Implicit Measures of Marketing Constructs
With the Implicit Association Test

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School of Management
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Frédéric F. Brunel
School of Management, Boston University
595 Commonwealth Avenue
Boston, MA 02215
(617) 353-4069 (office)
(617) 353-4098 (fax)
brunel@bu.edu

Brian C. Tietje
College of Business, Cal Poly State University
San Luis Obispo, CA 93407
(805) 756-1757 (office)
(805) 756-5057 (fax)
btietje@calpoly.edu

Cathleen M. Collins
School of Management, Boston University
595 Commonwealth Avenue
Boston, MA 02215
(617) 353-7057 (office)
(617) 353-4098 (fax)
cmcollin@bu.edu

Anthony G. Greenwald
Department of Psychology, University of Washington
Box 351525
Seattle WA 98195-1525
(206) 543-7227 (office)
(206) 685-3157 (fax)
agg@u.washington.edu
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Abstract

This paper discusses the need for implicit measurements in marketing research, the shortcomings of current measures, and uses the Implicit Association Test (IAT) in a marketing context, specifically in the measurement of brand attitudes, brand relationships, and attitude toward the ad (Aad). First, Study 1 validates the IAT in a general marketing context and demonstrates significant correlations between explicit measures of brand attitudes, ownership, usage behavior, and IAT-based measures of implicit brand attitudes and brand relationship strength. In Study 2, IAT measures of implicit attitudes towards sportswear advertisements (implicit Aad) portraying African-American (black) and European-American (white) athlete-spokespersons revealed a more positive attitude towards ads with white spokespeople versus ads with black spokespeople, but explicit measures of Aad did not, confirming that when social desirability might be at play, implicit and explicit measures do not correlate. Together, these studies demonstrate that the IAT enhances understanding of consumer responses to marketing stimuli, particularly when consumers are either unable or unwilling to identify the sources of influence on their behaviors. Implications of this research are both theoretical and practical.
A substantial portion of consumer behavior is shaped by cognitive processes that are outside the range of conscious awareness (Alba and Hutchinson 2000; Bargh and Chartrand 1999; Seger 1994; Underwood and Bright 1996). Although significant theoretical advances have been made in the investigation of unconscious processes, methodological and validity limitations have constrained this progress. For instance, explicit self-report measures may not be accurate indicators since people may be unable or unwilling to share their attitudes with a researcher (Dovidio and Fazio 1992; Gaertner and Dovidio 1986; Haire 1950). Also, because implicit attitudes often differ from explicit attitudes, explicit measures are typically unsuitable. Moreover, implicit or indirect measures (e.g., projective measures, semantic priming) pose other obstacles including interpretation difficulty, possible researcher bias, and problems identifying individual differences. Since “valid measurement is the sine qua non of science” (Peter 1979, p. 6), a lack of satisfactory measurement tools that can directly assess unconscious cognition leads marketing and consumer researchers to rely on more valid explicit measures for empirical testing. For example, research concerning incidental ad exposure (Janiszewski 1988; Janiszewski 1990; Janiszewski 1993; Shapiro 1999; Shapiro and MacInnis 1992; Shapiro, MacInnis and Heckler 1997) presumes that preferences are “formed independently of conscious processing” (Janiszewski 1988, p. 200), but at the same time must rely on self-report measures of attitude toward the ad (Aad), recognition, and familiarity. As a result, one would expect that the availability of valid and implicit measures of these variables would provide new insights for research in this area, and would allow the testing of new hypotheses.

By definition, implicit attitudes have an influence on behavior that is unknown to the actor (Greenwald and Banaji 1995). Direct measures that rely on self-report are unable to capture implicit processes, and therefore indirect measures have become “theoretically essential”
(Greenwald and Banaji 1995, p. 5). To that end, the Implicit Association Test (or IAT, Greenwald, McGhee and Schwartz 1998) provides a metric for investigating the influential role of unconscious processes in social behaviors such as marketing and consumer behaviors. The IAT has proven to be an effective tool to explore implicit constructs in general social psychology settings (Greenwald et al. 2002) and, recently with respect to food preferences (Maison, Greenwald and Bruin 2001). This paper further extends the application of the IAT in a marketing context, specifically in the measurement of implicit brand attitudes, brand relationships, and Aad. In the first section, we discuss the limitation and shortcomings of current measures. We then describe the IAT, discuss its validity as a measurement tool, and explain how it can be operationalized to measure marketing constructs. In the third section, we present a validation study to compare IAT-based measures of implicit brand attitudes and brand relationship strength with explicit measures of brand attitude and brand ownership behaviors in a context where the implicit and explicit constructs would presumably converge (namely consumers’ attitudes towards Apple or Windows-based computers). In the fourth section, we report an experiment that obtains a divergence between an IAT-based measure of implicit attitude toward the ad (Implicit Aad), and explicit measures of Aad in a situation where biases in self-report measures might be anticipated; namely, when participants were asked to evaluate sportswear advertisements portraying African-American and European-American athlete-spokespersons. Finally, we provide a discussion of these results and the methodology with both theoretical and practical implications.
SHORTCOMINGS OF EXISTING MEASURES

Most explicit measures of attitude (e.g., Likert or semantic differential scales) reference a target object in the subject’s personal history (Jacoby, Lindsay and Toth 1992). Thus, explicit measures must necessarily assume that the subject has (1) formed an attitude, (2) is aware of (i.e., has access to) his or her attitude and (3) is willing to accurately share it with the researcher. For many reasons, it may be a tenuous assumption that all three conditions can be met in a given situation (Jacoby, Lindsay and Toth 1992).

An individual who has never heard of a topic is unlikely or unable to have formed a prior attitude. However, to avoid appearing ignorant, many people will still answer the question (Hawkins and Coney 1981). In other cases, previously formed attitudes may not be easily accessible to the individual (Fazio 1986; Fazio et al. 1986). Thus, although they have an opinion, they report a newly created one. In addition, even if subjects can identify the prior experience, they may be unaware of its influence on attitude and, hence provide inaccurate reports (Greenwald and Banaji 1995). Finally, while subjects may have access to their attitudes they still may distort their answers for social-desirability or image management reasons. Distortions are especially likely when an accurate response is seen as either violating social norms such as politeness or prejudice (Demo 1985; Dovidio and Fazio 1992), would jeopardize a subject’s self-image (Dovidio and Fazio 1992; Gaertner and Dovidio 1986; Sirgy 1982) or would go against the cliché, stereotypical answer (Haire 1950).

Overall, it could be argued that no explicit measures of attitude truly guarantee that responses are free of response bias. In addition, because these measures are subject to both conscious and unconscious distortions, it should come as no surprise that explicit and implicit
measures do not always converge (Banaji and Hardin 1996; Devine 1989; Greenwald, McGhee and Schwartz 1998).

Implicit or indirect attitude measures were developed to measure implicit attitudes that would not necessarily be detected by explicit measures (Greenwald and Banaji 1995). These measures make no reference to objects in a subject’s personal history. Instead, they focus a subject’s attention on performing some task that can indirectly reveal the underlying attitude such that inaccessible and closely held attitudes can be measured. Generally, implicit measures can be categorized as either disguised-unstructured or disguised-structured (Campbell 1950). They are disguised because subjects are aware they are participating in a study and yet unaware of what is truly assessed. Response alternatives can range from open and unstructured to a few structured alternatives (Lemon 1973).

**Unstructured Implicit Measures**

Projective measures are unstructured measures that ask subjects to react to a deliberately ambiguous stimulus. In the process of completing the task, subjects project parts of themselves (in the form of attitudes, prejudices, fears, etc.) that can then be interpreted. For example, Haire’s shopping study (1950) was one of the first widely reported projective measures in marketing. Haire asked females to describe “the woman” who had developed a shopping list that included either Nescafe instant or Maxwell House drip coffee (otherwise, the lists were identical). Nearly half of the subjects described the Nescafe purchaser as “lazy” and a “poor planner”-attitudes they were loathe to admit directly (Haire 1950).

Sentence or word completion and word association tests are also used frequently. They are more structured than projective techniques because the stimulus is less ambiguous and the response options more focused. In a word association task, subjects respond to words with the
first word that comes to mind. In completion tasks, subjects are provided with the first few words or letters and, as suggested by the name, they complete the sentence or word. In these measures, only a few responses are analyzed, since target measures are hidden amongst a much larger set. Further, it is burdensome to create sentence/word completion or word association measures that gather the information of interest while truly disguising the study purpose.

In sum, even if an unstructured measure has face validity, the analysis process can create errors in the conclusion. These errors stem from the typical difficulties in coding and interpretation of qualitative data (Churchill 1995). Thus, although unstructured measures can be valuable, their use should be discouraged in causal designs where specific and precise measurements are needed.

**Structured Implicit Measures**

By limiting response options, structured measures gain a degree of objectivity and avoid most interpretation problems. With these measures, a subject’s attention is focused on the completion of a task with defined or undefined success criteria. For example, grouping pictures, words or objects based on subjects’ evaluation of the stimuli is a structured task with no right answer. Although grouping pictures has demonstrated convergent validity with explicit measures, concealing the research goals is difficult (Lemon 1973).

An information test is another type of structured implicit measure. It determines a subject’s knowledge of a topic and has clearly defined success criteria – the answers are either correct or not. Since a subject’s attitude toward a topic should systematically guide the selection and retention of knowledge, this test provides an implicit measure of that attitude (Campbell 1950; Churchill 1995). Information tests are robust to social desirability if the purpose is sufficiently disguised (Lemon 1973) but may be confounded by need for cognition (Haugvedt,
Petty and Cacioppo 1992). Other measures with defined success criteria and robustness to social desirability ask subjects to estimate a group’s opinion or identify the social norms of an event. However, they do not provide any information about the automaticity of attitude activation (Dovidio and Fazio 1992). This is key because: the stronger the associative network around an attitude object, the more automatically the attitude will be activated, even if the attitude is weak (Bargh 1989) or not consciously held (Fazio 1986; Fazio et al. 1986).

Priming, at either a subliminal or conscious level, can implicitly assess both attitude and strength of the automatic activation effect (Dovidio and Fazio 1992; Fazio et al. 1986; Greenwald, Klinger and Liu 1989). A priming effect exists if a subject’s ability to process a stimulus is enhanced by the previous presentation of a related or associated stimulus. “What matters more than whether one is aware of a stimulus event is whether one is aware of the potential influence of that event on subsequent experience and judgments” (Bargh 1994, p. 15). Thus, as long as the relationship between the prime and the target is concealed, the indirect effects of the primed stimuli can be detected. Semantic priming (where subjects classify the meaning of target words) measures response latency to assess attitude automatic activation. Although subjects are instructed to ignore the prime word preceding a target word, when prime and target are semantically similar, categorization judgments of the target words are faster (Meyer and Schvaneveldt 1971). Overall, priming is very flexible as it can use verbal or non-verbal (e.g., pictures, shapes, faces) stimuli (Tulving and Schacter 1990), and is robust to social desirability, self-image and accessibility problems. However, while response latency data “provide reliable and valid indications of associative strength in memory” (Fazio 1990, p. 95), there has been evidence that priming measures may not be sensitive enough to highlight individual differences (Bargh et al. 1992; Chaiken and Bargh 1993).
Summary

Several problems of existing measures have been identified. First, explicit measures can only identify attitudes that a subject is able and willing to share. Second, projective, completion and association measures are subject to interpretation errors and could be identified by subjects, thereby becoming *de facto* explicit measures. Third, information tests may be confounded by need for cognition and neither these nor opinion estimation/norm identification can determine the level of automatic activation. Fourth, even though priming solves the weaknesses of explicit measures and can gauge the activation level of automatic attitudes, it may not be sensitive enough in all cases. Overall, this discussion of existing measures of attitude has highlighted that a desirable measure should be sensitive to individual differences and robust to image management and attitude accessibility issues.

**THE IMPLICIT ASSOCIATION TEST**

The IAT measures the strength of association between a target-concept and an attribute dimension. For example, the first demonstration of the IAT (Greenwald, McGhee and Schwartz 1998) compared the relative strength of the association between flowers versus insects (the target-concepts) and positive versus negative valence (i.e., valence attribute concepts, Greenwald et al. 2002). In their explication of a Unified Theory of Implicit Social Cognition, Greenwald et al. (2002) define an attitude as “the association of a social object or social group concept with a valence attribute concept” (p. 5). Persons holding a more favorable attitude towards flowers than insects possess stronger “flower”-“positive” associations than “insect”-“positive” linkages. The IAT’s usefulness for measuring self-concept has also been demonstrated (Greenwald and
Females, for example, possess stronger IAT-measured associations between “me”-“feminine” than “me”-“masculine”.

The IAT measures the strength of associations between target-concepts and attribute dimensions by comparing the relative ease of categorizing target-concepts that are paired with one attribute dimension versus another. Assume, for the purposes of illustration, that you were an enthusiastic New York Yankees fan who had a general distaste for the New York Mets. You are presented with a series of words and/or pictures that portray each of the following: the Yankees, the Mets, pleasant concepts (e.g., the word “happy” or a picture of a smiley face) and unpleasant concepts. As you are presented with these stimuli, you are instructed to verbally assign them to one of two mixed categories – either “Yankees-good” or “Mets-bad”. For example, if you were presented with a photo of Derek Jeter (a shortstop for the Yankees), you would assign that item to the category “Yankees-good”. After completing several of these categorization decisions, you are then presented with the same stimuli, only this time you are instructed to verbally assign them to either “Yankees-bad” or “Mets-good”. As an avid Yankees fan, you would complete the first half of the exercise faster than the second, because it would be easier for you to associate the concept “Yankees” with “good” than with “bad”.

In the IAT, word, picture, and/or sound stimuli are presented via a computer that represent target-concepts and attribute-dimensions, and participants are instructed to assign these stimuli to one of two mixed categories by hitting one of two response keys on the computer keyboard. During the first half of the exercise in the example above, the participant would hit the “a” key (i.e., the left key) if the stimulus belonged to the category “Yankees-good” and the “k” key (i.e., the right key) if the stimulus belonged to the category “Mets-bad”. The pairings are reversed during the second half of the exercise (i.e., the second mixed-task), and participants are
instructed to hit the left key if the stimulus belongs to the category “Yankees-bad” and the right key if the stimulus belongs to the category “Mets-good”. The *IAT effect* measures the difference in average response latencies between the first and second mixed-tasks. When targets and attributes are easily associated (compatible), mean response latency is shorter (i.e., processing will be faster) than if the target-concepts and attributes are not strongly associated.

### VALIDITY OF THE IMPLICIT ASSOCIATION TEST

In psychology, considerable support for the validity of the Implicit Association Test has emerged, as detailed in the original paper describing the IAT (Greenwald et al. 1998) and several reviews of the IAT (Cunningham, Preacher and Banaji 2001; Greenwald and Farnham 2000; Greenwald and Nosek 2001). In this section, several criteria for evaluating marketing measures (Netemeyer and Bearden 1998) are applied to the IAT.

#### Theoretical Foundation

The IAT design is based on the premise that attitudes, stereotypes, self-concept, and self-esteem can be defined as associations between concepts (Greenwald et al. 2002). This theoretical approach is consistent with the associative network of memory model (Anderson and Bower 1973; Collins and Loftus 1975) in which emotion functions as a “memory unit” (Bower 1981), and which operationalizes an attitude as the association between an attitude-object and a valence concept (Fazio 1995; Fazio et al. 1982). Furthermore, the idea that attitudes, self-esteem, and stereotypes can be manifest implicitly has been established in the literature (Greenwald and Banaji 1995), and is the impetus for the development of other implicit measures such as Fazio’s sequential priming paradigm (Fazio et al. 1986).
Content Validity

The content validity of the IAT can be assessed by the appropriateness of the stimuli that are used to represent each of the target-concepts and attribute dimensions. The primary consideration for stimuli selection is that they be reasonably familiar (although the IAT effect appears robust across relatively wide variations in item familiarity, c.f. Greenwald and Nosek 2001) and easily classified into one of two categories (e.g., pleasant vs. unpleasant, Nike vs. Reebok). The stimuli that are used to represent the various concepts and attributes in the IAT are either drawn from established category lists that are available in the literature (e.g., Battig and Montague 1969; Bellezza, Greenwald and Banaji 1986) or are pre-tested for familiarity and ability to be categorized.

Reliability

The IAT demonstrates test-retest reliabilities averaging r = .6 across numerous studies (Bosson, Swann and Pennebaker 2000; Dasgupta and Greenwald 2000; Greenwald and Farnham 2000; Greenwald and Nosek 2001). The IAT also demonstrates resistance to several types of procedural artifacts (Greenwald, McGhee and Schwartz 1998; Greenwald and Nosek 2001). The IAT effect is robust across procedural variations, including which hand is assigned to the pleasant category, variability in the number of items used to represent categories, the familiarity of the items used to represent categories (except for items with extremely low levels of familiarity; Brendl, Markman and Messner 2001; Greenwald and Nosek 2001; Rothermund and Wentura 2001), and variability in the response-stimulus interval. Performance in the categorization task that occurs in the first mixed task does tend to be faster versus the second mixed task, but this order effect has subsequently been addressed by counterbalancing the order of these two tasks (Greenwald, McGhee and Schwartz 1998; Greenwald and Nosek 2001). IAT
effects are also robust to differences in how incorrect responses and non-normal response latency distributions are treated (Greenwald and Nosek 2001).

**Construct Validity**

*Convergent Validity:* IAT measures converge with semantic priming measures of association strength (Cunningham, Preacher and Banaji 2001; Mellott and Greenwald 2000; Rudman and Kilianski 2000). The IAT has also been shown to correlate with physiological measures of implicit social cognition. IAT measures of implicit prejudice correlate with fMRI-assessed activation of the amygdala (a subcortical structure associated with emotional learning and evaluation) in White subjects exposed to unfamiliar Black faces (Phelps et al. 2000).

*Discriminant Validity:* Confirmatory factor analysis shows divergent validity of implicit and explicit self-esteem and gender self-concept (Greenwald and Farnham 2000). Prejudice against female job applicants has been associated with IAT-assessed gender stereotypes, but not explicit measures of gender stereotypes (Rudman and Glick 2001), illustrating that the IAT measures implicit constructs that may diverge from their explicit counterparts.

*Nomological Validity:* Greenwald and Farnham (2000) review several studies demonstrating that “IAT measures can be influenced in theoretically expected fashion by procedures that might be expected to influence automatic attitudes or stereotypes” (p. 1023). For example, viewing photos of admirable members of stigmatized groups and despised members of nonstigmatized groups reduced implicit negative attitudes towards the stigmatized groups (Dasgupta and Greenwald 2000).

*Known Group Validity:* Not only can the IAT detect valence differences that are considered universal in the population (e.g., preferences for flowers over insects, Greenwald, McGhee and Schwartz 1998), but also differences that are expected to vary between subject
populations. The IAT reveals differences between Japanese and Korean American preferences for their own ethnicities (Greenwald, McGhee and Schwartz 1998), differences between East and West Germans in their implicit attitudes toward their geographical regions (Kuehnen et al. 2001), differences between men and women in their implicit gender self-concepts (Greenwald and Farnham 2000), and differences between men and women in their implicit attitudes and implicit self-concepts relating to mathematics and the arts (Nosek, Banaji and Greenwald 2000).

USING THE IAT IN MARKETING

Besides applications in a broad-spectrum of psychology settings, the IAT has also been used to show that IAT-based measures of attitudes towards food categories including juices versus sodas and low versus high calorie foods correlate with explicit measures of attitudes and behaviors towards these categories (Maison, Greenwald and Bruin 2001). In this article, we use the IAT to measure marketing-related constructs, including brand attitudes, brand relationships, and Aad. As previously discussed, attitudes can be represented as the association between an attitude object and a valence attribute concept (Greenwald et al. 2002). A person’s attitude toward a brand such as McDonald’s, for example, would be represented as the relative strength of the association between McDonald’s and positive versus negative valence. In addition to evaluative assessments of brands, consumers can also have a relationship with a brand when it is part of a person’s self-concept (Belk 1988; Fournier 1998; Kleine, Kleine and Allen 1995). As such, the strength of one consumer’s relationship with a specific brand would be represented in our example as the strength of the association between McDonald’s and the attribute concept “me”. We demonstrate the usefulness of the IAT for measuring these two constructs in Study 1. In Study 2, we use the IAT to capture implicit attitude toward the ad (implicit Aad), by
measuring the relative strength of the association between advertisements with spokespeople of different ethnicities and the valence attribute concept (pleasant vs. unpleasant).

Although explicit measures of brand attitudes, brand relationships, and Aad have already been developed, these measures are unable to capture an implicit construct that is, by definition an “introspectively unidentified (or inaccurately identified) trace of past experience” (Greenwald and Banaji 1995, p. 5). Unlike explicit measures, the IAT can be used to capture implicit constructs by measuring the relative strength of associations between target-concepts and attribute dimensions at the implicit level.

**STUDY 1**

Study 1 was designed to establish the effectiveness of the IAT as a measure of brand attitudes and strength of brand relationships. To do so we chose an uncontroversial topic, where implicit and explicit attitudes are expected to converge. Computer platforms, more specifically Macintosh by Apple (Mac) and PC (Microsoft Windows-based) machines, were chosen as the focal targets for this study of implicit attitudes and implicit brand relationships. We did not expect significant differences between explicit and implicit attitudes, since consumers should know their attitudes and lack motivation to disguise them, as computers are not considered a sensitive topic. This study was also designed to test the IAT as an instrument for measuring brand relationships, or the degree to which some brands are part of consumers’ self-concept.

**Procedure and Design**

Fifty-six introductory psychology students participated in the study on a voluntary basis for extra course credit. For each participant, all data was collected during one experimental session lasting under one hour. All participants first completed a 3-page survey demographic,
vision, and computer proficiency questions, explicit measures of Mac versus PC attitudes, computer ownership, and usage frequency. Even though prior research has demonstrated that the order of implicit versus explicit measures has inconsequential effects on the results (Greenwald and Farnham 2000), we selected the most conservative option and captured the explicit measures first because the IAT is less likely than explicit measures to be influenced by prior measures. Then, participants completed two IATs whose order was counterbalanced. One of the IATs measured implicit attitudes by using stimuli representing Macintosh and PC-based computers (the target-concepts) and pleasant and unpleasant words (the attribute dimension; see Figure 1).

The other IAT measured implicit brand relationships by pairing the Mac and PC-related stimuli with words representing the concepts “self” and “other”. Self-related words included “I”, “me”, “my”, and “mine”; other-related words included “they”, “them”, “their”, and “other”. The first IAT consisted of 7 blocks with 32 trials during the practice blocks and 40 trials during the measured blocks. Each trial consisted of the presentation of a single stimulus item. The second IAT only required 6 blocks, since the block in Step 1 of Figure 1 was unnecessary for the IAT that was administered second because the Mac versus PC categorization had already been practiced and the key assignments remained unchanged for each subject.

Subjects were randomly assigned to one of eight counterbalanced task orders to accommodate three procedural factors (i.e., a 2×2×2 design): whether the brand attitude or brand relationship IAT was administered first, whether pleasant or unpleasant were initially assigned to the left or right key (in other words: presentation order of the favorable versus unfavorable attitude), and whether self or other were initially assigned to the left or right key.
Measures

During the IAT, the computer recorded participants’ response latencies (in milliseconds) for the two measured blocks during the brand attitude and brand relationship IAT. Trial, block, and stimuli information and error rates were also recorded. Consistent with prior procedures and recommended guidelines established for the IAT (Greenwald and Farnham 2000; Greenwald, McGhee and Schwartz 1998), the first two trials in the measured blocks were dropped because they are typically longer; latencies longer than 3,000 ms were recoded to 3,000 ms, and latencies shorter than 300 ms were recoded as 300 ms. After the data transformations, the IAT effect was calculated as the difference in response latencies between the third and fifth step depicted in Figure 1. A pro-Mac implicit attitude effect occurred when a subject was quicker to categorize a stimulus when Mac and pleasant shared the same response key compared to when Mac and unpleasant shared the same key. A self-Mac implicit brand relationship effect occurred when a subject was quicker to categorize Mac and self together compared to Mac and other. Higher scores on the IAT effects described in this study indicate more favorable implicit attitude and brand relationship towards Macs relative to PCs.

Explicit attitudes toward Macs and PC were measured in the survey with a 5-item semantic differential scale, anchored by good-bad, pleasant-unpleasant, inferior-superior, unsatisfactory-satisfactory, and favorable-unfavorable (α = .90 for both Mac and PC scales). Two ownership measures (Mac and PC) asked subjects to indicate how many computers of each type they owned. For each brand, usage frequency was measured with semantic differential scales anchored by not at all–very frequently.

Participants’ scores on the explicit attitude, ownership, and usage measures for PCs were subtracted from their Macintosh scores to generate a relative measure of Mac versus PC
tendencies. Consistent with the IAT effect, higher scores on these measures indicated a greater preference for Macs versus PCs.

Results

Initial analyses tested the effects of the counterbalancing factors (e.g., order of the two IATs), and none of these factors had a significant effect on the IAT results. These findings are consistent with prior studies using the IAT demonstrating the robustness of the IAT across several procedural variations (Greenwald, McGhee and Schwartz 1998; Greenwald and Nosek 2001). Therefore, the analysis that follows is collapsed across the eight procedural conditions. The focal analysis of this study is the degree to which the explicit measures of brand attitudes, ownership, and usage correlated with IAT-based measures of implicit brand attitudes and brand relationship. Table 1 illustrates that all of the explicit difference measures were significantly and strongly correlated with the IAT-based measures. Further, we show that in this context where we do not expect subjects to hide their true beliefs, the explicit brand attitudes and the implicit attitudes are strongly correlated ($r=.504$, $p<.01$), thereby validating the IAT for brand evaluation.

Table 1 ABOUT HERE

Further analysis of the explicit difference scores was conducted to see how well the IAT-based measures differentiated between respondents who definitively favored Macs or PCs. To do this, the explicit difference scores for attitudes, ownership, and usage were dummy-coded. Participants who had reported more favorable Mac-related explicit attitudes, ownership, or usage were assigned a 1 while a 0 indicated higher measures for PCs. Participants who were indifferent; that is, whose scores on the attitude, ownership, and usage measures were the same for PCs and Macs, were excluded from this analysis. This eliminated 11.4%, 20.3%, and 5.6% of
the participants who reported equivalent attitudes, ownership, and usage, respectively, for Macs versus PCs. It should also be noted that the pattern of results does not change if all respondents are kept in the analysis.

Participants who reported more favorable explicit attitudes, greater ownership or usage frequencies for a brand had significantly faster response latencies when the brand was paired with the attribute pleasant versus unpleasant, thereby yielding consistency between the implicit and explicit constructs. In all six comparisons the difference is statistically significant (p<.05 or p<.01, see Figure 2). This confirms that not only the brand IAT is correlated with explicit brand preferences, but it is also sensitive to individual behavioral differences. Further, a comparison of implicit attitude effects for PC versus Mac loyalists yielded stronger IAT effects for the Mac groups than the PC groups. Whether the data were split by prior attitudes, ownerships or usages, the average IAT effect for the Mac loyalists ranged from 130.28 to 158.8, while ranging only from 54.78 to 69.46 for the PC group. T-tests confirmed that whatever split we analyzed, we detected a larger IAT effect for the Mac groups than for the PC groups (t > 4.33, p <.001 for all three comparisons). These results indicate that for the Mac loyalists attitude strength and accessibility seem stronger and higher than for the PC loyalists (see Figure 2).

With respect to the brand relationship IAT, a significant IAT brand relationship effect was obtained across the three categorization schemes only for the Mac loyalists (M=121.1, t=2.93, p =.01 for explicit attitude; M=157.3, t=3.10, p <.01 for ownership; M=178.6, t=4.36, p <.001 for usage; see Figure 2). Subjects who reported more favorable explicit attitudes, greater ownership or usage frequencies for Macs had significantly faster response latencies when Mac
and self were combined as opposed to Mac and other. Conversely, PC loyalists’ response latencies when PC and other were combined as opposed to PC and self were not different (t values ranging from .15 to .76). Further, a comparison of implicit brand relationship effects for PC versus Mac loyalists confirmed stronger IAT effects for the Mac groups than the PC groups. Whether the data was split by prior attitudes, ownerships or usages, t-tests confirmed that we could detect higher IAT effect for the Mac groups that for the PC groups (t>3.25, p<.005 for all three comparisons). Together, these results suggest that being a “Mac person” is more closely related to one’s identity than owning a PC. Also, it appears that for our respondents there was no evidence of a connection between the concept of self and the PC concept, the opposite being true for the Mac group.

Study 1 Results Discussion

This study demonstrates the validity of the IAT as an instrument for measuring implicit brand attitudes and brand relationships. Firstly, in a situation where implicit and explicit constructs would be expected to converge, IAT measures of brand attitudes and brand relationship were strongly correlated with explicit measures of brand attitudes, ownership, and usage. Furthermore, IAT measures were sensitive to individual differences, and effectively differentiated consumers who reported more favorable explicit attitudes, ownership, and usage of one brand versus the other. Second, the measurement benefits of the IAT are particularly compelling with respect to brand relationships. Using Fournier’s terminology (1998), the IAT results showed that Mac loyalists have a stronger self-connection to the brand, thereby suggesting that the Mac’s brand relationship quality is superior to that of the PC. The strong Mac brand relationship might stem from the resistance/loyalty that Mac users have developed after years of being a minority in the computing world (currently and in recent past, Macintosh
has held a small 5% share of all desktop computer sales, Hamilton 1999; Wong 2001) and the stronger brand community exhibited by Mac users versus PC users (Muniz and O’Guinn 2001). Because of this small minority status one would expect that Mac users hold “a socially embedded and entrenched loyalty, brand commitment… and even hyper loyalty (Muniz and O’Guinn 2001, p. 427), which in turn becomes a central component on one’s identity. The IAT results also confirm that brands “serve as powerful repositories of meaning purposively and differently employed in the substantiation, creation, and (re)production of concepts of self in the marketing age” (Fournier 1998, p. 365). This validation of the IAT in a marketing or brand evaluation context was a necessary step in order to firmly establish that the IAT is a valid marketing measure. This is key if one is to also show that under certain conditions or for certain topics there can be dissociations (i.e., no significant correlations) between explicit marketing attitude measures and corresponding IAT measures.

STUDY 2

The previous study showed that IAT-based measures of brand attitudes and brand relationships are correlated with explicit measures in circumstances when consumers know their attitudes and presumably lack motivation to disguise them. The goal of Study 2 is to establish that the IAT also allows uncovering consumers’ attitudes that traditional measures do not detect. In particular, we wish to demonstrate that social desirability in some explicit tasks can lead to erroneous marketing conclusions if implicit measures are not considered. In this study, we investigate the sensitive topic of the race of advertising spokespeople. Past IAT research has shown that the IAT reveals racial biases that explicit measures do not detect (Dasgupta and McGhee 2000; Greenwald, McGhee and Schwartz 1998). Also, there has been an extensive
body of marketing research dealing with the impact of spokespeople on advertising effectiveness and persuasion (Caballero, Lumpkin and Madden 1989; Debevec and Iyer 1988; Deshpande and Stayman 1994; Heath, McCarthy and Mothersbaugh 1994; Kamins 1989; Kamins 1990; Kamins and Gupta 1994; Lynch and Schuler 1994; Misra and Beatty 1990). Yet, this past research has only assessed advertising perceptions through explicit measures (see Forehand and Perkins 2002 for an exception). In this second study, we focus on the very well established construct attitude toward the ad (Aad) (Mitchell and Olson 1981; and see Brown and Stayman 1992 for a meta analysis of 47 studies on this topic) as a focal variable and intend to show that there can be a disassociation between explicit Aad and implicit Aad.

**Procedure and Design**

Ninety-three introductory to business statistics undergraduate students (consisting of 33 men and 60 women, 46 Caucasians, 30 Asians, 6 Hispanics, 3 African-Americans, 8 Multi-Racial or other ethnicities, median age = 19) participated in the study for course credit. For each participant, all data were collected during one experimental session lasting under forty-five minutes. First, participants completed a survey containing demographic, vision, and computer proficiency questions. Subsequent analysis showed that all subjects could be retained in the sample. The survey also included measures of the key construct of interest – attitude toward the ad (5 item scale) – both for ads with white spokespeople and ads with black spokespeople. Measurement order was counterbalanced, so that half of the subjects reported on their attitude towards ads that featured white spokespeople first and the other half reported on attitude towards ads with black spokespeople first. Subjects were randomly assigned to one of the orders. Then subjects completed a 7 block computer-based IAT. Blocks 4 and 7 were the measurement blocks. Each block consisted of 32 (practice) and 40 (measured) trials each. In addition to trial
number, block number, and stimuli information (see Appendix 1 for example of stimulus),
subjects’ response latencies (in milliseconds) and error rates were recorded.

Stimuli

For this study we developed thirty-two ads. These ads were very simple in layout in
order to allow for quick processing and classification. They consisted of a picture of an athlete
(male or female), as well as a brand identifier (name or logo). Based on brand familiarity pretest
with a similar population, ads were designed for two different athletics footwear brands: a low
familiarity brand (Etonic) and a high familiarity brand (New Balance). Sports were varied, and
included tennis, basketball, track, golf and bodybuilding. Ads were executed in four versions:
one with a white athlete and a matching one with a black athlete, and one for each of the two
brands (in total: 8 sports pictures × 2 races × 2 brands). All efforts were made to insure that the
black and white race versions of the ads matched each other in all dimensions (see Appendix 1
for examples of the advertising stimuli). In order to minimize differences between ads, they
were displayed in black and white mode. This study also used the same list of pleasant and
unpleasant words that were used in Study 1.

Measures

Explicit measures of Aad were collected for ads with white spokespersons, and for ads
with black spokespersons. They were measured using a six item semantic differential scale
(interesting/boring, good/bad, unpleasant/pleasant, dislike/like, favorable/not favorable, not
irritating/irritating). These items (in different combinations) have been used in past research on
attitude toward the ad (see MacKenzie and Lutz 1996; MacKenzie, Lutz and Belch 1986;
Mitchell 1986; Mitchell and Olson 1981). Reliability for each scale was high (alpha (black) =
.93; alpha (white) = .88). Two versions of the written survey were made so as to counterbalance
presentation order of the explicit measures. Half of the subjects received the version where Aad black was first and the others the version where Aad white was first.

Two types of explicit measures of attitudes towards whites and blacks were also included in the survey booklet. The first type of measure was a feeling thermometer (Greenwald, McGhee and Schwartz 1998) numerically labeled at 10-degree intervals from 0 to 99, with the words “cold or unfavorable”, “neutral”, and “warm or favorable” placed next to the anchored points of 0, 50, and 99, respectively. Participants were instructed “Please make a horizontal mark across the scales below indicating how you feel, in general, about each of the ethnic groups listed below.” Two thermometers (one for each ethnic group) were displayed side by side on the survey page. The placement of the thermometers (i.e., whether the thermometer for blacks was on the left or right) was randomized. Next, participants completed two sets of five 7-point semantic differential scales (beautiful/ugly, good/bad, pleasant/unpleasant, not trustworthy/trustworthy, and nice/awful) to measure overall race attitude for each ethnicity. As with the thermometers, the scales’ presentation order was randomized. For each race an average of the 5 items was computed in order to provide an overall race attitude measure. Then, for each respondent, and for each type of explicit measures (thermometers and overall race attitude), difference scores were calculated by subtracting scores towards blacks from the scores towards whites. Thus, higher values on the difference scores reflect a relatively more positive attitude towards whites or ads with whites versus blacks.

Implicit attitude toward the ad was measured using a similar methodology to Study One. In this study, the IAT effect was measured as the difference in response latencies when the classification target category (“ad with a black spokesperson” versus “ad with a white spokesperson”) shared the same response key as the attribute (“unpleasant” versus “pleasant”).
Thus, a pro-white spokesperson implicit Aad effect occurred when a subject was quicker to categorize a stimulus when “ad with white spokesperson” and “pleasant” shared the same response key compared to when “ad with white spokesperson” and “unpleasant” shared the same key.

**Results**

First, and as expected, we found that there were no significant differences between explicit Aad that was reported for ads with white spokespersons (m=4.67) compared to ads with black spokespersons (m=4.77) (see Figure 3). Although the means were not significantly different (t=1.32, p<.20), the small difference favoring ads with black spokespersons suggests that the participants were trying to avoid the appearance of being racially biased. Within the implicit measures of Aad, there is a strong effect in favor of the white spokespersons (IAT effect m=244.53ms, t=11.25, p <.001). Participants were approximately a quarter of a second faster when classifying ads with white spokespeople with pleasant and black spokespeople with unpleasant than classifying white with unpleasant and black with pleasant. This appearance of dissociation between the implicit and explicit results is further confirmed by the correlation analysis.

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Table 2 illustrates bivariate correlations between the various implicit and explicit measures obtained in the study. Of central importance for this study is that the implicit and explicit measures of Aad are not significantly related to one another. Implicit Aad is not significantly related to explicit attitudes towards whites versus blacks, as measured by the
thermometer scale, but it is related to the explicit ethnic attitude difference score, as measured by the 5-item scale, thought not strongly (r<.30).

---

**Table 2 ABOUT HERE**
---

**Discussion of Study 2 Results**

While Study One has demonstrated the validity of the IAT as an instrument for measuring implicit brand attitudes and brand relationships and has shown that this instrument is sensitive to individual differences, this second study has shown that the IAT is a useful measurement tool that allows the measurement and uncovering of results and effects that explicit measures cannot detect. In this case, we showed that explicit measures of Aad may not represent automatic associations evoked by the ad. In this case involving the race of a spokesperson, it is plausible that explicit Aad measures reflect views that participants wish to present, whereas the implicit measure reflects a more uncontrollable automatic association. The implicit responses should be accurate portrayals of the stereotypes that are held by the respondents, whereas the explicit measures are more tented by socially desirability.

**GENERAL DISCUSSION**

In this article we set out to demonstrate that 1) marketing research and marketing theories can benefit from better implicit measures, 2) that the IAT is a valid and reliable instrument that can be used to measure a range of marketing constructs, and 3) that under specific situations IAT measures are uniquely suited to provide information that is not available through explicit measures. Findings from our two studies provide the following insights.
In Study 1, we have shown that explicit measures and IAT measures of attitudes and other marketing constructs converge and are valid when consumers are willing and able to report their feelings and beliefs, and understand the influence of prior experiences on the knowledge structures supporting them. IAT-based measures of brand attitudes converged with explicit measures of brand attitudes in the Mac versus PC study where social desirability or other biases were not likely to occur. In addition, IAT-based measures of brand relationship strength revealed distinctive asymmetries between brands. Finally, we showed that the IAT was sensitive to individual differences, and the magnitude of the IAT effects provides evidence of attitude availability and strength. However, there are also conditions where respondents do not have access to their true attitudes or choose to conceal them.

In Study 2, we showed that the IAT can capture automatic associations between target-concepts and attribute dimensions. The IAT is useful in these circumstances where explicit measures of brand constructs diverge from their implicit counterparts. In this second study, IAT-based measures of Aad revealed an influence of ethnic prejudice on Aad that explicit measures did not. These findings underscore the importance of the IAT for two main domains 1) the implications and opportunities for future research aimed at better understanding the impact of ethnic stereotypes on advertising and brand attitudes, and 2) the general usefulness of the IAT as a measurement tool in marketing theory testing and practice.

Marketing research that investigates the role of unconscious processes in consumer learning seems to be the number one candidate to benefit from the IAT in the near term. Research on Aad formation, mere exposure effects, and classical conditioning (e.g., Janiszewski 1988) could use the IAT to determine if automatic/implicit associations between brands, ads, and attribute dimensions behave as would be expected by these theories. Instead of relying on a lack
of recall or other conscious processes as evidence that preconscious activities are present, the IAT allows researchers to tap directly into the implicit processes that are presumed to occur.

Other domains of consumer behavior are also affected by unconscious and automatic processes. In general, the IAT can provide important measures for topics that are controversial or stigmatized. Past research investigating the impact of stigmas associated with volunteerism (Snyder, Omoto and Crain 1999) has shown that the public stigmatizes people who engage in socially-beneficial activities such as volunteering to help someone with AIDS. The IAT can be used in this context to reveal the associations that drive these perceptions, such as an association between AIDS and homosexuals, drug users, and other stigmatized groups. Similarly, the IAT can be used to investigate how negative events that involve spokespeople can impact attitudes towards the spokespeople and the brands they represent (Louie, Kulik and Jacobson 2001). In both cases, the IAT can be used to test whether implicit associations have been formed between attitude objects and stigmatic attributes, and also further understand behaviors that derived from these associations.

Our IAT results with respect to race biases can be linked to other research on race and ethnicity in marketing. For example, research on consumer distinctiveness and ethnic self-awareness (Forehand and Deshpande 2001; Grier and Deshpande 2001) examines the effect of spokesperson ethnicity and other ethnic primes on brand attitudes and persuasion. IAT-based measures of implicit ethnic stereotypes, Aad, and brand attitudes can allow researchers to test the theories that are used to explain these effects, especially when these theories suggest the presence of “unconscious ethnic processing and categorization” (Forehand and Deshpande 2001, p. 338). Certainly it is not our intent to suggest that because IAT measures revealed that our respondents were racially biased that marketers should avoid using minorities in their ads.
Rather, we see this as a two sided outlook where 1) more work is needed to better understand the role of unconscious ethnic processing, and 2) the IAT can provide more evidence for policy and decision makers that even when explicit measures can suggest that racial or other biases do not exist, there can still be strong stereotypes being held by consumers, and that these deserve special attention, educational efforts or other interventions. Outside of race, one could consider the use of the IAT to better understand implicit attitudes towards risky behaviors like smoking or drinking, the use or not of condoms etc, since it is often likely that political correctness and social desirability tend to influence explicit answers on these issues. Similarly, the IAT can be useful to better understand consumers’ reactions to companies’ social responsibility programs, and help better predict when and how doing good will also do well for the company (Sen and Bhattacharya 2001).

Results from Study 1 demonstrate the IAT’s usefulness for measuring the degree to which brands are a part of a consumer’s self-concept. These findings demonstrate the IAT’s potential for advancing research concerning both brand relationships (Fournier 1998) and brand community (McAlexander, Schouten and Koenig 2002; Muniz and O’Guinn 2001) and consumer identity. The IAT is also applicable to research on organizational identification (Bergami and Bagozzi, 2000) and would allow for new understandings and measures of the overlap between self-definition and organizational identity and new insights on its likely impact on other marketing variables.

The IAT may provide unique and important information on other topics in brand management as well. Consumers’ associative brand networks may include concepts and associations that a consumer either cannot or will not report, but which may surface through the IAT. Further, since a successful brand extension or brand alliance would share at least some of
the traits associated with the core brand (Simonin and Ruth 1998), the IAT may expand our understanding of this transfer process.

Finally, we would like to suggest that the IAT be used not just as a dependent measure, but also as an independent one or in conjunction with others. It seems that much insight can come from using the IAT as an explanatory factor for behavior, choice or judgments. For instance, while traditional explicit measures provides satisfactory subjective and normative measures to understand the link between attitude and behavior, the IAT might increase the predictability of behavior by adding an unconscious or implicit component to traditional models. In general, any contexts where associations between attributes and concepts are presumed to operate at an implicit level would provide a suitable and necessary setting for the use of the Implicit Association Test. Our studies offer a demonstration of the IAT’s use in marketing and its potential contribution in consumer research. It is our hope and opinion that future research will undoubtedly uncover even greater applicability and value of this measurement tool.
## TABLE 1

STUDY 1 CORRELATION BETWEEN KEY VARIABLES

<table>
<thead>
<tr>
<th>Pearson Correlation</th>
<th>Implicit Attitude&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Implicit Brand-Relationship</th>
<th>Explicit Brand Attitude</th>
<th>Computer Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Brand Relationship</td>
<td>.542** (n=63)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explicit Brand Attitude (difference score)</td>
<td>.504** (n=54)</td>
<td>.307* (n=54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Ownership (difference score)</td>
<td>.468** (n=54)</td>
<td>.411** (n=54)</td>
<td>.581** (n=79)</td>
<td></td>
</tr>
<tr>
<td>Computer Usage (difference score)</td>
<td>.688** (n=50)</td>
<td>.543** (n=50)</td>
<td>.692** (n=72)</td>
<td>.689** (n=72)</td>
</tr>
</tbody>
</table>

* p<.05
** p<.01

<sup>a</sup>High scores on the IAT and the explicit difference scores indicate preferences for Macintosh relative to PC-type computers.
TABLE 2

STUDY 2 CORRELATION BETWEEN KEY VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Implicit Aad (positive-white)</th>
<th>Explicit Aad (white vs. black spokespeople)</th>
<th>Explicit attitude towards white vs. blacks (thermometer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit Aad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(white vs. black spokespeople)</td>
<td>.054</td>
<td>.108</td>
<td>.284**</td>
</tr>
<tr>
<td></td>
<td>n=93</td>
<td>n=93</td>
<td>n=93</td>
</tr>
<tr>
<td>Explicit attitude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>towards white vs. blacks</td>
<td>.108</td>
<td>.302**</td>
<td>.279**</td>
</tr>
<tr>
<td>(thermometer)</td>
<td>n=93</td>
<td>n=93</td>
<td>n=93</td>
</tr>
<tr>
<td>Explicit attitude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>towards white vs. blacks</td>
<td>.284**</td>
<td>.279**</td>
<td>.623**</td>
</tr>
<tr>
<td>(scale)</td>
<td>n=93</td>
<td>n=93</td>
<td>n=93</td>
</tr>
</tbody>
</table>

* p<.05
** p<.01
*** p<.001
FIGURE 1
SCHEMATIC DESCRIPTION OF THE ATTITUDE IMPLICIT ASSOCIATION TEST (IAT)

<table>
<thead>
<tr>
<th>Step 1:</th>
<th>Category labels</th>
<th>Sample stimuli</th>
<th>Category labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice block (32 trials)</td>
<td>Apple/Macintosh</td>
<td>●</td>
<td>Apple</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○</td>
<td>PC-type\IBM</td>
</tr>
<tr>
<td></td>
<td>Pleasure</td>
<td>○</td>
<td>lucky</td>
</tr>
<tr>
<td></td>
<td>Unpleasure</td>
<td>●</td>
<td>hatred</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2:</th>
<th>Category labels</th>
<th>Sample stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice block (32 trials)</td>
<td>Apple/Macintosh</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Practice block</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Critical block</td>
<td>○</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3:</th>
<th>Category labels</th>
<th>Sample stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice block (32 trials)</td>
<td>Apple/Macintosh or Pleasant</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Critical block (40 trials)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4:</th>
<th>Category labels</th>
<th>Sample stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice block (32 trials)</td>
<td>Unpleasure</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Pleasant</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5:</th>
<th>Category labels</th>
<th>Sample stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice block (32 trials)</td>
<td>Apple/Macintosh or Unpleasure</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Critical block (40 trials)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

Categorization tasks for the five steps of the attitude IAT. The correct response for each sample stimulus indicated by the black dots. The IAT effect is calculated as the difference in average response latencies between Steps 3 and 5. (Adapted from Greenwald and Farnham 2000)
FIGURE 2
STUDY 1: IMPLICIT ATTITUDE AND IMPLICIT BRAND RELATIONSHIP RESULTS

Implicit Attitude Effect by Explicit Attitude

Implicit Brand-Relationship Effect by Explicit Attitude

Implicit Attitude Effect by Computer Ownership

Implicit Brand-Relationship Effect by Computer Ownership

Implicit Attitude Effect by Usage Frequency

Implicit Brand-Relationship Effect by Usage Frequency

Mac & Pleasant words  PC & Pleasant words  Mac & Self words  PC & Self words
FIGURE 3
STUDY 2: EXPLICIT AND IMPLICIT ATTITUDE TOWARD THE AD MEASURES

Explicit Aad Measures
(1-7 scale)

Explicit Aad Measures
(1-7 scale)

Implicit Aad Measures
(in m.s.)

Implicit Aad Measures
(in m.s.)

White Spokesperson  Black Spokesperson

White Pleasant/Black Unpleasant
Black Pleasant/White Unpleasant

No Significant Difference

IAT Effect
M= 244.43
t92=11.25
P<.001

M= 737.41
981.84

White Pleasant/Black Unpleasant
Black Pleasant/White Unpleasant
APPENDIX 1

EXAMPLES OF ADVERTISING STIMULI USED FOR STUDY TWO

All ads were executed for both brands. This appendix contains a representative set of the ad stimuli used in study two. In total there were 32 versions created.
REFERENCES


----- (1990), "The Influence of Print Advertisement Organization on Affect toward a Brand Name," Journal of Consumer Research, 17(June), 53-65.


Rothermund, K. and D. Wentura (2001), "Figure-Ground Asymmetries in the Implicit Association Test," Zeitschrift fur Experimentelle Psychologie, 48(2), 94-106.


