



## Reports

## The language of implicit preferences

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## ABSTRACT

Are attitudes affected by the language in which they are expressed? In particular, do individual preferences shift to accord with the cultural values embedded in a given language? To examine these questions, two experiments tested bilingual participants, administering the same test of implicit attitudes in two languages. In both studies, participants manifested attitudes that favored social categories associated with the test language, e.g. more pro-Moroccan attitudes when tested in Arabic as compared with French (Study 1) and more pro-Spanish attitudes when tested in Spanish as compared with English (Study 2). The effects of language on elicited preference were large (mean  $d > .7$ ), providing evidence that preferences are not merely transmitted through language but also shaped by it.

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At first glance, our likes and dislikes are as familiar to us as an old shoe. We know our preferences and rely on them to guide us amongst a multitude of choices, from the mundane (Pepsi or Coke?) to the consequential (shall I marry her, or her?). Our preferences, or what social psychologists more often call *attitudes*, seem ever at our fingertips, easy to rely on in our quest for favored outcomes. To play this role, it would seem that attitudes must, first and foremost, be *stable* mental representations. Indeed, much early theorizing treated attitudes as the underlying psychological construct that ensured regularity of behavior: “attitudes...account for the consistency of conduct” (Allport, 1935, p. 836).

Despite the intuitive plausibility of this “attitudes-as-stable” account, the currents of contemporary research have turned against it. Above all, this is due to the pronounced sensitivity of attitude expression in context. Attitudes are affected by what one has thought about just prior to attitude expression (Blair, 2002), by what event preceded the attitude evaluation (Stapel & Schwarz, 1998), by who is physically present (Lowery, Hardin, & Sinclair, 2001; Sommers, 2006) and even by the weather (Schwarz & Clore, 1983). Based on such discoveries, many contemporary theorists argue that attitudes are malleable in the face of numerous contextual forces (Blair, 2002), or more radically, that attitudes are not stably represented at all, but rather are produced on-line, with this construction process influenced by whatever contextual factors are currently salient (Schwarz, 2007; Schwarz & Bohner, 2001; Smith & DeCoster, 2000). Thus, while all current models of attitudes acknowledge contextual influence, some still emphasize attitudes as stable long-term memory structures that will affect behavior in predictable ways (e.g. the MODE model: Fazio,

1990), while others emphasize their malleability to environmental factors and thus consider them constructions of the moment (Ferguson & Bargh, 2007; Schwarz, 2007).

The question of whether attitudes are stable and then contextually influenced, or are generated on-line in context, is exceedingly difficult to address because both views can support nearly identical predictions (see Schwarz, 2007, for elaboration on this point). In the research presented here, we generate a strong test by creating a condition that would favor stability, inserting a subtle manipulation, and testing whether stability or variability obtained. Specifically, we measured bilinguals' relative attitude towards *the same two attitude objects* (object stability), in *the very same person* (individual consistency), and *within minutes of each other* (temporal stability), while varying the language or medium in which the attitudes were assessed.

In two studies, we measured the national group attitudes of bilingual participants in each of two test languages. We reasoned that if attitudes are indeed stable long-term memory structures, the same speaker in the same situation should draw on them in the same way when responding to the attitude measures. On the other hand, if attitudes are constructed on-line, rather than constructed in a given language, they should be influenced by the larger cultural associations embedded in that language.

How might such influence play out? Languages, besides their first function of communication, are also repositories of rich cultural values that help to constitute national, ethnic, and individual identities (Krauss & Chiu, 1997; Ochs, 1993); they are markers of group membership, and remarkably their role in shaping preferences emerges as early as the first year of life, with infants preferring the speakers of familiar languages and familiar accents and even the foods and objects they endorse (Kinzler, Dupoux, & Spelke, 2007). In adults, language continues to be a source of both cohesion and conflict, from the Biblical shibboleth to the banning of local languages in African

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colonial schools to contemporary debates over bilingual education in the United States (Shell, 2001).

These considerations suggest that languages are closely associated with and indeed privilege certain national and linguistic groups. A concrete hint of this comes from the fact that the words referring to such groups are rarely value-neutral. For example, the word “foreigner” in English implies an otherness and exteriority, based on its Latin root implying “being outside.” The same can be said for the Japanese “gaijin” (literally “outside person”), the Spanish “extranjero,” the Arabic “ajjabi,” and so on. Thus, the very act of speaking a given language entails playing the role—if only in the moment—of a member of that linguistic community, and in so doing, could activate associated notions of privilege and ingroup preference with respect to that linguistic group. If attitudes are constructed online, these preferences will be one constituent of the construction process, shifting attitudes to favor the linguistically defined “ingroup.” Assessing “the same” attitude, in the same individual and context, but in a different language could produce strikingly discrepant results even in the absence of any further intervention.

This topic is also closely related to a resurgence of interest in how and when language influences non-linguistic cognitive processes (e.g. Boroditsky, 2001; Hunt & Agnoli, 1991). Recent research has found linguistic effects on the conceptualization of time (Boroditsky, 2001), grammatical gender (Boroditsky, Schmidt, & Phillips, 2003; Sera, Berge, & del Castillo Pintado, 1994), spatial cognition (Levinson, 2003), and some aspects of social cognition (reviewed in Hardin & Banaji, 1993). However, these examples all concern the effect of syntactic or lexical distinctions explicitly encoded in language. Here we ask whether linguistic influences extend beyond aspects of the explicit symbol system. Do the semantic interrelationships embedded in a language, in particular with respect to intergroup terms and concepts, affect the way such groups are evaluated? An affirmative answer would suggest that, at least when it comes to talking about and judging themselves, languages are far from impartial “containers” for the packaging of underlying thoughts, but rather are active players in the construction of those thoughts.

Research investigating the relationship between language and thought faces the primary challenge of establishing that any observed difference is due to language per se, rather than cultural differences, task differences, and so on (for a thorough discussion of these issues, see Boroditsky, 2001). One satisfactory means to achieve this is to target bilingual participants for study; comparisons remain between languages but are also within persons, thereby controlling for many personal and cultural differences that surely correlate with language.

A secondary challenge concerns the measurement of the attitude itself. If tasks involve verbal report, keeping the meaning of complex propositional statements consistent across languages is difficult. Even if it can be accomplished, there is always the possibility that bilinguals will seek to crosscheck the meaning of information in both languages, based on a desire to be consistent. Thus, some researchers have advocated employing tasks that do not rely on participant self-report, such as behavioral or other implicit measures in which the researcher’s aim is not readily apparent to the participant (Boroditsky, 2001).

To satisfy this challenge, we focused on automatic or implicit attitudes. By definition, implicit attitudes are difficult to control (e.g. Bargh, 1994), so assessing attitudes at this level may exclude demand characteristics such as those discussed above. While implicit procedures are susceptible to contextual forces such as prior exposure, the nature of the task, and situational demands (see Blair, 2002; Dasgupta & Asgari, 2004; Ferguson & Bargh, 2007), we know very little about whether they are sensitive to the language in which they are assessed. Lack of such work may itself be a reflection of the continuing expectation, even among experts, that language is merely a transparent window through which underlying, stable attitudes can be viewed.

## Experiment 1: Arabic vs. French language tests of Moroccan-French attitudes

We conducted our first experiment in Morocco, whose unique linguistic history afforded us several advantages in conducting this study. Most educated Moroccans are bi- or tri-lingual, speaking French, Modern Standard Arabic (the official languages of the nation), and the unique Moroccan dialect of Arabic. Many Moroccans also speak one of the many Berber or Amazigh languages indigenous to the region. Moroccans study both French and Modern Standard Arabic in school, and signs, newspapers, magazines, and radio and television programs are widely available in both languages. Furthermore, French, being the language of colonial education and administration, and Arabic, being the language of Islamic learning and Arab nationalism, have very salient and different cultural and political associations.

To harness these possibilities most effectively, we focused on national attitudes, using common French and Arabic names as the targets of evaluation. We predicted that the “invisible context” of language would lead participants towards more favorable evaluations of names associated with the test language, i.e. more positive attitudes towards Arabic names when tested in Arabic as opposed to French.

### Method

#### Participants

A total of 59 volunteers at the American Language Institute in Fes and Café Margarita in Rabat, Morocco, were paid 50 dirhems (approx. US\$5.70) for their participation. Participants were all native Moroccans, fluent in both French and Arabic. Results from 12 participants were excluded from analysis because power outages, sandstorms, and other natural events interrupted their tests. Results from eight other participants were excluded because of an excess number of too fast and/or incorrect responses (i.e., they responded to more than 10% of trials in under 300 ms or they responded to more than 20% of trials incorrectly; see Greenwald, Nosek, & Banaji, 2003 for details on exclusion criteria), leaving a total of 39 participants for the analysis. This rate of data loss is greater than what we encounter typically and can be understood as a fixed cost of research in countries where neither the resources nor the practice with computerized tests can be assumed.

#### Procedure and measures

The primary measure of interest was the IAT, a widely used measure of implicit attitudes based on the simple notion that it is easier to jointly categorize related concepts than less related or unrelated concepts. Participants perform two categorization tasks in concert, i.e. categorize names as Arabic or French and words as good or bad, but using only two response keys such that in one critical block Arabic names share a response key with positive words and in another block they share a response key with negative words. If Arabic names are generally positive in valence, participants will be faster and more accurate in the condition in which they are paired with positive words. The IAT has now been used in hundreds of studies and has demonstrated reliability and validity (Cunningham, Preacher, & Banaji, 2001; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Lane, Banaji, Nosek, & Greenwald, 2007. Nosek, Greenwald, & Banaji, 2007).

We constructed identical versions of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) in Arabic and French using seven common Moroccan names (Mohammed, Hassan, Nadia, Fatima, Aisha, Rashida, and Ahmed) and seven common French names (Jean, Pierre, Jacques, Marie, Claudette, Monique, Joëlle) as target stimuli, along with seven “good” French words (paradis, heureux, sympa, magnifique, plaisant, belle, and joyeux) and seven “bad” French words (haine, douleur, colère, tristesse, terrible, chagrin, méchant) as well as their Arabic equivalents (jannah, sa’eed, latif, furhan, mubhish, jameel,

jayid, and hiqt, huzn, hazeen, ghadub, alam, koroh, sayee'), pairing the categories "Moroccan" and "French" with the categories "good and "bad."

After consent was obtained by the experimenter (in French, regardless of the language condition of the subsequent IAT), each participant (all French-Arabic bilinguals) completed both Arabic and French versions of this IAT, and the order of the tasks (Arabic first or French first) was counterbalanced across participants. The introduction and directions for completing the IAT were presented on-screen in the language of the subsequent task. Because the hypothesized language effects could potentially emerge only in written language contexts (due to the salient difference of the scripts of each language) or only in auditory contexts (due to the salient acoustic differences of each language), we varied stimulus modality as a between subjects factor, giving half our participants an entirely written version of the IAT and half an auditory version in which stimuli were presented aurally through headphones rather than displayed on the screen. Analysis followed the revised scoring procedure outlined by Greenwald et al. (2003).

After the two IATs, participants completed a written questionnaire in French which asked them to self-report their degree of fluency and years of study of Arabic and French, as well as their attitudes towards Morocco and France, Moroccan and French people, and the Arabic and French languages. Responses to language ability questions were recorded on 7-point Likert scales and responses to preference questions were recorded on 100-point feeling thermometers.

### Design

We used a simple within-subjects design, with the language condition as our independent variable, and the IAT  $D$ -score (an effect size measure related to Cohen's  $d$ ; see Greenwald et al., 2003) as our dependent variable. Although not of theoretical interest, block order (Moroccan + Good first, Moroccan + Bad first) and language order (Arabic version first, French version first) were included as between-subject counterbalancing factors. None of the counterbalancing factors significantly interacted with the primary comparison across language, and so no additional analyses involved these variables. Moreover, the mode of stimulus presentation (written vs. auditory) did not significantly influence the results, so only pooled data combining the two modalities will be presented. In the resulting IAT  $D$ -score, positive values indicate preference for Moroccan names over French names.

### Results and discussion

Fig. 1 (left panel) shows the mean  $D$ -score as a function of language condition. When the test was administered in Arabic, participants as a group showed a significant preference for Moroccan over French (IAT  $D = 0.37$ ,  $SD = 0.40$ ,  $t(38) = 5.78$ ,  $p < 0.001$ ). But, when the test was administered in French, participants as a group showed equal preference for the category Moroccan and French (IAT  $D = 0.03$ ,  $SD = 0.42$ ,  $t(38) = 0.45$ ,  $p = 0.66$ ), though, as indicated by the sizable standard deviations, individual scores varied widely around these means. We subtracted each participant's IAT  $D$ -score on the French version of the test from his/her  $D$ -score on the Arabic version to calculate the language effect score ( $D_{\text{lang}}$ ), and a one-sample  $t$ -test revealed that this language effect was indeed significant, and of large magnitude (IAT  $D_{\text{lang}} = 0.34$ ,  $t(38) = 4.07$ ,  $p < 0.001$ ,  $d = .81$ ), indicating that participants exhibited stronger pro-Moroccan attitudes in the Arabic-language condition than the French-language condition. This effect was not driven by a small number of participants with largely discrepant scores: 32 of our 40 participants were more pro-Morocco when tested in Arabic, a proportion far exceeding change expectations, sign test  $p < .001$ . Thus, the same participants exhibited substantially different implicit attitudes when assessed in different languages.

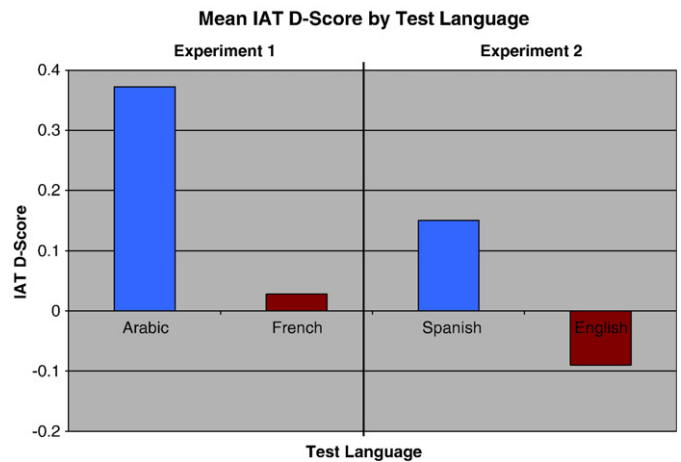


Fig. 1. IAT  $D$ -values by Test Language for Experiment 1 (left panel) and Experiment 2 (right panel). Positive values indicate pro-Moroccan preference in Experiment 1 and pro-Hispanic preference in Experiment 2.

Turning to the self-report data, two differences emerged. Participants reported greater liking for the Arabic over the French language,  $t(27) = 2.99$ ,  $p < .01$ , and for Moroccan over French people,  $t(25) = 2.14$ ,  $p < 0.05$ . There were no differences in self-reported language ability or preference for Morocco over France, both  $t_s < 1.2$ ,  $p > .22$ . To determine if any of these factors drove the language effect we observed, we computed a difference score representing each participant's relative preference for the Arabic over the French language and for Moroccan over French people, and examined the correlations between these variables and the  $D_{\text{lang}}$  effect. A positive correlation would suggest that these preferences are driving the language effect. However, neither correlation approached significance, nor did correlations between any of the other self-report responses and  $D_{\text{lang}}$ , all  $|r| < .25$ ,  $p > .23$ . This suggests that the effect of language on preference is not simply derived from a global preference for one or the other language or its speakers, or from overall language ability. Rather, the effect appears to be driven by associations residing within the language itself.

### Experiment 2: Spanish vs. English tests of Hispanic-Anglo attitudes

When an effect like the one obtained in Experiment 1 is observed, the first question that arises is replicability, given the possibility that this observed difference in attitude is a peculiarity of the Arabic-French distinction as it plays out in a particular cultural setting. We conducted a second experiment to determine if the language effect observed in the first experiment would obtain in a new pair of languages in a different geographic location, the United States, where multilingualism is rarer. We tested Spanish-English bilinguals using identical IATs in Spanish and English, employing high-frequency and easily recognizable Hispanic (Miguel, Maria, Pedro, Juan, Carlos, Isabella, and Antonia) and Anglo-American (Michael, Mary, Peter, Monica, John, Jennifer, and Emily) names as target stimuli along with "good" and "bad" attributes in each language. Thus, each participant (all self-reported Spanish-English bilinguals) took two versions of the same IAT comparing attitudes toward Hispanic and Anglo-Americans, one in Spanish and one in English, and order was counterbalanced across participants. Also, as in Experiment 1, stimulus modality (written or auditory) was varied as a between subjects factor.

### Method

#### Participants

A total of 69 volunteers completed the experiment online via a dedicated URL (Uniform Resource Locator). Participants were not

compensated for their research, but they were presented with a brief summary of the results of their tests and further information about the IAT and the goals of the experiment. Participants were primarily Hispanic-American (>85%), and were all self-reported bilinguals. They accessed the online test from IP (Internet Protocol) addresses registered in the United States. Results from 31 participants were excluded from analysis either because they did not complete both tests or because of an excess number of fast an/or incorrect responses, as outlined in Experiment 1, leaving a total of 38 participants for the analysis. Once again, the higher than normal rate of exclusion is a consequence of our voluntary and uncompensated online assessment (for discussion related to online data collection, see Nosek, Banaji, & Greenwald, 2002).

### Procedure

Upon visiting the test URL, participants were presented with a consent form in English. They were then provided with task instructions in the same language as the subsequent IAT. Apart from the fact that the test took place online, the procedure was otherwise identical to that outlined in Experiment 1.

### Design

The design is identical to that of Experiment 1. As in Experiment 1, block order (Hispanic + Good first, Hispanic + Bad first) and language order (Spanish version first, English version first) did not significantly interact with the primary comparison across language or test modality, and so will not be discussed further. Moreover, as in the first experiment, the mode of stimulus presentation did not significantly influence the results, and so only pooled data combining the two modalities will be presented here. In addition, self-reported language ability or preference for one or the other language or its speakers did not correlate with any result reported here, and so will not be discussed further. In the IAT *D*-scores reported here, positive values indicate preference for Hispanic names over Anglo names.

## Results and discussion

Fig. 1 (right panel) shows the mean *D*-score as a function of language condition. When the test was administered in Spanish, participants showed a small but significant preference for Hispanic names over Anglo names (IAT  $D = 0.15$ ,  $SD = 0.41$ ,  $t(37) = 2.34$ ,  $p < 0.05$ ). However, when the test was administered in English, participants showed no preference for either Hispanic or Anglo names, and indeed trended in the opposite direction (IAT  $D = -0.09$ ,  $SD = 0.34$ ,  $t(37) = -1.62$ ,  $p = 0.11$ ).

We subtracted each participants' IAT *D*-score on the English version of the test from his/her *D*-score on the Spanish version to calculate the language effect score ( $D_{\text{lang}}$ ), and a one-sample *t*-test revealed that this language effect was indeed significant and of large size, (IAT  $D_{\text{lang}} = 0.24$ ,  $t(37) = 3.87$ ,  $p < 0.001$ ,  $d = .63$ ), indicating that participants exhibited stronger pro-Hispanic attitudes in the Spanish-language condition than the English-language condition. Again, this effect could not be attributed to a small number of participants with highly discrepant scores: 27 of 38 participants were different in the predicted language, which exceeded chance expectations, sign test  $p = .01$ .

Turning to the self-report data, participants reported greater liking for Spanish than English,  $t(37) = 4.14$ ,  $p < .001$ , and marginally greater liking for Spanish-speaking people over English-speaking people,  $t(37) = 1.90$ ,  $p < .10$ . However, no self-report responses correlated with  $D_{\text{lang}}$ , all  $|r| < .10$ ,  $p > .65$ . Thus, as in Experiment 1, our language difference did not appear to stem from preferences for one language or its speakers.

These results confirm and support those of Experiment 1 by replicating the implicit language effect in a different population with different languages. This language effect appears to be stable across location, language, and mode of stimulus presentation. Thus, language does appear to influence implicit attitudes, shifting them in a direction of greater preference for the linguistic "ingroup" associated with that language. Indeed, summing across these two experiments suggest that the effect is far from trivial, reaching standard criteria for a large effect size (mean  $d = .72$ ).

## General discussion

Across two studies, we found evidence that the language in which a measure of implicit attitudes was administered influenced the resulting attitude that was evoked. As this paper goes to press, we see that similar findings have been reported in the context of Arab-Israeli attitudes (Danziger & Ward, 2010), giving further support for the broad pattern of results reported here. French-Arabic bilingual Moroccans showed much stronger pro-Morocco attitudes when assessed in Arabic as opposed to French, and Spanish-English bilinguals in the US showed a much stronger preference for Spanish names when assessed in Spanish as opposed to English. The large effect sizes provide strong evidence that implicit attitudes are affected by test language, with more positivity toward the social group (Moroccan versus French or Hispanic American versus Anglo-American) associated with the language of test.

This result has several theoretical and practical implications. These results support the idea that social attitudes toward the very same groups can be made to diverge within the same individual depending on the language in which the test is administered, despite only mere minutes separating each administration. In both studies, this effect was *not* the result of differential language ability, as assessed by participant self-report, nor of differential preference for one or the other language or its speakers. Rather, the data suggest that the direction of this influence stems from favorable attitudes towards the linguistic ingroup that are embedded in the language (e.g., Latinos in Spanish, Anglos in English). In this sense, speaking a language is a form of cultural and linguistic affiliation. As Wittgenstein famously asserted, "a language is a form of life" (1953); the present experiments support this claim by demonstrating that language gives life to social entities by influencing evaluations of groups.

While these results are in principle consistent with both the attitudes-as-online-constructions and the attitudes-as-stable constructs views, the former view predicts the strong influence of language on attitudes by default, whereas these results are somewhat surprising from in latter view, which would not necessarily predict the influence of the "invisible" context of language on attitudes. We might go so far as to ask, if assessing the same attitude in the same individual in an almost exactly the same setting fails to reveal the same attitude, when should we expect it to do so?

Practically speaking, the evidence presented in this study suggests that interpretation of attitude studies that use the IAT (and no doubt other measures) must take test language into account. Administering an English-language IAT to subjects in places like South Africa or India, or to American or European bilinguals, can produce results that do not hold in any universal sense. Rather, such results are contingent on the test language: the attitudes assessed in Zulu, Hindi, or Spanish may very well differ from those assessed in English. Imagine conducting a cross-linguistic, cross-national study to compare the strength of national attitudes. If participants in each country are assessed only in their native language, a direct comparison of the results might indicate a large difference (e.g. Moroccans are very pro-Morocco while French are very pro-French). However, our results suggest that the degree to which Moroccans are "pro-Morocco" depends crucially on test language, and this difference could in part, or even in whole, emerge because of the contextual effect of language we identify here.

Questions about the precise mechanism(s) through which this language effect operates must be addressed in future work. Two possible avenues of influence are the positive ingroup associations embedded in each language and the very act of interacting in a language which makes the participant a member of this linguistic ingroup for the duration of the task. We are currently initiating research to determine whether the resultant effects are driven by language *per se*, or by attendant properties of language such as accent or more general country-relevant priming. Additional important questions concern the boundary conditions of these effects. Which implicit attitudes are sensitive to changes in language, and which are stable across languages? What about stereotypes that apply to speakers of different languages? For example, will Mexican-American bilinguals implicitly endorse stereotypes about their own group more powerfully when assessed in English than Spanish? In addition, how does the individual's identification with one language or the other, or perception of the relative status of the languages, relate to the effects observed here? These questions will be investigated in future studies.

The results of the present study indicate that attitudes squarely belong amongst those contents of mind that can be influenced by language. Language, in this sense, is much more than a medium for conveying preferences; it is intimately involved in constructing and shaping their very nature.

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