; and (2) additional, theoretically germane variables, such as conservatism and socio-economic concerns. This consistent effect across two domains reaffirms the view that IAT responses reflect individual attitudes that one *personally* endorses. For if they were not, the analysis should have uncovered null or weak effects for implicit attitudes.[22]

[21] I also modeled these items as indicators of the same underlying construct. This model yielded fit indices that suggest a poor model fit, as well as several large residuals.

[22] Let's say, for instance, that scores on the IAT reflect one's knowledge that *society* devalues Latino immigrants relative to White immigrants, but that one does not necessarily endorse this view (e.g., Arkes and Tetlock 2004; Olson and Fazio 2004; Karpinski and Hilton 2001). Here, the individual could score high on the IAT in spite of not endorsing the attitude it presumably captures. That the same individuals who score high on the IAT also support stricter immigration policies is more consistent with the view of implicit attitudes as individually endorsed attitudes, since they help predict one's personal immigration policy preferences (Nosek and Hansen 2008; Ashburn-Nardo et al. 2003).

The dependent variables in both equations are continuous latent factors. Thus, the coefficients in Table 2 suggest the unit change in a latent factor as each predictor goes from its minimum ("0") to its maximum value ("1"), holding all else constant. Because the indicators for each factor run from 1 (strongly disagree) to 7 (strongly agree), increases in the latent factor occur in one-unit increments. Thus, for the illegal immigration model, we see that going from the lowest possible score on the IAT (positive implicit attitude toward Latino immigrants) to its highest (negative implicit attitude toward Latino immigrants) generates a hearty increase of slightly more than one-unit (1.144) on the latent illegal immigration factor. This substantive effect is comparable to the one yielded by conservatism (1.215). Indeed, the only variable having a larger substantive effect than these two predictors is ethnocentrism, which results in nearly a two-unit change (1.905) in the latent factor. Other variables also increase opposition to illegal immigration, including gender and one's socio-economic concerns about immigration, both of which result in roughly half of a unit increase in the latent factor. Education, on the other hand, reduces one's opposition to undocumented immigration by a similar magnitude.

The results for opposition to legal immigration reconfirm the influence of implicit attitudes and further corroborate the distinction between legal and illegal immigration policy preferences uncovered earlier. This time, the magnitude of implicit attitude is slightly stronger, for it produces a roughly one and one half unit (1.605) change in the legal immigration latent factor. The effect is comparable to that of socio-economic concerns about immigration, whose magnitude nearly doubles in this equation. Indeed, for this latter variable, going from the lowest level of socio-economic concern to having the highest level of concern boosts one's opposition to legal immigration by slightly more than one-unit (1.140) on the latent factor.[23] Furthermore, in contrast to the results for illegal immigration, the magnitude of conservatism is reduced (.391) and the effect of gender (−.207) changes direction, thereby underlining the distinctiveness of these preferences for legal immigration.[24] Finally, we see that education still reduces opposition to legal immigration, and that ethnocentrism produces the effect with the strongest magnitude.

[23] An astute reader may recall that Brader et al. (2008) discover that threatening communications activate anxiety only when such information cues a Latino immigrant. This would suggest a positive interaction term between one's implicit attitude and level of socio-economic concern. Though my continuous measure of socio-economic concerns is not *directly* comparable to the threat manipulation in Brader et al. (2008), I nevertheless find that the anticipated interaction term is in the expected positive direction across both domains of immigration, though significant only in the legal immigration policy analysis ($\beta = .798$, $p < .05$ one-tailed). One reason for this discrepancy is the fact that the current analysis distinguishes between illegal and legal immigration policy preferences. The resulting pattern is thus consistent with the claims of Brader et al. (2008) as well as with this paper's view that illegal and legal immigration preferences are empirically distinct.

[24] The finding that gender might have differential effects depending on the domain of immigration is a novel finding worthy of further inquiry, especially since this survey is more recent than previous surveys addressing attitudes toward immigration (e.g., Citrin et al. 1997).

An alternative to assessing the substantive effects of each predictor is to examine the standardized coefficients reported in Table 2. These standardized coefficients are nothing more than transformations of the raw coefficients themselves. Accordingly, the raw coefficient for each predictor is multiplied by the sample standard deviation of the predictor. This product is then divided by the standard deviation of the dependent variable. Given this transformation, changes in the dependent variable occur in standard deviation units. Thus, a standard deviation change in the distribution of implicit attitude generates a .119 standard deviation increase in opposition to illegal immigration. Similarly, a standard deviation change in the distribution of socio-economic concerns yields a .126 standard deviation increase in opposition to illegal immigration. In slight contrast, a standard deviation change in conservatism and ethnocentrism, respectively, produce a .363 and .354 standard deviation change in opposition to illegal immigration.

Turning to the standardized results for opposition to legal immigration, we find that the influence of implicit attitude is quite similar. Here a standard deviation change in the distribution of implicit attitudes yields a .145 standard deviation change in the latent factor for legal immigration. A standard deviation change in socio-economic concerns, moreover, produces a .199 standard deviation change in opposition to immigration; whereas for conservatism, a .101 standard deviation change is produced. Finally, we see that a comparable change in ethnocentrism yields a .458 standard deviation change in opposition to legal immigration.[25]

Finally, I test hypothesis three by examining the degree to which the influence of implicit attitudes on immigration policy judgments are mediated by: (1) non-racial considerations, such as conservatism and socio-economic concerns; and (2) explicit racial intolerance, as indexed by authoritarianism and ethnocentrism. Accordingly, I start with a basic equation where the sole predictors of immigration policy preferences are basic demographic variables (i.e., gender, age, income, and education) and one's implicit attitude toward Latino immigrants. Then, I sequentially run the same equation but enter an additional covariate to see whether it mediates the effect of implicit attitude on opposition to illegal and legal immigration. The sequence of variables employed is as follows: (1) conservatism; (2) index of socio-economic concerns; (3) authoritarianism; and (4) ethnocentrism.

[25] A key consideration is whether the coefficients from both regressions are reliably different from each other. Thus, I estimated a baseline model where both latent factors were simultaneously regressed on the same battery of predictors from Tables 3 and 4. I then re-ran alternate models with single coefficients constrained to equality. This series of nested models enable one to gauge the degree to which such parameter constraints deteriorate the fit of the model, as captured by statistically significant changes in $\chi^2$ (e.g., Kline 2005; Bollen 1989). Significant changes in this statistic imply that a set of coefficients is reliably different from each other. In this analysis, these include: conservatism ($\Delta\chi^2 = 10.34$, $p < .01$); ethnocentrism ($\Delta\chi^2 = 7.83$, $p < .01$); socio-economic concerns ($\Delta\chi^2 = 2.70$, $p < .10$); and gender ($\Delta\chi^2 = 14.91$, $p < .01$). The effects of implicit attitude were not reliably different ($\Delta\chi^2 = .69$, $p < .41$), a pattern which underscores the persistent effects of this construct across varied immigration policy domains.

These analyses, reported as models 1–4 in Tables 3 and 4 below, reveal that the coefficient on implicit attitude remains positive and statistically significant, despite the addition of a potential mediator. In fact, these models suggest that inasmuch as mediation occurs, it is ethnocentrism which channels the effect of authoritarianism on opposition to illegal and legal immigration. Finally, when one simultaneously accounts for all potential mediators, the coefficient of implicit attitude remains positive and statistically significant (see final model in Tables 3 and 4). Indeed, this general pattern holds even if we substitute the measure of ethnocentrism with a revised measure that, arguably, more accurately resembles the IAT.[26] To this end, I replace the ethnocentrism scale with a measure of explicit attitude toward Latino immigrants relative to White immigrants, such that individuals' feeling thermometer ratings of White immigrants are subtracted from their feeling thermometer ratings of Latino immigrants.[27] Thus, higher scores on this measure indicate greater negative attitude toward Latino immigrants. The correlation between the IAT and this explicit analog increases modestly ($r = .22$, $p < .01$). However, even in these alternate models (see last column in Tables 3 and 4), the coefficient on implicit attitude remains robust, positive, and statistically significant. This analysis reaffirms the main pattern in this paper: that implicit attitudes are distinct from other constructs, and that these attitudes generally exert a direct influence on opposition to immigration.

## Discussion and Conclusion

This paper tackled a crucial question related to the IAT: How well can it predict relevant political judgments? My analysis reveals that implicit attitudes toward Latino immigrants shape preferences for illegal and legal immigration policy net of other measures of intolerance and net of measures capturing strictly political concerns, such as one's ideological orientation. Indeed, the magnitude of the IAT's effect on immigration policy judgments compared very favorably with that of other measures of intolerance. Furthermore, by replicating the IAT's effects across different modes of data collection, this analysis bolsters confidence in the IAT's ability to capture implicit attitudes across diverse research settings, including those

[26] Critically, these results are substantively the same if one utilizes the more traditional meditational approach employed by Baron and Kenny (1986). Here, for mediation to occur, an independent variable should influence the dependent variable as well as the proposed mediator. Furthermore, when the effects of the independent variable and mediator on the dependent variable are simultaneously controlled, the effect of the mediated variable should be reduced. I followed this approach using OLS for each proposed mediator and replicated the above results, as indicated by the statistical significance of the Sobel test ($z$) for most proposed mediators: conservatism ($z = 2.53$, $p < .01$); socio-economic concerns ($z = 1.67$, $p < .09$); authoritarianism ($z = 1.50$, $p < .13$); ethnocentrism ($z = 1.71$, $p < .09$); and explicit-Latino immigrant ($z = 3.02$, $p < .01$)(all tests two-tailed). Importantly, while most of these mediators channel some of the effect of implicit attitudes on immigration policy judgments, the *direct* effect of implicit attitudes remains positive, robust, and statistically significant, thereby corroborating the above findings.

[27] I thank an anonymous reviewer for this suggestion.

**Table 3** The direct and indirect effects of implicit attitude on opposition to illegal immigration

| | Model (1) | Model (2) | Model (3) | Model (4) | Final model | Alternate model |
|---|---|---|---|---|---|---|
| Implicit: Latino Immig. | 1.935* (.568) | 1.554* (.564) | 1.256* (.568) | 1.194* (.568) | 1.144* (.570) | 1.015* (.575) |
| Conservatism | – | 1.442* (.216) | 1.531* (.223) | 1.405* (.225) | 1.215* (.227) | 1.426* (.224) |
| Socio-economic concerns | – | – | .984* (.333) | .998* (.335) | .621* (.327) | .894* (.254) |
| Authoritarianism | – | – | – | .442* (.238) | .291 (.236) | – |
| Ethnocentrism | – | – | – | – | 1.905* (.354) | – |
| Explicit: Latino Immig. | – | – | – | – | – | 1.181* (.399) |
| Age | .194 (.257) | .178 (.263) | .090 (.268) | .080 (.264) | .084 (.264) | .070 (.267) |
| Gender (male) | .258* (.115) | .258* (.117) | .323* (.126) | .332* (.126) | .359* (.125) | .349* (.126) |
| Education | −.648* (.204) | −.595* (.209) | −.495* (.208) | −.444* (.209) | −.438* (.210) | −.432* (.209) |
| Income | .047 (.245) | −.085 (.250) | −.011 (.255) | .044 (.257) | .143 (.259) | .003 (.254) |
| Estimated $R^2$ | .125 | .326 | .355 | .364 | .462 | .385 |
| $N$ | 333 | 333 | 333 | 333 | 333 | 333 |

*Notes:* Immig. = Immigrant. Coefficients are weighted least squares estimates for the latent policy factor in Table 1. Standard errors are in parentheses. All predictors are coded 0–1. * $p < .05$ (one-tailed test)

**Table 4** The direct and indirect effects of implicit attitude on opposition to legal immigration

| | Model (1) | Model (2) | Model (3) | Model (4) | Final model | Alternate model |
|---|---|---|---|---|---|---|
| Implicit—Latino Immig. | 2.328* (.561) | 2.119* (.558) | 1.678* (.553) | 1.617* (.554) | 1.605* (.549) | 1.345* (.575) |
| Conservatism | – | .639* (.189) | .796* (.189) | .649* (.200) | .391* (.198) | .676* (.193) |
| Socio-economic concerns | – | – | 1.515* (.258) | 1.556* (.260) | 1.140* (.257) | 1.410* (.259) |
| Authoritarianism | – | – | – | .551* (.227) | .323 (.225) | – |
| Ethnocentrism | – | – | – | – | 2.854* (.313) | – |
| Explicit—Latino Immig. | – | – | – | – | – | 1.456* (.366) |
| Age | .013 (.235) | .000 (.237) | −.161 (.239) | −.170 (.239) | −.189 (.234) | .193 (.241) |
| Gender (male) | −.277* (.115) | −.301* (.116) | −.215* (.117) | −.210* (.117) | −.207* (.114) | −.181 (.118) |
| Education | −.617* (.195) | −.573* (.196) | −.415* (.196) | −.364* (.198) | −.366* (.197) | −.346* (.198) |
| Income | −.278 (.223) | −.326* (.225) | −.242 (.221) | −.171 (.229) | −.045 (.231) | −.222 (.222) |
| Estimated $R^2$ | .142 | .176 | .250 | .265 | .445 | .290 |
| $N$ | 333 | 333 | 333 | 333 | 333 | 333 |

*Notes:* Immig. = Immigrant. Coefficients are weighted least squares estimates for the latent policy factor in Table 1. Standard errors are in parentheses. All predictors are coded 0–1. * $p < .05$ (one-tailed test)

involving public opinion surveys, where researchers have less control over study participants. Finally, this analysis refines our theoretical understanding of U.S. immigration politics. The evidence here suggests that immigration policy judgments are directly colored by one's implicit view of one immigrant group: Latino immigrants. In this way, these findings provide a different perspective on the nature of opposition to immigration by documenting how one's attitude toward one group of immigrants can affect evaluations of policies that affect an entire gamut of foreigners.

While the analysis in this paper underscores the importance of non-racial considerations—such as conservatism and socio-economic concerns—in influencing support for exclusionary immigration policies, the findings also stress the substantial role that attitudes toward immigrants—whether explicit or implicit—play in these evaluations. Across the domains of illegal and legal immigration, ethnocentrism displayed a substantively powerful effect, thus reaffirming the recent findings of Kinder and Kam (2009) (see also Kam and Kinder 2007). What is remarkable, however, is that even after controlling for these ethnocentric attitudes—which are explicit in nature and broadly applied to immigrant outgroups—implicit attitudes still exerted a direct influence on one's immigration policy judgments. This suggests two things. The first is that individuals are quite comfortable reporting negative views of immigrants, and that these views strongly affect judgments of immigration policy. The second, however, is that implicit attitudes toward immigrants appear to be more group-specific in nature yet nonetheless influential in political decision-making. Together, these insights teach us that attitudes which are spontaneously activated matter as much in theoretical and empirical terms as those attitudes that are fully within one's introspection. Indeed, the findings here suggest that, notwithstanding their differences in scope, attitudes toward immigrants originate from conscious as well as subconscious wellsprings.

The findings in this paper also augur well for the IAT as a measure that captures attitudes that are relevant, robust, and representative of "real world" political judgments. This analysis thus provides an important beachhead in research involving the IAT. Future research, however, can build on the findings in this paper to further refine our understanding about this measure and its implications for social and political decision-making. For instance, to some scholars, the relative nature of the IAT is a severe limitation. I addressed this concern by replicating the anticipated IAT effect with two different contrast categories. Subsequent research can further address how much is lost or gained, in predictive terms, by relying on the IAT versus other implicit measures that are not inherently relative in nature, such as the Go\No-Go Association Task (Nosek and Banaji 2001) and the Bona Fide Pipeline (Fazio et al. 1995). Some lab-based research finds that the IAT and other measures (e.g., Bona Fide Pipeline) only sometimes capture the same construct (e.g., Fazio and Olson 2003). Such research can be fruitfully extended along the lines of this paper to determine whether, and to what extent, these measures succeed in predicting similar criterions in representative samples of individuals.

Further research should investigate the degree of synergy between the IAT and other measures of implicit attitudes. More specifically, further research is needed on the extent to which these measures capture related constructs. For instance, while using a different implicit measure, Kam (2007) recently found that implicit attitudes toward Latinos affect the evaluations of Hispanic political candidates. This raises an important question: Are implicit attitudes toward Latinos distinct from implicit attitudes toward Latino *immigrants*? If they are, it would suggest that the target of this attitude is broader than documented in this paper. If they are not, it would suggest that implicit attitudes toward related groups are finely grained, and perhaps finely attuned to different judgments. For IAT researchers, this question has relevance beyond the domain of immigration, since overlap may exist between, for example, implicit attitude toward Gays and implicit attitude toward Lesbians.

In addition, further investigation is needed to understand the possible links between implicit attitude and explicit *behavior* (rather than *preferences*). To be sure, the attitude-behavior link is one relatively less explored by scholars of implicit and explicit racial attitudes alike. But so far as one is interested in further validating measures of implicit attitude such as the IAT, documenting their relationship to actual behavior is an ideal worthy of further inquiry. One key step in reaching this objective is to address the extent to which such implicit attitudes have automatic effects—that is, to what degree do these implicit attitudes bias one's evaluations when we least expect them to. In concurrent experimental work (Pérez 2010), I take up this question and find that one's implicit attitude toward Latino immigrants shapes one's immigration policy judgments, even when directed to focus on non-Latino immigrants. At minimum, these findings, coupled with those in this paper, point strongly in the direction of further documenting the possible channels through which implicit biases shape individual behavior.

These questions underline how much work there is still left in deepening our understanding about the IAT, specifically, and implicit attitudes, more generally. But by tackling key questions about the validity of this measure, this paper provides a new point of departure for IAT research, where fuller confidence in this measure's predictive validity is rigorously documented rather than taken for granted. These efforts may not convince all skeptics. Yet by engaging some of their skepticisms, it is hoped that research on the IAT will continue to unfold in line with the respect and curiosity any serious scientific endeavor deserves.

**Acknowledgements** I thank John Aldrich, Kerry Haynie, Vince Hutchings, and Paula McClain for their guidance on an early version of this manuscript. I am also grateful for the feedback and encouragement on this project provided by Amada Armenta, John Geer, Marc Hetherington, Natalie Masuoka, and Liz Zechmeister. Finally, I am particularly indebted to Cindy Kam, who patiently read and commented on multiple drafts of this article. Any remaining errors are, of course, my responsibility alone.

## Appendix 1

Sequence and stimuli for IATs

| | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 |
|---|---|---|---|---|---|---|---|
| Task description | Concept discrimination | Attribute discrimination | Practice combined task | Combined task | Reversed concept discrimination | Practice reversed combined task | Reversed combined task |
| Classification schemes | Latino Immigrant or White Immigrant | Bad or Good | Latino Immigrant/Bad or White Immigrant/Good | Latino Immigrant/Bad or White Immigrant/Good | White Immigrant or Latino Immigrant | White Immigrant/Bad or Latino Immigrant/Good | White Immigrant/Bad or Latino Immigrant/Good |
| Sample stimuli | García<br>Johnson<br>Díaz<br>Miller | Horrible<br>Glorious<br>Agony<br>Happy | Smith<br>Terrible<br>López<br>Wonderful | Jones<br>Awful<br>Pérez<br>Joy | González<br>Evil<br>Moore<br>Honor | Ramírez<br>Nasty<br>Wilson<br>Laughter | Sánchez<br>Horrible<br>Taylor<br>Love |
| Number of trials | 20 | 20 | 20 | 40 | 20 | 20 | 40 |

*Notes:* Implicit attitude scores are based on data from Blocks 3, 4, 6, and 7. The order of the matched and mismatched tasks was randomized in the study. In other words, some subjects first performed the matched task, while others first performed the mismatched task. A trial is defined as the time from the onset of a single stimulus to the correct categorization of that item. Trials in which an error is made requires the subject to correct the error before proceeding. This set-up is the same for the Latino-Immigrant/Asian Immigrant IAT reported in this paper

Stimuli list for IATs

*Good words*: Honest, Joy, Love, Peace, Wonderful, Honor, Pleasure, Glorious, Laughter, Happy

*Bad words*: Agony, Prison, Terrible, Horrible, Nasty, Evil, Awful, Failure, Hurt, Poverty

*Latino immigrant surnames*: García, Martínez, Rodríguez, López, Hernández, González, Pérez, Sánchez, Díaz, Ramírez

*White immigrant surnames*: Smith, Johnson, Williams, Jones, Brown, Davis, Miller, Wilson, Moore, Taylor

*Asian immigrant surnames*: Nguyen, Liu, Tran, Chen, Wong, Wu, Wang, Choi, Chang, Yang

*Notes:* Good and Bad words were drawn from standard stimulus lists used by IAT researchers (Greenwald et al. 1998). Latino immigrant surnames consist of frequent Latino surnames as indicated by U.S. Census Bureau data (see Word et al. 1996). White immigrant surnames consist of frequent Anglo last names as found in U.S. Census Bureau data (http://www.census.gov/genealogy/names/). Asian immigrant surnames are comprised of U.S. Census Bureau data on frequent Asian-Pacific Islander surnames (Falkenstein and Mathew 2002). Surnames were selected from these lists through a pre-test done prior to the pilot study

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