Predicting the Vote: Implicit Attitudes as Predictors of the Future Behavior of Decided and Undecided Voters

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Two studies assessed the predictive validity of implicit political attitudes in relation to voting behavior. In Study 1, we demonstrated the validity of the adopted measure (i.e., the IAT; Greenwald, McGhee, & Schwartz, 1998) with a sample of voters who clearly sided with one of the opposing parties. In Study 2, implicit political preferences were measured in a sample of undecided voters one month before the election, and actual voting behavior was assessed immediately after the election. Results demonstrated that implicit political attitudes were good predictors of future voting behaviors. These findings support the hypothesis of the presence of embryonic attitudes even in the case of those voters who at the explicit and conscious level deny any preference for one of the two opposing candidates.

KEY WORDS: implicit processes, IAT, decision making, political choice

Political surveys have to systematically deal with the recurrent problem of undecided voters. Indeed, at each political survey a significant proportion of respondents report that they have not yet developed any clear voting preference. Even a few months before the election, rates of 20% or more undecided voters are not uncommon (Mannheimer, 2003; Perry, 1979). For instance, in the Italian context, 15 days before the general election of 2006, around 10% of the respondents were unable to report for whom they would vote if the election were to be held the following day (*La Repubblica*, 2006).[1] In addition, data indicate that most of these undecided respondents come to a decision only a few days before the vote, if not the very same day of the election, while in the polling booth (Barisone & Mannheimer, 1999).

Despite the numerical relevance of this part of the electorate, there is not yet a full understanding of the psychological processes that characterize their route from uncertainty to the expression of a vote. Empirical research in social cognition has not yet directly tackled this issue. At each election, we know the sociodemographic characteristics of undecided voters, but less is known about the decision processes that ultimately lead them to vote for one candidate or the other. In the present paper, we will test the hypothesis that, despite a verbal report of uncertainty, undecided electors will nonetheless show different implicit attitudes toward the different political candidates and, more specifically, that these spontaneous responses will be predictive of future voting behaviors. To this end, in the present paper a recently developed implicit attitude measure was used—the IAT (Greenwald et al., 1998).

A better understanding of implicit attitudes among undecided voters can be helpful in two ways. First, it may open new perspectives in the study of the decision processes of undecided voters. Using participants' spontaneous and uncontrolled reactions as a pipeline to detect attitudes toward political candidates, we hypothesize that in most cases even undecided voters will display an embryonic preference for one of the two opposing candidates (e.g., De Houwer, 2006; Fazio & Olson, 2003). In addition to the theoretical relevance of this issue, it also has practical implications for carrying out political surveys. Indeed, undecided respondents often confound the predictions derived from surveys and introduce a significant error component. According to the preelectoral surveys, in many cases the percentage of undecided voters is indeed much larger than the advantage of one party over the other. If this is the case, an indication of how these undecided voters will finally vote may substantially improve the electoral forecast. Therefore, it

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[1] According to the results of the survey published on the website of the newspaper *La Repubblica* on March 23, 2006 (i.e., 15 days before the Political Election to be held on April 9, 2006, in Italy) 10% of the electorate described themselves as still undecided, when answering the question "If you should vote tomorrow, for which party would you vote?" ("Se domani dovesse votare, quale partito vot
erebbe?"). This percentage of undecided voters was twice as large in comparison to the gap between the two major coalitions reported in the same survey (i.e., 5%), indicating that undecided voters may actually determine the final outcome of the electoral competition.

would become crucial to employ measurement tools aimed at detecting the likely future voting behaviors of those who report being undecided. This is what will be pursued in the current paper.

Hot cognition and political judgment. For a long time, research on decision making has underestimated the role of affect and spontaneous evaluations. The goal was mainly to develop normative models in which decision making was considered as a very rational process aimed at maximizing expected utility (e.g., Edwards, 1961). More recently, greater attention has been devoted to both affective responses and automatic processes. On the one hand, affective responses have been incorporated into models of political decision making (Abelson, Kinder, Peters, & Fiske, 1982; Glaser & Salovey, 1998; Marcus & MacKuen, 2001). On the other hand, it is now clear that evaluative responses are often the outcome of spontaneous and uncontrolled processes and that such responses may deeply impact upon decisions and behaviors. The basic idea is that the mere presentation of an attitude object triggers the personal attitude toward such object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Therefore, evaluative responses may arise in an automatic fashion without any need of consciously thinking or ruminating about the properties of the stimulus (Castelli, Zogmaister, Smith, & Arcuri, 2004; Fazio et al., 1986; Zajonc, 1980; see also Johnson & Hasher, 1987). Attitudes are conceived as object-evaluation associations (Fazio, 2001), and the efficiency of the automatic retrieval of the evaluation depends on the strength of the associative links (i.e., accessibility). In turn, the higher the accessibility of the evaluative responses (i.e., fast and efficient retrieval from memory), the stronger their influence will be on subsequent cognitive processes and behaviors. This hypothesis has been nicely demonstrated by Fazio and Williams (1986) in the course of the 1984 presidential election in the United States. The authors asked participants to evaluate a number of political topics and to report how much, in their opinion, Reagan and Mondale could be judged as good candidates for the presidential office. Importantly, the latencies between the end of a question and the response were collected as an index of accessibility, and they were indeed predictive of the coherence between the expressed attitude and the vote: the faster the response, the higher the coherence between the expressed attitude and the subsequent voting behavior.

This new conceptualization about the role of spontaneous and automatic responses had a large impact on the study of decision-making processes. The importance of the earliest responses to a stimulus is nicely underlined by Zajonc (1980), who notes that "we do not just see 'a house': We see a 'handsome' house, an 'ugly' house, or a 'pretentious' house (. . .). We sometimes delude ourselves that we proceed in a rational manner and weight all the pros and cons of the various alternatives. But this is probably seldom the actual case. Quite often 'I decided in favour of X' is no more than 'I like X' (. . .) We buy the cars we 'like', choose the jobs and houses we find 'attractive', and then justify these choices by various reasons" (pp. 154–155). Similarly, the so called "affect heuristic" (Slovic,

Finucane, Peter, & MacGregor, 2002) does assign a crucial function to spontane-
ous evaluative responses, which are considered the background on which all
decisions are generated.

This approach can be particularly valuable in the domain of political deci-
sion making. Indeed, it has been proposed that political leaders, symbols, or
issues are also automatically evaluated. Morris, Squires, Taber, and Lodge
(2003), using a psycho-physiological paradigm, have recently provided clear
support for this hypothesis. The authors used event-related brain potentials
within a priming paradigm. In line with the findings reported by Fazio et al.
(1986), they showed that the priming of political leaders, social groups, and
political issues facilitated the subsequent processing of evaluatively consistent
information, whereas the processing of inconsistent information was impaired.
This demonstrated that a spontaneous evaluation of primes was triggered. This
conclusion was further supported by the presence of a larger N400 component in
the electrical brain activity for incongruent pairs, which indicated that partici-
pants were spontaneously trying to deal with incongruity (Kutas & Hillyard,
1980). In general, if the emotions elicited by the new information are coherent
with previous evaluations stored in memory and automatically activated, the new
information is acquired, accepted, and stored. In contrast, new information that
contradicts current spontaneous evaluation is denied, challenged, or simply
ignored (Lodge & Taber, 2005; Morris et al., 2003).

Results from a recent series of studies by Lodge and Taber (2005; see also
Burdein, Lodge, & Taber, 2006, for a review) provided further evidence about
the hot cognition hypothesis. In addition, they demonstrated that the activation
of consistent responses and the inhibition of inconsistent responses were stron-
ger in the case of participants with more polarized attitudes and with more
sophisticated political ideas. These studies strongly suggest that there may be
important differences across individuals in spontaneous responses toward politi-
cal matters.

In the current studies, we aimed at expanding the described theoretical and
empirical work and at examining the spontaneous responses of both decided (i.e.,
individuals with polarized attitudes) and undecided voters. According to the afore-
mentioned literature, in the case of decided voters one should expect a large
consistency between voting preferences and the evaluative tone of spontaneous
responses (Burdein et al., 2006; Lodge & Taber, 2005; Morris et al., 2003). Most
importantly, we tested whether the spontaneous responses of undecided voters
were also predictive of their subsequent voting behaviors. To this end, across two
studies we will measure the implicit attitudes of both decided and undecided voters
through the Implicit Association Test (IAT; Greenwald et al., 1998) and test
whether they are predictive of the future actual vote.

The Implicit Association Test. Several implicit attitude measures are now
available in the literature (De Houwer & Eelen, 1998; Fazio et al., 1986; Green-
wald et al., 1998; Nosek & Banaji, 2001). Most of these techniques are based on

the analysis of spontaneous evaluative processes (e.g., De Houwer, 2006; Fazio & Olson, 2003). Among these instruments, the Implicit Association Test (IAT, Greenwald et al., 1998) has emerged in the last few years as the most frequently used and most carefully tested technique.

The IAT is based on a series of computer-administered categorization tasks. Participants are requested to discriminate stimuli belonging to four different categories. For instance, in a study assessing spontaneous political preferences, participants may be presented with pictures of left- and right-wing candidates together with positive and negative words. In the initial two phases of the IAT, participants are required to either categorize evaluative words on the basis of their valence (phase 1) or political candidates on the basis of their political membership (phase 2). Stimuli appear on the monitor one after the other and participants have to quickly categorize them by using two response keys on the computer keyboard. These two initial phases basically serve to learn the meaning of each response key. The third phase is a combination of the previous two phases, and participants have now to perform a double categorization task. Both evaluative words and pictures of political candidates are presented one after the other in a random order, and participants are required to categorize words as either "good" or "bad" and political candidates as either "left-wing" or "right-wing" politicians. Importantly, only two response keys have to be used. Therefore, the same response key has to be used, for example, for both positive words and left-wing politicians, whereas another response key has to be pressed to categorize both negative words and right-wing politicians. In this case, if the respondent's attitude toward left-wing politicians is positive, the task will be relatively easy since evaluatively congruent concepts have to be mapped together on the same response key. In contrast, participants with right-wing political ideas will find it more difficult to perform the task, and this will result in an increased number of errors as well as in longer response latencies. In general, when the task requires pressing the same key for two concepts that are already associated in the mental representation of the participants, the performance will be facilitated. In addition, such facilitation tends to increase as the mental association becomes stronger. In the fourth phase of the IAT, participants have to categorize again the pictures of political candidates, but the response key assignment is reversed in comparison to the second phase. The fourth phase is a learning phase in order to prepare participants for the fifth and last phase. In the fifth phase, participants have again to perform a double categorization task as in the third phase. This time, however, the association between evaluative words and political leaders is reversed with respect to the third phase. If in the third phase left-wing politicians shared the same response key with positive words, they now share the same response key with negative words, whereas the opposite holds true for right-wing politicians.

The rationale underlying the IAT measure is quite straightforward. As said, if two concepts, such as left-wing and positive, are associated in the cognitive representation of the respondent, and these two concepts share the same response

key, then the categorization task will be easier, as compared to the task in which the two concepts are mapped onto different response keys. One characteristic of the IAT, which is critical in the present study, consists in the fact that no direct question is asked to participants about their attitudes (i.e., it is an indirect measure). In fact, it has been shown that implicit attitudes may be investigated through the IAT even when participants try to conceal them (Asendorpf, Banse, & Muecke, 2002; Banse, Seise, & Zerbes, 2001; Egloff & Schmuckle, 2002; Fiedler & Bluemke, 2005; Kim, 2003; Steffens, 2004). Furthermore, because of the indirect nature of the IAT, the respondent does not need to be aware of the mental representations under investigation, because IAT performance does not rely on conscious introspection, so that it is generally dissociated from controlled and verbally reported attitudes.

Thus far, the IAT has been applied to the study of attitudes toward several different social groups and issues (e.g., Amodio & Devine, 2006; Dasgupta & Rivera, 2006; Knowles & Peng, 2005), toward the self (e.g., Bosson, Swann, & Pennebaker, 2000), or toward physical objects like consumer goods (e.g., Brunel, Tietje, & Greenwald, 2004). Most importantly for our purposes, it has also proved useful in the investigation of political attitudes. For instance, Nosek and his colleagues (Nosek, Banaji, & Greenwald, 2002) applied the IAT in a study on the 2000 American Presidential polls, demonstrating that this instrument is highly sensitive to the preference of respondents for one of two presidential candidates (see also Knutson, Wood, Spampinato, & Grafman, 2006). The positive features of the IAT concern several aspects. Beside the ease of implementation, the IAT has very good psychometric properties, and it usually displays higher levels of reliability as compared to other implicit measurement techniques (Cunningham, Preacher, & Banaji, 2001). In addition, it is sensitive to individual differences (e.g., Greenwald et al., 1998), so that IAT-measured attitudes may be used to predict individual behaviors (see Asendorpf et al., 2002; Hofmann, Gschwendner, Castelli, & Schmitt, 2008; McConnell & Leibold, 2001).

Overview of the research. In the present work, two studies are presented, aimed at assessing the predictive validity of implicit political preferences, measured through the IAT, in relation to voting behavior. The goal of the first study, conducted before the Italian General Election of 2001, was to investigate the validity of the IAT as an instrument for the prediction of the voting behavior of those who had a clear political preference at the moment of the administration of the test. Hence, voters who had already developed a clear choice were administered an IAT aimed at investigating their evaluation of the two opposing political parties, and we examined how well the IAT index predicted their actual voting behavior. In the second study, conducted prior to the Italian Local Elections of 2005, the performance on the IAT was used as predictor of the voting behavior of undecided voters, that is of those respondents who in the preelectoral interview reported that they had not yet developed a choice.

Study 1: The 2001 General Elections

Overview and main hypotheses. The aim of this first study was to investigate the validity of the IAT as an instrument for the detection of political attitudes and for the forecast of voting behaviors. In the Italian General Election of May 13, 2001, most parties were allied in two coalitions, called "Casa delle Libertà" (the right-wing political coalition) and "Ulivo" (the left-wing political coalition), headed respectively by Silvio Berlusconi and Francesco Rutelli. Since the whole electoral campaign of the two coalitions was focused on the two leaders, we investigated the relative preference for either Berlusconi or Rutelli. A sample of voters was contacted for a preelectoral interview, approximately four weeks before the election, and was administered an IAT that assessed the relative preference for the two political leaders. Participants were recontacted after the election and asked for which coalition they had voted. This allowed us to test the relationship between implicit political attitudes and subsequent voting behavior.

Method

Participants

Seventy-four participants (47 male and 27 female) aged between 18 and 65 years, and living in the urban districts of Milan, were recruited thanks to the assistance of a national survey agency that had already sampled them for participation in focus groups.

Procedure

One month before the election (Time 1), participants were asked whether they had already decided for whom to vote and, if they had already made up their mind, to report their preferred coalition. Next, they were administered the IAT, aimed at detecting the relative preference for Silvio Berlusconi (leader of the right-wing coalition) or Francesco Rutelli (leader of the left-wing coalition).

Pictures and names of the two candidates were used as stimuli in the IAT, together with six positive and six negative words (see Greenwald et al., 1998). As discussed in the introduction, the whole IAT procedure consisted of a series of five blocks of trials (see Table 1 for a detailed presentation of the sequence of phases). In the first block of trials participants were required to categorize positive and negative words. In the second phase, the task required them to categorize pictures of the two political leaders, Berlusconi and Rutelli. In the third phase, both evaluative words and pictures of the two candidates had to be categorized. The fourth phase required categorizing again the pictures of the two political leaders, but this time the meaning of the response keys was reversed with respect to the second phase. In the fifth and last phase, there was again a double categorization

Table 1. Trial Blocks Used in the IAT Task (Study 1)

Block	Type of judgment	Left key	Right key	Number of trials
1 Learning block	Attribute categorization	Negative	Positive	12
2 Learning block	Concept categorization	Rutelli	Berlusconi	18
3 Critical block	Combined categorization	Negative or Rutelli	Positive or Berlusconi	66
4 Learning block	Revised concept categorization	Berlusconi	Rutelli	18
5 Critical block	Revised combined categorization	Negative or Berlusconi	Positive or Rutelli	66

Note. The order of the critical blocks 3 and 5, and accordingly of the learning tasks 2 and 4, was counterbalanced between participants.

task, but this time the pairing between a given candidate and evaluative words was reversed in comparison to the third phase. Whether the left-wing candidate shared the response key with positive words in the third or fifth phase was counterbalanced across participants, so as to avoid eventual order effects (see Greenwald et al., 1998).

A week after the election (Time 2) all participants were contacted again and invited to report their actual voting behavior. Finally, they were fully debriefed.

Results

Preelectoral Intentions and Voting Behavior

Forty-four respondents had already made up their mind at the time of the preelectoral interview (Time 1). Specifically, 12 of them intended to vote for the right-wing coalition, 22 for the left-wing coalition, and the other 10 were scattered among minor parties that were not allied with the major coalitions. The remaining 30 respondents reported to be still undecided.

Seventy-two participants were contacted again after the election (Time 2), whereas two undecided participants could not be reached. Fifty-two participants went to the polls (19 voted for the right-wing and 33 for the left-wing coalition), and 20 did not vote. Of the 12 participants who intended to vote for the right-wing coalition, 11 behaved according to their stated intention, and one did not go to the polls. Of the 22 participants who intended to vote for the left-wing coalition, 18 voted according to their stated intention, and four did not go to the polls. Out of the 10 respondents who stated that they intended to vote for other parties, one gave the preference to the right-wing coalition, three to the left-wing coalition, and six did not vote for either coalition (they voted for other parties or chose not to vote). Out of the remaining 28 participants who described themselves as "not yet decided" in the preelectoral interview, seven voted for the right-wing coalition, 12 for the left-wing coalition, and nine did not vote or voted for parties that did not belong to one of the two major coalitions.

Implicit Political Preferences and Voting Behavior

For each respondent, we computed a Diat index of preference for the two candidates. Latencies outside the 300–3000 ms. window were excluded, and data were then treated in accordance to Greenwald's scoring algorithm (Greenwald, Nosek, & Banaji, 2003). The computation of the Diat index requires several steps that are fully described by Greenwald and his colleagues (2003). This recently proposed index basically takes into account several different aspects of the performance, namely the mean response latencies in the two critical phases, the number of errors in such phases, as well as the overall variability in the responses of the participant: All these pieces of information are summarized in an overall index of association of candidates with the evaluative dimension. In addition, this index takes into account individual differences in response time, so that the implicit attitude score is not artificially influenced by the participant's overall speed of response (i.e., larger index for slower participants). We arbitrarily calculated the Diat index in such a way that higher values indicated a relative preference for Rutelli over Berlusconi.

The validity of IAT-measured implicit attitudes was first investigated by comparing the implicit attitudes of those participants who had a well-formed explicit preference for the right-wing and for the left-wing coalition at the moment of attitude assessment, as expressed by their voting intentions. A t-test revealed that the mean values of the Diat indexes of these two groups of respondents were clearly different, $t(32) = 6.771$, $p < .001$, $\eta = .767$, indicating that in the case of well-formed attitudes, implicit attitudes were also largely divergent ($M = -.69$, $SD = .42$ for participants who intended to vote for the right-wing coalition, and $M = .78$, $SD = .68$ for those who intended to vote for the left-wing coalition, respectively).

In order to further test the coherence between the explicit and implicit attitudes of the decided voters at Time 1, we calculated a dichotomous index of implicit preference, considering as in favour of Berlusconi all participants who were more facilitated in the task that associated Berlusconi with positive concepts, and vice versa, considering in favour of Rutelli those who were more facilitated when associating Rutelli and positive concepts. This dichotomous index of implicit preference was crossed with the expressed voting intentions at Time 1 thorough a chi-square analysis. The result, $\chi^2(1) = 19.52$, $p < .001$, confirmed the high coherence between the implicit attitude component and the explicit voting intentions at Time 1.

The following analyses were restricted to those 52 participants (33 already decided and 19 not yet decided at Time 1) who actually voted for one of the two major candidates. A hierarchic logistic regression analysis on voting behavior was conducted, in which the Diat index and certainty status at Time 1 (i.e., decided vs. undecided) were entered in the first step, and their interaction in the second step. The Diat index was standardized before computing the interaction term. The

model in the first step was highly significant, $\chi^2(2) = 29.858$, $p < .001$, $R^2 = 0.437$ (Cox & Snell), $R^2 = 0.598$ (Nagelkerke). More specifically, the Diat index was a significant predictor of vote, Wald $(1) = 12.733$, $p < .001$, whereas certainty was not predictive of vote, Wald $(1) = .157$, $p = .692$. The interaction that was entered in the second step did not add any predictive power to the model, $\chi^2(1) = 1.047$, $p = .306$ for the second step, Wald $(1) = .998$, $p = .320$ for the interaction term.

The fact that the interaction term was not significantly related to the voting behavior provides a preliminary indication that the Diat index was a good predictor of the actual vote both for participants who had already developed their choice and for those undecided at Time 1. To further investigate the predictive value of the IAT for the two groups of voters—decided and undecided at Time 1—two separate logistic regression analyses were performed. Both in the case of decided and undecided participants the Diat index was regressed onto actual voting behavior. A highly significant effect emerged in the case of decided voters, $\chi^2(1) = 25.678$, $p < .001$, and the ROC analysis (Green & Swets, 1974) yielded an AUC = .95, indicating that the Diat index could almost perfectly predict voting behavior at the individual level, among the decided voters. As for undecided voters, the logistic regression analysis was again significant, $\chi^2(1) = 5.225$, $p < .05$, and the ROC analysis yielded an AUC = .79.

Discussion

These results indicate that the implicit attitudes of participants, who, at the moment of the preelectoral interview, had already made up their mind, were almost perfectly related to their subsequent voting behavior, supporting the validity of the IAT as an instrument for the prediction of voting behaviors. Even more interestingly, a clear relation emerged between the implicit attitudes of undecided voters and their subsequent voting behavior.

The latter result is particularly interesting because it provides support for the hypothesis of the presence of embryonic attitudes in the cognitive maps of those voters who at the explicit level do not report any preference for one of the candidates. It was shown here that these nascent attitudes may be detected through an implicit measurement technique, namely the IAT. Indeed, spontaneous responses were highly related to actual voting behaviors approximately four weeks later. However, a limit of the present analysis consists in the small number of undecided respondents who took part in the study. Therefore, during the subsequent Italian Local Elections, which took place in April 2005, we conducted a second study, specifically focusing on undecided voters.

Study 2: The 2005 Local Elections

The aim of study 2 was to examine the implicit attitudes of those voters who described themselves as still undecided in the preelectoral interview and to further

investigate the validity of the IAT as a means of predicting the electoral choice of those voters. Hence, only voters who described themselves as "not yet decided" were eligible for this second study, in which we assessed the relative implicit preference for one of the two leading candidates (one month before the election) and actual voting behavior in the 2005 Italian local election in a region of the North of Italy (i.e., Veneto).

Method

Participants

Several hundred people were contacted and asked whether they had already made their voting decision, that is whether they could identify a preferred candidate if the election were to be held the following day. When these people were approached in different cities in Veneto, they were informed that we did not want to know for whom they intended to vote, but only whether they had already made up their decision, and that only those who described themselves as "undecided" were eligible for the present study. In this way, we could be confident that our sample comprised only truly uncertain voters, because those who usually describe themselves as "undecided" in order to conceal their political position in this case could have easily responded "yes" without needing to disclose their choice. No credits, gifts, or money were given to the participants.

Fifty-eight undecided voters were recruited approximately one month before the Local Election (Time 1) that was held in Veneto (Italy) in April 2005. The participants, ages 22 to 65 years, lived in different urban districts of the Veneto region.

Procedure

At Time 1, participants who self-reported being undecided for the coming election performed an IAT to assess their implicit preference for either Galan (the right-wing candidate) or Carraro (the left-wing candidate). They were then given a questionnaire and a prestamped envelope and asked to send it back after the election with the indication of their actual vote. In order to guarantee complete anonymity, no sociodemographic data were collected, and anonymity was further guaranteed by using numerical codes rather than names.

As in the previous study, to represent the two candidates in the IAT, six different pictures of the right-wing-coalition candidate, Giancarlo Galan, and six pictures of the left-wing-coalition candidate, Massimo Carraro, were used. Six positively valenced and six negatively valenced words (e.g., joy, love, ugly, death) were used to represent the two poles of the attitudinal dimension. The structure of the IAT was similar to the first study, and the order of administration of the two critical double-categorization blocks was counterbalanced between participants to

Table 2. Trial Blocks Used in the IAT Task (Study 2)

Block	Type of judgment	Left key	Right key	Number of trials
1 Learning block	Concept categorization	Negative	Positive	12
2 Learning block	Attribute categorization	Galan	Carraro	18
3 Critical block	Combined categorization	Galan or Negative	Carraro or Positive	66
4 Learning block	Revised concept categorization	Carraro	Galan	18
5 Critical block	Revised combined categorization	Carraro or Negative	Galan or Positive	66

Note. The order of the critical blocks 3 and 5, and accordingly of the learning tasks 2 and 4, was counterbalanced between participants.

avoid order effects. A detailed presentation of the various phases of IAT employed in the present study is provided in Table 2.

At the beginning of the session, each participant was given a different numerical code. This code was used to identify their performance on the IAT. Participants completed the IAT and were subsequently given a short questionnaire on their voting behavior, which they were asked to complete and send to the researchers after the Election Day (Time 2). The numerical code assigned to the participant was printed on the questionnaire, and this enabled us to match the IAT performance with the questionnaire.

Results

Fifty-one participants (88%) returned the questionnaire. Thirteen of these voted for Galan; 24 voted for Carraro; eight did not go to the polls; and six voted for other candidates. Data from the IAT were treated as in Study 1, and higher values on the Diat index indicated a preference for Carraro over Galan.

A logistic regression analysis on the data from those participants who either voted for Carraro or for Galan revealed that individual differences in the IAT index were significantly associated with voting behavior, $\chi^2(1) = 6.329$, $p < .02$. The ROC analysis yielded an AUC = .734. Therefore, the goodness-of-fit of the model and the ROC analysis support the predictive validity of implicit attitudes on future voting behaviors, even among undecided voters.

Further analyses were computed to investigate whether the Diat index discriminated the implicit attitudes of those voters who chose one of the two major candidates from those voters who ended up giving their vote to other candidates or not voting. Because of the low number of those voting for other candidates and those not voting at all, and because of the similarity of their mean Diat indexes, we combined these two categories. Subsequently, an analysis of variance was carried out on the Diat index entering the voting choice (Galan, Carraro, neither of them) as a between-participants factor. The results (see Figure 1) indicated that the Diat
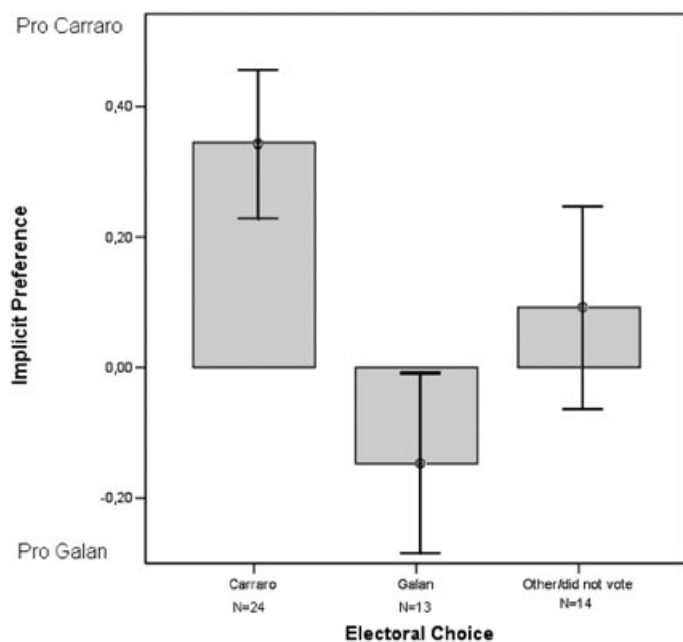
Figure 1. Mean Diat index depending on the voting choice for Galan, Carraro, or neither of them (Study 2). More positive values indicate a higher preference for the left-wing candidate (Carraro), more negative values indicate a higher preference for the right-wing candidate (Galan). Bars indicate standard error of the means.

indexes were significantly different, $F(2,48) = 3.136$, $p < .05$, $\eta^2_p = .116$. Those who later voted for Galan showed negative scores on the IAT ($M = -.14$, $SD = .54$); those who voted for Carraro had positive scores ($M = .38$, $SD = .61$); and those who voted for neither of them fell exactly in between ($M = .09$, $SD = .70$). A linear trend analysis confirmed this finding [contrast: .369; $F(1,48) = 6.246$, $p < .02$].

Discussion

Results from the present study confirmed, with a larger sample of participants, the high predictive value of the automatic evaluative reactions of undecided voters. In accordance with what we observed in the first study, these spontaneous preferences were congruent with the political choices that were expressed during the vote, approximately four weeks later. The predictive power of the index yielded by the implicit measurement technique was well above chance, and the signal detection analysis furthermore indicated that the IAT had a good level of sensitivity to differences in implicit attitudes, and these differences were related to the future voting behavior.

General Discussion

The main goal of the present research was to assess the latent preferences of people who defined themselves as undecided prior to a political vote. We tested the hypothesis that, despite a verbal report of uncertainty, undecided voters would nonetheless express different spontaneous responses toward the two candidates and, more specifically, that these spontaneous responses would be predictive of the future voting behaviors. To this end, we employed the IAT to detect the implicit component of the not-yet-structured decision process. The IAT is considered as a reliable measure of implicit associations, and it proved its predictive validity in several domains like consumer (Brunel et al., 2004) or nonverbal behaviors (McConnell & Leibold, 2001). It is here demonstrated that the IAT may also enable to predict actual voting behaviors, even in the case of voters who report about being undecided. Placing an emphasis on implicit attitudes is consistent with the hypothesis that a large number of social evaluations are the result of unintentional and automatic processes that ultimately have a large impact on behaviors. In particular, it is here demonstrated in two different studies that the implicit attitudes about the two competing political candidates were significant predictors of the electoral choice both in the case of decided and undecided voters.

Hot cognition and automatic affect toward political candidates. The present results provide important indications on the significance of automatic preferences for voting behaviors. As we discussed in the introductory section, for a long time the role played by spontaneous evaluations was only marginally considered in research on decision making and voting choices, in what may be called the "cold" cognition approach to political thinking (see Lau, 2003; Redlawsk, 2004). Right now, it has become clear that emotions and affect do play a significant role in electoral choices and that they should be integrated into a "hot" cognition approach in which spontaneous reactions toward political entities represent a key feature. Indeed, the evidence supporting the relevance of automatic evaluations for political choices is accumulating (e.g., Burdein et al., 2006; Lodge & Taber, 2005; McGraw, 2000; Morris et al., 2003; Redlawsk, 2004). According to the "hot cognition" view (see Lodge & Taber, 2005), sociopolitical concepts are evaluatively laden. Once a sociopolitical concept has been evaluated, this evaluation is automatically activated within a few milliseconds after the mere exposure to the concept. Therefore, the evaluation is expected to be automatically activated any time one is presented with the candidate or a symbolic representation (Lodge & Taber, 2005).

Lodge and Taber (2005) found support for the hot cognition hypothesis with an affective priming paradigm (Fazio et al., 1986). Results from the present studies further support the hot cognition hypothesis using a different implicit measurement technique, namely the IAT. Moreover, the present results expand previous findings in an important way. Indeed, the relevant question addressed here related to the role played by implicit political attitudes in the case of undecided voters. We

hypothesized that spontaneous evaluations could also be shown by undecided voters, even though such spontaneous evaluations were likely to be less strong in comparison to those of voters who already hold well-developed attitude structures. Importantly, spontaneous evaluations proved to be predictive of future voting behaviors. In the following paragraph we will examine one potential route leading from implicit attitudes to actual vote.

How can implicit and unconscious preferences influence explicit voting behavior? There is probably more than one way to bridge the gap between automatic preferences and overt expression of the vote. One of these paths is related to the role played by automatic cognition in directing selective attention and perception. Beginning from the seminal work of Lazarsfeld and his colleagues (Lazarsfeld, Berelson, & Gaudet, 1944), research showed that voters are not passive recipients of information, but they are actively involved in information selection (e.g., Donsbach, 1989; Redlawsk, 2002; Taber & Lodge, 2006), memory (e.g., Meffert, Chung, Joiner, Waks, & Garst, 2006; Redlawsk, 2001), and in all stages of information processing, including interpretation and counterarguing (e.g., Ditto & Lopez, 1992; Meffert et al., 2006; Taber & Lodge, 2006). Hence, on the basis of previous evaluations, the voter decides which information to attend and to process. Then the selected information is transformed and remembered according to the voter's motivations and preexisting preferences. As a result of this biased information processing, attitude polarization arises (see Meffert et al., 2006; Taber & Lodge, 2006). This implies that even embryonic spontaneous evaluations, as those evidenced by undecided voters, are expected to exert an immediate and direct effect on subsequent processing, so that one's prior implicit preferences powerfully constrain the selection, encoding, and evaluation of new information (Lodge & Taber, 2005).

The pervasiveness of these automatic processes on incoming information is directly related to the strength of the attitude (e.g., Lodge & Taber, 2005). In particular, Meffert et al. (2006) and Taber and Lodge (2006) hypothesized and found that the strength of the initial attitude influenced the impact on selective cognitive processes: The polarization effect emerged most strongly among those participants who had strong initial candidate preferences, whereas those with weak and undifferentiated attitudes showed less bias in processing political arguments. Therefore, the impact of previous attitudes is expected to be stronger in the case of citizens who already hold well-developed and structured attitudes. Nonetheless, even where spontaneous preferences are initially weak, they may still fuel a series of processes that lead to selectively accumulate evidence in favour of one of the two candidates and ultimately to vote for this candidate.

In sum, automatic reactions toward political candidates, like the embryonic attitudes we detected among undecided voters, may guide the gathering and interpretation of information in the weeks before the election and thus determine the direction in which the electoral choice is shaped. Future research will definitely have to focus on this general hypothesis that posits a link between spontaneous

affective responses and selective information processing. In some cases, as for decided voters, the perceiver will eventually end up with more polarized attitudes, but, in the case of undecided voters, knowledge about their spontaneous affective responses may provide insight in the process of attitude formation from initial indecision to the conscious expression of an electoral choice.

Automatic evaluations and the forecast of electoral results. In addition to their theoretical implications, the current results are also particularly relevant for those engaged in the forecast of electoral results. Undecided voters often represent a relevant proportion of the electorate, and in many cases make the difference in the verdict of the polls. The Italian General Election of April 2006 is a perfect example of this situation. According to the surveys, even three days before the Election Day, a percentage of about 3–5% of the electorate declared themselves as still uncertain about whether they would vote for the left-wing or the right-wing coalition, and those who were undecided could therefore determine the outcome. Especially in circumstances like these, an indication about the political preferences of those undecided people could be extremely valuable for people interested in voting forecasts. When the electoral choice is made very late, sometimes even inside the polling booth, implicit measures could improve our predictions. Of course, in the present paper we focused on the underlying processes rather than on the prediction of the electoral outcome, and to this end we employed a numerically restricted sample which was not representative of the overall population. Polling agencies, however, may combine probabilistic sampling with the simultaneous collection of both implicit and explicit political attitudes measures. In this way, implicit attitude measures may represent additional predictors that are expected to increase the ability to foresee future voting behaviors and electoral outcomes.

Both automatic and controlled evaluative reactions are hypothesized to jointly contribute to the development of a voting choice. It has to be stressed that, in the present research, we did not test explicit attitudes in depth. We merely asked participants about their voting intentions at Time 1, that is for whom they would have voted if the elections were to be held the following day. Therefore, we collected only broad information about the fact of being decided or undecided and in the former case for what candidate participants intended to vote. This research strategy did not enable us to directly test whether there was any dissociation between implicit and explicit attitudes. Nevertheless, more sensitive explicit measures could also be used in conjunction with the IAT, like semantic differentials aimed at assessing the attitude toward each of the candidates or the forced requirement to indicate the preferred candidate. The collection of such data would allow determination of the correlation between automatic and controlled components of the attitudes. Yet, the in-depth investigation of explicit attitudes among undecided voters might lead them to express a given preference at Time 1 and then to later report a consistent voting behavior. Therefore, the forced verbal expression of a preference may artificially increase the consistency between explicit attitudes at Time 1 and the vote at Time 2. Thus far, in the present research we opted for less

intrusive explicit attitude measurements, but planned future research will also include a more detailed investigation of undecided voters' explicit attitudes.

A final and related concern has to do with the unique role of implicit measures—like the IAT—in the attempt to grasp the future voting behaviors of undecided voters. We are not claiming that implicit attitude measures represent the only way to improve our predictive ability, and subtle questionnaire measures may well provide additional useful information. The goal for the future is therefore to combine implicit attitude measures and paper and pencil measures that tap political preferences in an indirect way with the final objective to better understand the psychological processes that characterize undecided voters. The present work moves in this direction and suggests that the undecided voter is probably a less mysterious and inscrutable object than it has been considered so far.

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REFERENCES

Abelson, R. P., Kinder, D. R., Peters, M. D., & Fiske, S. (1982). Affective and semantic components in political person perception. *Journal of Personality and Social Psychology, 42*, 619–630.

Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: Evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology, 91*, 652–661.

Asendorpf, J. B., Banse, R., & Muecke, D. (2002). Double dissociation between implicit and explicit personality self-concept: The case of shy behavior. *Journal of Personality and Social Psychology, 83*, 380–393.

Banse, R., Seise, J., & Zerbes, N. (2001). Implicit attitudes toward homosexuality: Reliability, validity, and controllability of the IAT. *Zeitschrift für Experimentelle Psychologie, 48*, 145–160.

Barisone, M., & Mannheimer, R. (1999). *I sondaggi*. Bologna: Il Mulino.

Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology, 79*, 631–643.

Brunel, F. F., Tietje, B. C., & Greenwald, A. G. (2004). Is the Implicit Association Test a valid and valuable measure of implicit consumer social cognition? *Journal of Consumer Psychology, 14*, 385–404.

Burdein, I., Lodge, M., & Taber, C. (2006). Experiments on the automaticity of political beliefs and attitudes. *Political Psychology, 27*, 3, 359–371.

Castelli, L., Zogmaister, C., Smith, E., & Arcuri, L. (2004). On the automatic evaluation of social exemplars. *Journal of Personality and Social Psychology, 86*, 373–387.

Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12*, 163–170.

Dasgupta, N., & Rivera, L. M. (2006). From automatic antigay prejudice to behavior: The moderating role of conscious beliefs about gender and behavioral control. *Journal of Personality and Social Psychology, 91*, 268–280.

De Houwer, J. (2006). What are implicit measures and why are we using them? In R. W. Wiers & A. W. Stacy (Eds.), *The handbook of implicit cognition and addiction* (pp. 11–28). Thousand Oaks, CA: Sage Publishers.

De Houwer, J., & Eelen, P. (1998). An affective variant of the Simon paradigm. *Cognition and Emotion, 12*, 45–61.

Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and non preferred conclusions. *Journal of Personality and Social Psychology, 63*, 568–584.

Donsbach, W. (1989). Exposure to political content in newspapers: The impact of cognitive dissonance on readers' selectivity. *European Journal of Communication, 6*, 155–186.

Edwards, W. (1961). Behavioral decision theory. *Annual Review of Psychology, 12*, 473–498.

Egloff, B., & Schmuckle, S. C. (2002). Predictive validity of an Implicit Association Test for assessing anxiety. *Journal of Personality and Social Psychology, 83*, 1441–1455.

Fazio, R. H. (2001). On the automatic activation of associated evaluations: An overview. *Cognition and Emotion, 15*, 115–141.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and uses. *Annual Review of Psychology, 54*, 297–327.

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.

Fazio, R., & Williams, C. (1986). Attitude accessibility as moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 54*, 505–514.

Fiedler, K., & Bluemke, M. (2005). Faking the IAT: Aided and unaided response control on the implicit association tests. *Basic and Applied Social Psychology, 27*, 307–316.

Glaser, J., & Salovey, P. (1998). Affect in electoral politics. *Personality and Social Psychology Review, 2*, 156–172.

Green, D. M., & Swets, J. (1974). *Signal detection theory and psychophysics*. New York: Wiley.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*, 187–216.

Hofmann, W., Gschwendner, T., Castelli, L., & Schmitt, M. (2008). Implicit and explicit attitudes and interracial interaction behavior The moderating role of situationally available control resources. *Group Processes and Intergroup Relations, 11*, 69–87.

Johnson, M. K., & Hasher, L. (1987). Human learning and memory. *Annual Review of Psychology, 38*, 631–668.

Kim, D. Y. (2003). Voluntary controllability of the Implicit Association Test (IAT). *Social Psychology Quarterly, 66*, 83–96.

Knowles, E. D., & Peng, K. (2005) White selves: Conceptualizing and measuring a dominant-group identity. *Journal of Personality and Social Psychology, 89*, 223–241.

Knutson, K. M., Wood, J. N., Spampinato, M. V., & Grafman, J. (2006). Politics on the brain: An fMRI investigation. *Social Neuroscience, 1*, 25–40.

Kutas, M., & Hillyard, S. A. (1980) Reading senseless sentences: Brain potentials reflect semantic incongruity. *Science, 207*, 203–205.

La Repubblica (2006). Le intenzioni di voto ai Partiti Il trend di marzo. Retrieved June 7, 2006, from http://www.repubblica.it/speciale/2006/elezioni_sondaggi/index.html

Lau, R. R. (2003). Models of decision-making. In D. O. Sears, L. Huddy, & R. L. Jervis (Eds.), *Oxford handbook of political psychology* (pp. 19–59). New York: Oxford University Press.

Lazarsfeld, P. F., Berelson, B., & Gaudet, H. (1944). *The people's choice*. New York: Duell, Sloan & Pearce.

Lodge, M., & Taber, C. S. (2005). The automaticity of affect for political leaders, groups, and issues: An experimental test of the hot cognition hypothesis. *Political Psychology, 26*, 455–481.

Mannheimer, R. (2003). *Gli italiani e la politica. 2002–2003 consensi e delusioni*. Milano: Bompiani.

Marcus, G. E., & MacKuen, M. B. (2001). Emotions and politics: The dynamic functions of emotionality. In J. H. Kuklinski (Ed.), *Citizens and politics: Perspectives from political psychology* (pp. 41–67). New York: Cambridge University Press.

McConnell, A. R., & Leibold, J. M. (2001). Relations among the Implicit Association Test, Discriminatory behaviour and explicit measures of racial attitudes. *Journal of Experimental Social Psychology, 37*, 435–442.

McGraw, K. M. (2000). Contributions of the cognitive approach to political psychology. *Political Psychology, 21*, 805–832.

Meffert, M. F., Chung, S., Joiner, A. J., Waks, L., & Garst, J. (2006). The effects of negativity and motivated information processing during a political campaign. *Journal of Communication, 56*, 27–51.

Morris, J. P., Squires, N. K., Taber, C. S., & Lodge, M. (2003). Activation of political attitudes: A psychophysiological examination of the Hot Cognition Hypothesis. *Political Psychology, 24*, 727–745.

Nosek, B., & Banaji, M. R. (2001). The go/no-go association task. *Social Cognition, 19*, 625–664.

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration website. *Group Dynamics, 6*, 101–115.

Perry, P. (1979). Problems in election survey methodology. *Public Opinion Quarterly, 43*, 312–325.

Redlawsk, D. P. (2001). You must remember this: A test of the on-line model of voting. *Journal of Politics, 63*, 29–58.

Redlawsk, D. P. (2002). Hot cognition or cool consideration? Testing the effects of motivated reasoning on political decision making. *The Journal of Politics, 64*, 1021–1044.

Redlawsk, D. P. (2004). What voters do: Information search during election campaigns. *Political Psychology, 25*, 595–610.

Slovic, P., Finucane, M., Peter, E., & MacGregor, D. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Intuitive judgment: Heuristics and biases* (pp. 397–420). New York: Cambridge University Press.

Steffens, M. C. (2004). Is the Implicit Association Test immune to faking? *Experimental Psychology, 51*(3), 165–179.

Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science, 50*, 3, 755–69.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*, 151–175.