

# Implicit and explicit attitudes among students\*

## Actitudes implícitas y explícitas en estudiantes

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### ABSTRACT

Mental processing and mental experience is not the same thing. The former is the operation of the mind; the latter is the subjective life that emerges from these operations. In social evaluation, implicit and explicit attitudes express this distinction. <https://implicit.harvard.edu/> was created to provide experience with the Implicit Association Test (IAT) a procedure designed to measure social knowledge that may operate outside of awareness. In this paper we examined the relationships between the Implicit Association Test, and explicit measures. One hundred and forty three Psychology college students from University of Porto completed measures for this study. Results suggest that (a) implicit preferences are pervasive, and (b) implicit and explicit attitudes are weakly related.

#### Key words author

Implicit cognition, attitudes, Implicit Association Test, Internet.

#### Key words plus

Implicit Association Test, Students-Attitudes Scale Analysis, Psychology.

### RESUMEN

Los procesos mentales y la experiencia mental no son la misma cosa. Los primeros son las operaciones de la mente, la otra es la vida subjetiva que emerge de dichas operaciones. En la evaluación social, las actitudes implícitas y explícitas expresan esta distinción. El sitio <https://implicit.harvard.edu> fue creado para ofrecer experiencia con la Prueba de Asociación Implícita (IAT por sus siglas en inglés), un procedimiento diseñado para medir el conocimiento social que puede operar por fuera de la conciencia. En este trabajo examinamos las relaciones entre el IAT y medidas explícitas. 143 estudiantes de la Universidad de Porto completaron medidas para este estudio. Los resultados muestran que: a) las preferencias implícitas son penetrantes, y b) las actitudes implícitas se relacionan débilmente.

#### Palabras clave autor

Cognición Implícita, Actitudes, Implicit Association Test, Internet

#### Palabras clave descriptores

Prueba de asociación implícita, estudiantes, actitudes, análisis a escala, psicología.

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Since La Piere's (1934) classic demonstration of attitude-behaviour inconsistency toward a Chinese couple travelling across the United States, social psychologists have invested a great deal of energy into developing techniques to assess group attitudes in ways that circumvent problems resulting from limited introspective access, experimenter effects, and social desirability concerns. Recently, researchers have employed various social cognition approaches to assess prejudice that minimize the problems involved with explicit reports of attitudes (e.g., Devine, 1989; Dovidio, Kawakami, Johnson, Johnson & Howard, 1997; Greenwald, McGhee & Schwartz, 1998).

The current work focuses on one aspect of the attitude construct: *implicit* versus *explicit*. Realizing that the human mind is more than the sum of its conscious processes, a number of theorists have proposed a conceptual distinction between evaluations that are the products of introspection, called explicit attitudes, and those that occur automatically and may exist outside of conscious awareness, called implicit attitudes (Greenwald & Banaji, 1995).

## Implicit attitudes

An explicit response is controllable, intended, made with awareness, and requires cognitive resources. Measures of implicit cognition comprise a heterogeneous set of methods and procedures that are differentiated from explicit measures by having at least one of: (1) reduced controllability, (2) lack of intention, (3) reduced awareness of the origins, meaning, or occurrence of a response, or (4) high efficiency of processing (Bargh, 1994). Treating these as a set reflects the lack of evidence for clear distinctions between them rather than a theoretical commitment that they operate the same way.

Assessing explicit attitudes can be simple, such as asking "Which do you prefer, summer or winter?" Assessing implicit attitudes is usually more indirect. In the IAT, items representing four categories (summer, winter, pleasant, unpleasant) are categorized as quickly as possible in two different

conditions. In one condition, items representing *summer* and *pleasant* are categorized with an alternate response (a key press), and items representing *winter* and *unpleasant* are categorized with alternate response. In the second condition, items representing *winter* and *pleasant* are categorized with one response, and items representing *summer* and *unpleasant* are categorized with alternate response. The comparison of response times between conditions is an indication of association strengths between the concepts and evaluations. Respondents who categorize items more quickly when summer is paired with pleasant (and winter with unpleasant) are said to have an implicit preference for summer compared to winter (try the IAT at <https://implicit.harvard.edu/>).

As there is no Portuguese data published about the IAT, we are going to present data from United States where more than 2.5 million completed IATs and self-reports between July 2000 and May 2006 (Nosek et al., 2007). In particular, we are going to present results from that study about age, race, gender, and weight IATs, as they are more related to the current study.

Across tasks (answers to 17 different topics), the strongest IAT effect magnitude was observed in the greater difficulty of pairing old people with good and young people with bad compared to pairing old people with bad and young people with good. Eighty percent of participants showed this effect, and only 6% showed the reverse. Participants also reported a preference for young people and this was only weakly positively related with the IAT effect. Implicit age biases were notable for their persistence across the age span. Adults aged 60 and older showed a pro-young effect of similar magnitude as adults in their twenties despite changes in explicit age preferences.

About 68% of participants were faster on the IAT when Black/dark-skin was paired with Bad and White/light-skin was paired with Good compared to the reverse pairings. Implicit and explicit responses were moderately positively related ( $r = .27$ ). White participants showed a strong implicit pro-White preference, but so did American Indians, Asians, and Hispanics making clear that

the result is more than an own-group preference effect.

Prominent stereotypes characterize some academic domains, especially math and science, as being gendered. On the gender-science/humanities IAT, participants showed stronger associations of science with male and humanities with female than the reverse academic-gender pairing. This effect was observed for men and women, both implicitly and explicitly.

Expressing negativity toward fat people is not socially sanctioned to the same extent as it is for other social groups. Thin people were strongly preferred to fat people both implicitly and explicitly. Sixty-nine percent of the sample implicitly preferred thin people, and 12% implicitly preferred fat people.

In sum, Nosek et al. (2007, p. 60) after having analysed this impressive mass of data concluded that “with few exceptions, across domains and demographic categories, participants showed implicit and explicit social preferences and stereotypes”. Men and women, young and old, conservative and liberal, Black, White, Asian, and Hispanic – all groups have social preferences for some groups over others, and hold stereotypic associations or beliefs. Social preferences are not possessed exclusively by a privileged few, they are a general characteristic of human social cognition”.

### Relations between implicit and explicit attitudes

It has been argued that implicit and explicit measures of attitudes tap into different knowledge and thus should be unrelated (Greenwald & Banaji, 1995; Greenwald, McGhee & Schwartz, 1998), whereas others have found relations between the two (Dovidio et al., 1997). Recent evidence of relations between explicit self-report and the IAT indicate that they measure distinct, but related constructs. Nosek and Smyth (2007) observed convergent and discriminate validity of implicit and explicit constructs in a study of seven attitudinal

topics (gay-straight, black-white, humanities-science, flowers-insects, democrats-republicans, creationism-evolution, fat people-thin people). Implicit and explicit attitudes were moderately related, and their unique components were not explained by common methodological influences on the IAT or self-report.

Nosek (2005) randomly assigned web participants to complete an evaluative IAT and parallel self-report measures for one of more than 50 topics. Nosek and Smyth (2007) reanalyzed that data with a technique called structural equation modelling to obtain estimates of the implicit-explicit (IE) relations that were less influenced by unreliability in measurement. Correlations varied widely from weakly positive (below .20; e.g., Asians-Whites) to strongly positive (above .75; e.g., pro-choice-pro life), with a median correlation of .48. Nosek and Smyth (2007) also observed that a two-attitude model fit better than a single-attitude model for every domain, including those with relatively strong correlations. These data are consistent with the conclusion that implicit and explicit attitude measures reveal distinct, but related constructs.

Implicit and explicit attitudes are predictive of behaviour (Poehlman, Uhlmann, Greenwald & Banaji, 2007). When their predictive ability diverges, implicit attitudes are better at predicting behaviors that are more automatic and less controlled such as facial expressions, physical closeness, and other non-verbal behaviors. Explicit attitudes tend to be more predictive of relatively consciously controlled behaviors such as voting and consumer choices (Poehlman et al., 2007).

### The present study

The purpose of the current study is twofold: (1) to evaluate implicit attitudes toward five topics: age, countries, race, gender and weight attitudes; and (2) to examine the relationship between implicit attitudes with explicit attitudes. Specifically, the following hypotheses were addressed:

*H1:* It is expected to find implicit bias in the evaluation of age, countries, race, gender, and weight attitudes.

*H2:* It is expected to find a weak relation between implicit and explicit attitudes.

## Method

### *Participants*

One hundred and forty three Psychology college students from University of Porto completed measures for this study. Eighty four percent of these were female ( $n=120$ ), sixteen percent were male ( $n=23$ ). Mean age of participants was 20.88 ( $SD=3.57$ ). The number of participants who declared themselves as regular attendees was 36; the number of believers non attendees was 57; the number of non-believers was 42; and eight did not report the religion. All sample self-reported their ethnicity as Caucasian.

## Measures

### *The participants completed the following implicit and explicit measures:*

*Implicit Association Test (IAT).* The IAT (Greenwald et al., 1998) assesses associations between attitude objects (e.g. cats and dogs) and evaluative attributes (e.g. good and bad). Participants categorized pictures and words - presented in the center of a computer monitor into one of four categories using the “e” key to sort stimuli into the categories appearing on the left, and the “I” key for categories appearing on the right. Participants completed this task in seven blocks following the recommendations of Nosek, Greenwald and Banaji (2005). If participants made a categorization error, a red “X” appeared below the stimulus and the trial continued until the participant made the correct response. Participants could complete five IATs: age, countries, race, gender, and weight (Neto, Sriram, Nosek, Greenwald & Banaji, 2007).

### The Ageism Scale

The original scale is composed of 29 items (Fraboni et al., 1990). The scale has been found to have adequate construct validity and high internal reliability. Relationships to other constructs measured supported the uniqueness of the scale and revealed a lack of influence from social desirability (Fraboni et al., 1990). The Portuguese adaptation of this scale is composed of 25 items (Neto, 2004). Sample items included, “Old people deserve the same rights and freedoms as do other members of our societies”; “I would prefer not to go to an open house at a senior’s club, if invited”. Response choices were presented in a 7-point Likert format (1- strongly disagree to 7- strongly agree).

### Multicultural Ideology Scale

The Multicultural Ideology Scale was developed by Berry and Kalin (1995) for the Canadian context and assesses support for having a culturally diverse society, in which ethnocultural groups maintain and share their cultures with others. The scale was adapted to the Portuguese context (Neto, 2007) and there are ten items, with five in a negative direction (hence it is a balanced scale). Of these negative five, two advocate “assimilation” ideology, one advocates “segregation”, and two claim that diversity “weakens unity”. Sample items included, “Ethnic minorities should be helped to preserve their cultural heritage in Portugal”, and “People who come to live in Portugal should change their behaviour to be more like the Portuguese”. Responses were given on a seven-point response.

### Ethnic Tolerance Scale.

The tolerance scale is an ethnocentrism scale developed by Berry and Kalin (1995) for the Canadian context and is based on the classic ethnocentrism scale. The scale was adapted to the Portuguese context (Neto, 2007) and consists of seven items that assess one’s willingness to accept individuals or groups that are culturally or racially different from oneself. There are five items phrased posi-

tively (i. e. indicating tolerance) and two items phrased negatively (i. e. indicating prejudice). Sample items included, "It is bad idea for people of different ethnies to marry one another" and "I am uncomfortable in a room full of people from different cultures acting in a different way, speaking with strong accents". Responses were given on a seven-point response. A high score is indicative of tolerance.

#### Sex-Role Ideology Scale

The Portuguese short form of this scale (Neto, 1998a) was composed of fourteen statements expressing the people's prescriptions of gender role, or their attitudes about what traits and behaviours are appropriate for men and women (Kalin & Tilby, 1978). An example of an item is "A woman should have exactly the same freedom of action as a man". The correlation between the longer scale and this short form was .89. Responses were given on a seven-point response. A high score is indicative of egalitarian sex-role ideology.

In addition, the participants completed a questionnaire including sociodemographic information (e. g., age, gender, religion), and one item as a measure of Portuguese identity "How strongly do you identify with being Portuguese", using a 7 point scale where 1 is very weak and 7 is very strong.

On all scales, except on the ageism scale, a positive score on the explicit items indicates a preference in the direction of the implicit preference, so that a positive correlation between the two always indicates that stronger explicit liking for the attitude object is associated with stronger implicit preference for that same object.

#### Procedure

The survey was administered in November 2007. The order of implicit and explicit measures was counterbalanced between subjects. All participants were unpaid volunteers. Anonymity and confidentiality were assured.

## Results

### *Implicit attitudes*

The implicit evaluations have been evaluated in a qualitative way having in account the results that are transmitted the participants after to answer to a IAT. For each IAT task seven types of reply can be supplied. For example, for the Age IAT the participant can have as resulted: "Strong automatic preference for young people compared to old people"; "Moderate automatic preference for young people compared to old people"; "Slight automatic preference for young people compared to old people"; "Little or no automatic preference between young and old people"; "Slight automatic preference for old people compared to young people"; "Moderate automatic preference for old people compared to young people"; "Strong automatic preference for old people compared to young people".

In the age IATs task, respondents classified old and young faces paired with words of positive or negative valence. Concerning *age attitudes* 25.6% of participants showed a strong preference for young people in comparison with old people, 29.1% a moderate preference for young people in comparison with old people, and 16.2% a slight preference for young people in comparison with old people. Thus, more than two thirds of the participants (70.9%) reported greater difficulty of pairing *old people* with *good* and *young people* with *bad* compared to pairing *old people* with *bad* and *young people* with *good*, and only 8.6% showed the reverse.

In the country IATs task, respondents classified United States and Portugal symbols while classifying words of positive or negative valence. Concerning *country attitudes* 24.4% of participants showed a strong preference for Portugal in comparison with USA, 40% a moderate preference for Portugal in comparison with USA, and 10% a slight preference for Portugal in comparison with USA. Thus, three quarters of the participants (74.5%) reported greater difficulty of pairing *USA* with *good* and *Portugal* with *bad* compared to pairing *USA* with *bad* and *Portugal* with *good*, and only 4.4% showed the reverse.

In the race IATs, respondents classified Black and White faces while classifying words of positive and negative valence. Concerning *race attitudes* 20.2% of participants showed a strong preference for Whites in comparison with Blacks, 29.4% a moderate preference for Whites in comparison with Blacks, and 17.4% a slight preference for Whites in comparison with Blacks. Thus, two thirds of the participants (67%) reported greater difficulty of pairing *Blacks* with *good* and *Whites* with *bad* compared to pairing *Blacks* with *bad* and *Whites* with *good*, and only 7.3% showed the reverse.

In the gender-science IAT, respondents classified science and liberal arts terms while classifying male and female terms. Concerning *Gender-science/humanities stereotypes* 29.2% of participants showed a strong preference for sciences with men and humanities with women, 20.8% a moderate preference for sciences with men and humanities with women, and 16.7% a slight preference for sciences with men and humanities with women. Thus, also two thirds of the participants (66.7%) associated *science* with *male* more than with *female*, and only 18.7% showed the reverse.

Finally, the weight IATs is a comparison of fat people relative to thin people while classifying words of positive and negative valence. Concerning *weight attitudes* 13.8% of participants showed a strong preference for thin people in comparison with fat people, 29.8% a moderate preference for thin people in comparison with fat people, and 18.1% a slight preference for thin people in comparison with fat people. Thus, sixty two percent of the sample implicitly preferred thin people, and 12% implicitly preferred fat people.

### *Relations between implicit and explicit attitudes*

In Table 1 we can observe the internal consistency and the descriptive statistics of the scales used to measure the explicit attitudes. The internal consistencies of ageism, multicultural ideology, tolerance, and gender-role ideology scales seem satisfactory. The mean scale of ageism was 2.65 (SD=0.60), below the neutral midpoint of the scale (4.0). In

the same vein the mean values of the other measures Portuguese identity (M=4.98; SD=1.53), multicultural ideology (M=5.17; SD=0.75), tolerance (M=5.87; SD=0.80), and gender-role ideology (M=6.00, SD=0.67) were above the neutral midpoint of the scales. Thus, at explicit level the sample showed positive attitudes towards old people, cultural groups, and women.

**TABLE 1**

Descriptive statistics and internal consistency for the explicit attitudes and psychological well-being measures

	Mean	SD	# of items	Cronbach's alpha
Ageism	2.65	0.60	25	0.81
Portuguese identity	4.98	1.53	1	---
Multicultural ideology	5.17	0.75	10	0.70
Tolerance	5.87	0.80	7	0.71
Gender-role ideology	6.00	0.67	14	0.73

\* Source: own work

Now we are going to present the correlations between the IATs and respective explicit measures. The answers to IAT age were not significantly associated to ageism ( $r = .03, p > 0.05$ ). The answers to IAT countries were significantly associated to Portuguese identity ( $r = .21, p < 0.05$ ). The answers to IAT race revealed to be significantly and negatively associated to multicultural ideology ( $r = -.24, p < 0.05$ ), and to tolerance ( $r = -.21, p < 0.01$ ). The answers to IAT gender-science/humanities stereotypes were not significantly correlated to gender-role ideology ( $r = .09, p > 0.05$ ). Thus our second hypothesis was partially supported.

## Discussion

In the first half of the last century, Gordon Allport (1935) concluded that attitudes had “almost

completely captured and re-fashioned the science of social psychology” (p. 839). In the ensuing decades, theorists have analyzed attitudinal structure in terms of subcomponents and attitudes continue to hold center stage in social psychology (Neto, 1998b). Thurstone (1928) anticipated these developments when he wrote, “It will be conceded at the outset that an attitude is a complex affair which cannot be wholly described by any single numerical index.” (p. 530). For years, measurement lagged behind Thurstone’s appreciation of attitude complexity as assessments deliberately simplified attitudes into singular, summary evaluations. Theoretical and methodological advances provide an opportunity to take Thurstone’s point seriously and better understand the complexity of attitudes. This paper approached one aspect of the attitude construct, implicit and explicit attitudes.

The current findings demonstrated, on average, implicit preference for young over old, for Portugal over United States of America, for White over Black, for thin over fat, and stereotypic associations linking male terms with science and female terms with liberal arts. These findings are pervasive and support our first hypothesis.

In line with previous research (Nosek et al., 2007) we expected that respondents would associate old people with bad and young people with good more strongly than the reverse pairings. More than two thirds of respondents showed an automatic preference for young over old. The question of group membership emerges: Does being old mitigate the magnitude of the anti-old attitude? Data of the current study did not provide answer to this question. However, previous research showed strong negative implicit attitudes toward old were present from the youngest to oldest respondents (Nosek & Banaji, 2002).

As expected responses were first on the countries IAT when Portugal was paired with good and United States was paired with bad compared to the reversed pairings. Three quarters of respondents revealed automatic preference for Portugal relative to United States. In the current work this was the strongest IAT effect magnitude observed.

Responses were also faster on the race IAT when Black was paired with bad and White was paired with good compared to the reversed pairings. Approximately two thirds of respondents revealed automatic preference for White relative to Black. Previous research has shown that Black participants were the only racial group that did not show an implicit pro-White preference on average (Nosek et al., 2007).

In line with previous research (Nosek et al., 2007), we expected that respondents would associate fat people with bad and thin people with good more strongly than the reverse pairings. This is what has been observed. Sixty two percent of respondents revealed automatic preference for thin people relative to fat people. We found evidence of the widespread nature of implicit anti-fat attitudes.

Sixty seven per cent of respondents showed automatic association of male with science and female with liberal arts compared with the complementary pairings. The overall relative association of male to science and female to arts is not surprising given the strong historically skewed gender distribution in science.

The current findings showed that attitudes about groups exist in unconscious form, that is, relatively outside the ability to exert conscious control. These findings reflect the propensity to consciously deny feelings and thoughts either because of social pressures or personal standards.

It is possible to compare the current findings with those presented by Nosek et al. (2007) for four IAT tasks: age, race, gender-science/humanities stereotypes, and weight. If we compare the current results obtained in a very small sample (n=143) with those of the gigantic sample of Nosek et al. (2007) (more than 2-5 millions respondents), the IAT effects magnitude show striking likeness (i. e., age: 71% vs. 80%; race: 67% vs. 68%; gender-science/humanities stereotypes 67% vs. 72%; and weight 62% vs. 69%).

Discussions of the relationship between implicit and explicit social cognition have emphasized dissociation between the two (Fazio, Jackson, Dunton & Williams, 1995; Greenwald & Banaji, 1995). The current findings showed that implicit and ex-

PLICIT attitudes were weakly related, as expected. The age IAT showed no significant association with ageism, and the IAT gender-science/humanities stereotypes were not significantly associated with sex-role ideology. However, the countries IAT scores were significantly associated with Portuguese identity, and the race IAT scores showed significant associations with multicultural ideology and tolerance scores. Thus, these results contradict partially the idea of a complete dissociation between implicit and explicit attitudes.

Differences between implicit and explicit attitudes do not suggest that one is accurate and the other is not. Rather, they suggest a form of mental dissociation between implicit and explicit feelings and thoughts. Early theory deliberately blended two reasons that implicit responses might differ from explicit ones (Greenwald & Banaji, 1995). Dissociation might occur because people are unwilling to report mental contents that they could, in principle, report if they wished to do so. Alternatively, dissociation might occur because people are unable to report some of their mental experience because they are not aware of its existence or operation. These have not been formally distinguished, in part, because it is not easy to tell whether the unobtrusive quality of the measures taps one, or a blend of both.

The interest in implicit cognition spurred a design industry for developing implicit measures. This paper considered only the IAT. Clarifying the underlying cognitive processes across measures will enrich the current understanding of the implicit and explicit measures (Strack & Deutsch, 2004). Understanding the relationship between the mind and our experience of it is one of the main avenues for psychological sciences.

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