

# Implicit Consumer Preferences and Their Influence on Product Choice

**Malte Friese**  
University of Basel

**Michaela Wänke**  
University of Basel

**Henning Plessner**  
University of Heidelberg

## ABSTRACT

**Recent theories in social psychology assume that people may have two different attitudes toward an object at the same time—one that is explicit and corresponds with deliberative behavior, and one that is implicit and corresponds with spontaneous behavior. The research presented in this article tested this assumption in the consumer domain with an experimental approach. Participants whose explicit and implicit preferences regarding generic food products and well-known food brands were incongruent were more likely to choose the implicitly preferred brand over the explicitly preferred one when choices were made under time pressure. The opposite was the case when they had ample time to make their choice. On the basis of these results, the discussion stresses the importance of impulsive behavior and implicit measures for research in the area of consumer behavior. © 2006 Wiley Periodicals, Inc.**

Imagine yourself entering a supermarket 10 minutes before closing time. Once again, you failed to write up a shopping list. So while the staff is preparing to call it a day, you hurry through the aisles, trying not to for-

get too many of the ingredients for dinner. What products or brands will you opt for, as you can choose from a variety of similar goods, but time is short and the staff is looking at you impatiently? One could guess that you will probably quickly decide in favor of the products you like best, pay, and leave the store to enjoy the rest of the evening.

Recent theories in social psychology suggest that it might not be quite this easy. According to a growing amount of research, individuals may have two different attitudes toward an object at the same time—one that is explicit and one that is implicit (Greenwald & Banaji, 1995; Wilson, Lindsey, & Schooler, 2000). The expression of explicit attitudes refers to the construct social psychologists commonly try to assess by means of questionnaires or interviews. Although different definitions of implicit or automatic attitudes have been proposed, for the present purpose, implicit attitudes are described as evaluative responses regarding an attitude object, which, in contrast to explicit attitudes, are not necessarily subject to introspection (Greenwald & Banaji, 1995; see De Houwer, 2006, for a discussion of the term *implicit*). In other words, individuals may not be aware of their implicit attitudes or they may be unable to verbalize them. Nevertheless, implicit attitudes may influence information processing and behavior.

A measure of implicit attitudes that is easily adaptable to different contexts, the Implicit Association Test (IAT), has been presented by Greenwald, McGhee, and Schwartz (1998). IAT measures relative attitudinal preferences between two categories. In the course of a typical IAT, participants only use two response keys to sort stimuli of four different categories, two target categories (e.g., *BMW* and *Mercedes*), and two attribute categories (e.g., *pleasant* and *unpleasant*). The stimuli appear in the center, and the names of the categories remain in the upper corners of the computer screen. For the inference of implicit preferences there are two critical steps in the IAT procedure, namely, two combined blocks. During these steps one target category and one attribute category share the same response key, and the two remaining categories share the other response key (e.g., *BMW* and *pleasant* vs. *Mercedes* and *unpleasant*). For each stimulus presentation (trial) the response time is assessed. During the second combined block, response assignments are switched for the target, but not for the attribute categories (*BMW* and *unpleasant* share one response key). The difference between the average response times during these two blocks is referred to as the IAT effect, which in turn is considered to be an indicator of implicit preferences. If responses are faster for *BMW* and *pleasant* than for *BMW* and *unpleasant*, a relative implicit preference for *BMW* over *Mercedes* is inferred. The reasoning for this is that, when two concepts are associated, sorting them onto the same response key should be easier than when they are not associated.

Since the first publication, the amount of research involving the IAT has accumulated at an enormous pace (e.g., Fazio & Olson, 2003; Greenwald & Nosek, 2001). Up to now, the IAT has proven to be a very useful tool for research on associations in general and implicit preferences in

specific. It is a fairly flexible, robust, and reliable instrument. For example, Greenwald et al. (2002) report an average test–retest reliability of .60 and most studies also show satisfactory internal consistencies of Cronbach’s alpha  $> .80$  (e.g., Asendorpf, Banse, & Mücke, 2002; Banse, Seise, & Zerbes, 2001; Egloff & Schmukle, 2002). The IAT seems less sensitive to faking than explicit measures are (Steffens, 2004). Finally, the IAT has shown its predictive and incremental validity in quite a few studies (e.g., Asendorpf et al., 2002; Egloff & Schmukle, 2002; McConnell & Leibold, 2001). However, one of its major drawbacks is the question about the underlying processes of the IAT scores (internal validity). First, although it seems quite clear that associations may account for some of the variance in IAT scores, other processes may contribute to the effect as well (Mierke & Klauer, 2001, 2003; Rothermund & Wentura, 2001, 2004). Second, it should be mentioned that the stimuli and not only the chosen categories might also have an influence on IAT scores (e.g., Bluemke & Friese, 2006; Steffens & Plewe, 2001). Therefore, one should be careful when selecting the stimuli for an IAT, and the final IAT scores cannot be interpreted as representing absolute associations or attitudes (e.g., positive and negative IAT scores should not automatically be interpreted as positive and negative attitudes). Third, the IAT can only measure relative associations, which also forbids an absolute interpretation of the IAT scores. That is, referring to the example used above, one could only conclude that the implicit attitude of the subject is more positive toward *BMW* than toward *Mercedes*. The IAT effect does not imply that the subject’s implicit attitude toward *Mercedes* is negative per se. Several researchers have developed measures closely related to the IAT to overcome this limitation by assessing associations to single targets (Nosek & Banaji, 2001; Wigboldus, Holland, & van Knippenberg, 2004). Nosek, Greenwald, and Banaji (in press) provide a review of 7 years of research concerning the IAT.

Recently, the IAT has also been claimed to be a suitable and effective research tool in the domain of consumer psychology. Maison, Greenwald, and Bruin (2004) assessed explicit and implicit preferences for consumer goods (i.e., yogurt, soft drinks, fast food restaurants) and showed that the IAT can improve the prediction of behavior compared to employing explicit preference measures alone. Furthermore, the IAT has been used successfully to measure the identification with a certain brand and different reactions to ads, depending on the race of the spokesperson of the ad on the one hand and of the participant on the other hand (Brunel, Tietje, & Greenwald, 2004).

Basically, it is possible that explicit and implicit preferences converge or differ concerning a specific attitude object. If they converge, the prediction of behavior is self-evident. Together, both preferences should influence the consumer to act corresponding to his or her preferences. Even in this case, implicit preferences may still improve the prediction of behavior based only on the explicit preference (Maison et al., 2004). More intriguing, however, is the event where explicit and implicit preferences

diverge. Under what circumstances will consumer behavior be more influenced by the one or by the other? There are several reasons why explicit and implicit preferences may diverge. The consumer may be unwilling or unable to communicate and act according to his or her explicit preference (Brunel et al., 2004; see Hofmann, Gschwendner, Nosek, & Schmitt, 2005, for a review of moderators of the relation between implicit and explicit measures). Even if the explicit and the implicit measures refer to the same underlying construct, they may be able to tap different aspects. Or maybe even dissimilar explicit and implicit preferences coexist because they were formed at different times on different grounds. Which preference becomes relevant to behavior depends on whether the explicit preference is retrieved or not, and whether it overrides the implicit preference or not (Wilson et al., 2000). The present research specifically focuses on the divergence of explicit and implicit preferences.

In general, it has been suggested on the one hand that implicit preferences may be particularly effective in predicting rather automatic behavior that occurs without conscious monitoring. On the other hand, explicit preferences are assumed to be able to predict deliberate, controlled behavior (e.g., Asendorpf et al., 2002; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995; Wilson et al., 2000; see also Perugini, 2005, for a discussion of predictive models of implicit and explicit attitudes). For example, a dieter may feel attracted to an ice cream sundae, but on second thought the high caloric content may outweigh his spontaneous attitude in favor of the ice cream. Given time to reflect about his thoughts and feelings, he would report a less favorable attitude compared to a more spontaneous measure. But which type of measure is a better predictor for behavior? According to models of the correspondence between attitudes and behavior, as mentioned above, this would depend on the circumstances under which the behavior takes place. Assuming the dieter in the example will ponder over the menu on what to have for dessert, but by reflecting on his weight, he may be less likely to give in to his craving. However, when he is meditating about the structure of the universe while he is passing an ice-cream parlor, he may absentmindedly get a scoop and may be half done with it before he starts feeling guilty.

Many factors may influence whether consumer behavior is exerted under more or less control. The example illustrates that the state of hunger may influence control in the domain of eating behavior. In general, need states are strong moderators of controlled versus uncontrolled behavior. Other factors have also been proposed in the literature, most prominently the motivation and opportunity to deliberate (Fazio, 1990; Fazio & Towles-Schwen, 1999). Therefore, it can be assumed that time pressure moderates the predictive value of implicit versus explicit attitudes as it limits the probability of extensive information processing. In particular, time pressure should increase the predictive value of implicit preferences and diminish the influence of explicit preferences.

## EXPERIMENT

The current research investigated the impact implicit preferences have on the prediction of brand choice between brand products and generic products. The reasoning behind this selection was the assumption that for these categories, implicit and explicit preferences would diverge at least to some extent. Should this be the case, then the relative importance of implicit and explicit preferences for the prediction of behavior is of special interest. Informal pilot studies confirmed that consumers in Germany believe that generic products come from the same manufacturers as branded products and are only cheaper because they are not burdened with the costs of advertising. This was, in particular, true for food products. Nevertheless, the authors believed that brands would carry more positive affective connotations and consumers would find brands more trustworthy than generic products.

Although the prediction of behavior is trivial for those participants with similar explicit and implicit preferences—that is, to choose the respective products—predictions are more intriguing for subjects with diverging explicit and implicit preferences (e.g., explicitly preferring generic products but implicitly favoring brand products). For these participants, the explicit preference was assumed to guide their behavior when they could deliberately choose the product arrangement they preferred, independent of their implicit preference. However, under time pressure the implicit preference should prove to become more important.

### Method

**Participants.** Ninety-five passersby in the shopping district of Heidelberg, Germany, were approached and invited to participate in a study on market research. Participants attended the experiment individually in a nearby laboratory. The majority of the participants were students from different faculties of the local university. They were randomly assigned to one of the two conditions (time pressure: yes vs. no). Data of three participants were excluded due to high error rates, extremely short latencies, and problems dealing with the computer. Mean age of the resulting 92 participants was  $M_{\text{age}} = 22.1$  years. The sample included 58 women and 34 men. They received food products of approximately 3 Euros in value as a reward for their participation.

**Materials—Explicit Preference.** A questionnaire assessed the general explicit preference of brand products and generic products on a 7-point-rating scale [“When you shop for groceries do you in general rather prefer brand products or generic products?” (translated from German)] before asking some more detailed questions about participants’ attitudes. For both branded and generic products, participants were requested to rate specific attributes regarding the price, quality, taste,

and advertising on a Likert scale from 1 (*not at all*) to 7 (*perfectly*). At the end, some questions about participants' individual grocery shopping behavior were asked and demographic data were collected.

**Materials—Implicit Preference.** The IAT used in the present experiment complied with the standard version (cf. Greenwald et al., 1998). However, differences were as follows. The category names were *brand*, *generic*, *positive*, and *negative* (translated from German). Ten pictures of brand products and 10 of generic products served as the target stimuli. All pictures were equal in size. Brand and generic products were of the same kind (i.e., whipping cream, cream cheese, sweet corn, margarine, coffee). Each product was presented from two different angles. Twenty positive and 20 negative words used by Greenwald et al. (1998) were translated into German and represented the attribute categories. Attribute stimuli were presented first and their key assignment was reversed in the fourth block of the IAT.

**Behavior.** As a behavioral measure, participants were allowed to choose between two different sets of food products. One of the sets contained only branded food products and the other one consisted entirely of generic products. The arrangements were of equal monetary value and included the same kind of products, with the exception of the generic arrangement containing one more product, because they were cheaper.

**Procedure.** Upon arrival at the laboratory, participants were randomly assigned to one of the two time-pressure conditions. At first, they were given the questionnaire including the explicit attitude measure. After completion the information on the computer screen instructed them about the IAT procedure. They were told that positive and negative words as well as pictures of brand and generic products would be presented on the screen. Their task was to classify these words by pressing one of two keys (the response keys were 'Y' and '-' on German keyboards). Participants were informed that each stimulus would remain on the screen until a correct classification had been performed.

The IAT consisted of five blocks. In the first block, positive and negative words were presented on the screen and had to be classified according to their valence. In the second block, pictures of food products appeared and had to be categorized as either being a brand product or a generic product. Both blocks as well as the upcoming fourth block consisted of 40 trials. The third block (80 trials as well as in Block 5) constituted the first double discrimination task in which one target category and one attribute category shared the same response key. In the fourth block only the attribute stimuli were presented again, but compared to the first block, the assignment of labels to the response keys was reversed. The last block represented the second combined task. Again, stimuli of both dimensions (pictures and words) had to be discriminated at once. In order to control for task-shifting effects (Mierke & Klauer, 2001, 2003), stimulus selection alternated between the target and the attribute dimension in the combined blocks.

Having finished the IAT, participants were instructed to fill out a short questionnaire from an unrelated research project. This was done to promote cognitive activity foreign to the topic before the decision task. After completion of this filler task, subjects again turned to the computer and were told that as a gift they could choose between two arrangements of equal monetary value. They were shown two photos next to each other on the computer screen, each depicting a variety of food products. One of the arrangements contained only branded food products and the other one consisted entirely of generic products. In the condition without time pressure, participants could take as much time as they wanted to make their choice by pressing a certain key. In the spontaneous condition, time pressure was induced by telling participants they only had 5 seconds to make their choice. While they were shown the photos, a time bar was running at the bottom of the screen indicating how much time was left. Finally, participants received their chosen arrangement, were thanked, debriefed, and dismissed. The complete experiment lasted about 20 minutes.

## RESULTS

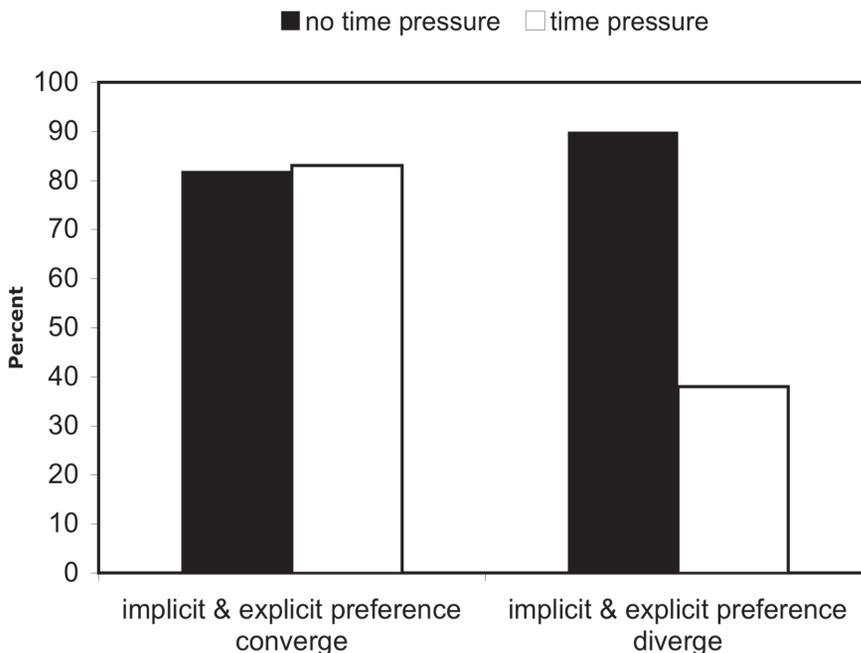
Only the latencies of the combined tasks of the IAT procedure are of interest in the present study. In line with Greenwald et al. (1998), outlier values below 300 ms were recoded to 300 ms and those above 3,000 ms were recoded to this value (1% of all responses). Latencies were log transformed. The first two trials of each block were dropped. Some (7.2%) of the trials were erroneous responses and were not included in the data analysis.

Next, the difference between the third and the fifth block was calculated. According to the difference in response latencies between the third and the fifth block, each participant was categorized as either implicitly preferring brand products or generic products. Participants whose difference scores fell between  $\pm 20$  ms were categorized as indifferent. Most (85%) of the remaining 86 participants showed an IAT effect in favor of brand products, 15% in favor of generic products.

Despite the overwhelming preference for brands over generic products as measured by the IAT, the explicit measures reflected a very different picture: 33% of the participants preferred brand over generic products, 35% were indifferent, and 32% preferred generic over brand products on the general explicit attitude question. This strong discrepancy between the IAT measure and the explicit rating scale suggests that both measures may be based on different attitudinal components, at least for some participants. In fact, among those respondents who reported a clear preference for either brand or generic products on the explicit measure only about 58% showed a congruent preference on the IAT. This discrepancy served as the basis for the main analysis. First, two categories were created: Participants whose implicit preferences were consistent with their explicit ones versus participants who had incongruent preferences. This

means that participants who implicitly *and* explicitly preferred either branded or generic products were allocated to one category. The other category consisted of participants whose responses indicated that they explicitly preferred one but implicitly preferred the other. This latter group is of special interest in the present context. The prediction of choice for the former group is straightforward. Only the group with diverging explicit and implicit preferences allows for the testing of the specific contributions of the respective attitudes in order to predict behavior.

Second, the behavioral measure was recoded so that it reflected whether the choice between brand and generic products was in line with the explicitly reported preference or not. Figure 1 shows the mean results. By and large, participants' choices were in accordance with their explicitly reported preferences. When explicit and implicit preferences converged, 82% of the subjects in the condition with no time pressure and 83% in the condition with time pressure chose the arrangement that corresponded to their attitudinal preferences;  $\chi^2(1) < 1, p = .95$ . Even when explicit and implicit preferences diverged, 90% of the subjects made a choice consistent with their explicit preference as long as participants had ample opportunity to think about their decision. However, when choices had to be made under time pressure, implicit preferences played a larger role as had been expected. Under time pressure, participants whose implicit and explicit preferences diverged were less likely to choose the explicitly preferred goods (38%);  $\chi^2(1) = 6.30, p = .01$  (see Table 1 for details).



**Figure 1.** Percentage of choices consistent with the explicit preference.

**Table 1. Absolute Frequencies of Choices.**

Convergence of Explicit & Implicit Preference	Consistency of Explicit Preference & Choice	
	Consistent	Inconsistent
	No time pressure	
Convergent	14	3
Divergent	9	1
	Time pressure	
Convergent	10	2
Divergent	5	8

## DISCUSSION

In accordance with recent publications (e.g., Brunel et al., 2004, Maison et al., 2004), the current research shows that the IAT can be used for measuring consumer preferences. The present data provide evidence that explicit, more elaborated preferences and implicit preferences, as measured with the IAT, are both valid predictors of brand choice depending on the situation. If participants had enough time to reflect about their choice, their choices were predicted exclusively by their answers in the questionnaire. Participants who had reported a preference for generic products actually did choose generic products when given the opportunity. This result was found for participants with converging as well as diverging explicit and implicit preferences. But the pattern changed when the decision had to be made under time pressure. When explicit and implicit preferences converged, participants still chose the respective product arrangement. However, when explicit and implicit preferences diverged, participants under time pressure were less likely to choose the product arrangement that was consistent with their explicitly reported preference. Apparently, when consumers lacked the time to retrieve an explicit preference, implicit preferences became additional predictors of choice. Because time pressure interferes with retrieval and judgment processes, time-pressured choices tend to be guided by highly accessible preferences (Fazio & Towles-Schwen, 1999). But these are not necessarily the preferences reported in other situations. Although this research showed that overall explicitly measured preferences were rather reliable predictors of choice, their predictive validity was clearly reduced when it came to situations where there was no opportunity to thoroughly reflect on the different choices. In real life, time pressure is certainly not the only variable that interferes with more controlled behavior. Indeed, making choices under time pressure is often restricted to the domain of game shows or the shopping channel. However, a good deal of everyday consumer decisions are made without much reflection (e.g., Bargh, 2002; Cobb & Hoyer, 1986). In fact, many consumer decisions are made rather absentmindedly, or at least without effortful pro-

cessing. The present data suggest that for such decisions, implicit preferences may be able to improve predictions quite successfully. This effect is assumed to be stronger for people whose implicit and explicit preferences are dissociated from each other.

For brands where consumers are likely to have a different implicit preference than an explicit one, the current finding cannot be stressed enough. Market researchers will come to wrong conclusions if they simply rely on the explicitly measured preference for predicting less deliberative consumer behavior. And even when predicting behavior that takes place without any control constraints, implicit preferences may improve the prediction. Quite often marketers hardly know whether their brands are typically chosen with great care, as this may vary between consumers or situations. In any case, assessing implicit preferences in addition to the explicit ones will help to gain valuable knowledge about consumer behavior.

These commentaries give rise to the question of what marketers could do to improve chances that their products will not only be preferred as indicated by an explicit measure, but also by an implicit measure. Especially in highly competitive market segments with similar good-quality products from various manufacturers, the implicit preference of consumers may give a competitive edge. Recent research has shown that implicit preferences, as measured with different versions of the IAT, include both stable traitlike as well as occasion-specific variance (Schmukle & Egloff, 2004, 2005). There is an ongoing debate about how the constructs that are assessed by implicit methods such as the IAT develop. Some theorists assume that implicit preferences reflect rather old components of attitudes that may have been replaced by another attitude on the explicit level (Wilson et al., 2000). From this point of view, on the one hand, implicit preferences are the result of early experiences that lead to very well-learned evaluative associations that are difficult to change later on (Rudman, 2004). On the other hand, it has repeatedly been shown that procedures of classical conditioning can have effects on implicit measures (Olson & Fazio, 2001, 2002), a result that can probably also be revealed in evaluative conditioning procedures (Walther & Grigoriadis, 2004). However, from a practitioner's perspective, it might be important to note that Olson and Fazio (2001, 2002) used novel objects for their classical conditioning procedure. In contrast, Wänke, Plessner, De Houwer, Richter, and Gärtner (unpublished) recently have shown that persuasive messages about existing products can cause changes on an IAT measure as well. There are numerous other studies that demonstrate that implicit measures more generally are sensitive to changes in the measurement context (e.g., Blair, 2002). Unfortunately, so far there is little evidence of the stability of such newly acquired evaluative associations. It remains an open question, how already existing attitudinal components as assessed by implicit measures can be modified *sustainably* (for a notable exception, see Teachman & Woody, 2003). Of course, this is what would be of highest value for marketers. Still, recommen-

dations for marketing purposes, regarding the question of how to change implicit preferences on a long-term basis, must rely on what is known about the factors that influence the formation and the strength of attitudes as assessed by explicit measures. It is reasonable to speculate that these factors play a role in the change processes of implicit preferences as well. For example, among others, direct experiences with the attitude object, recommendations from respected others, or persuasion by respected sources are factors that are recognized as having an influence on existing attitudes (for an overview, see Bohner & Wänke, 2002).

The results of the current research also corroborate the general assumption that implicit preferences may be particularly valuable for predicting rather spontaneous and uncontrolled behavior, and explicit preferences predominantly predict deliberative behavior (Fazio, 1990; Fazio & Towles-Schwen, 1999; Wilson et al., 2000). Similar results have recently been obtained in other areas of social behavior (Asendorpf et al., 2002; Egloff & Schmukle, 2002). Consequently, implicit preferences should prove to be valuable predictors of behavior that occurs in many different situations, where consumers tend to rely on their impulses rather than on thorough deliberation, for example, under conditions of cognitive load or ego depletion. Cognitive load (e.g., Shiv & Fedorikhin, 1999) limits processing capacities similar to the induction of time pressure in the current research. Cognitive load can be assumed to play a role in any average shopping endeavor where consumers are trying to keep up with their conversation while at the same time they are struggling to pay attention to the acoustic announcement of the day's special offers and trying to remember their shopping list. Ego depletion (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998) leads people to rely less strictly on their inner standards and goals, and hence to give in more easily to tempting situational cues that would otherwise pose no threat to their goals in regard to consumption or dietary restraints (Hofmann, Rauch, & Gawronski, in press). Of course, any combination of these mental states should even increase the likelihood of rather impulsive consumer behavior. As it becomes clear from these illustrations, consumer behavior is likely to be influenced by impulses in a variety of different forms in very diverse contexts and situations. Accordingly, research on this specific aspect of consumer behavior has many implications for marketers. On the one hand, possible areas of future research might lie in the further development of theoretical accounts of impulsive consumer behavior (Dholakia, 2000) and in the integration of conceptual work from other relevant fields of psychology (e.g., Baumeister & Heatherton, 1996). Such further research should elaborate on personality factors (Kaufman-Scarborough & Cohen, 2004) and on the multitude of situational factors that may collectively contribute to impulsive consumer behavior. On the other hand, it may be productive to further differentiate not only between the distinctive contexts impulsive consumer behavior can occur in but also between the various *kinds* of behavior that may be affected (e.g., choice behavior, con-

sumption behavior). The representation of these behaviors in research settings will allow for the systematic analysis of the influences that implicit and explicit indicators of consumer preferences have on the prediction of relevant behavioral outcomes. The current research shows that implicitly measured preferences may prove to be especially valuable for the prediction of impulsive rather than controlled consumer behavior.

## REFERENCES

- Asendorpf, J. B., Banse, R., & Mücke, D. (2002). Double discrimination 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 towards homosexuality: Reliability, validity, and controllability of the IAT. *Zeitschrift für Experimentelle Psychologie*, 48, 145–160.
- Bargh, J. A. (2002). Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. *Journal of Consumer Research*, 29, 280–285.
- Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, 7, 1–15.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252–1265.
- Bohner, G., & Wänke, M. (2002). *Attitudes and attitude strength*. Hove: Psychology Press.
- Blair, O. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review*, 6, 242–261.
- Bluemke, M., & Friese, M. (2006). Do features of stimuli influence IAT effects? *Journal of Experimental Social Psychology*, 42, 163–176.
- 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.
- Cobb, C. J., & Hoyer, W. D. (1986). Planned versus impulsive purchase behavior. *Journal of Retailing*, 62, 384–409.
- 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.
- Dholakia, U. M. (2000). Temptation and resistance: An integrated model of consumption impulse formation and enactment. *Psychology & Marketing*, 17, 955–982.
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, 33, 510–540.
- Egloff, B., & Schmukle, 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. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in*

experimental social psychology (Vol. 23, pp. 75–109). San Diego, CA: Academic Press.

- Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, 69, 1013–1027.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, 54, 297–327.
- Fazio, R. H., & Towles-Schwen, T. (1999). The MODE model of attitude-behavior processes. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 97–116). New York: Guilford Press.
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4–27.
- Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review*, 109, 3–25.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (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. (2001). Health of the Implicit Association Test at age 3. *Zeitschrift für Experimentelle Psychologie*, 48, 85–93.
- Hofmann, W., Gschwendner, T., Nosek, B. A., & Schmitt, M. (2005). What moderates implicit-explicit consistency? *European Review of Social Psychology*, 16, 335–390.
- Hofmann, W., Rauch, W., & Gawronski, B. (in press). And deplete us not into temptation: Automatic attitudes, dietary restraint, and self-regulatory resources as determinants of eating behavior. *Journal of Experimental Social Psychology*.
- Kaufman-Scarborough, C., & Cohen, J. (2004). Unfolding consumer impulsivity: An existential-phenomenological study of consumers with attention deficit disorder. *Psychology & Marketing*, 21, 637–669.
- Maison, D., Greenwald, A. G., & Bruin, R. (2004). Predictive validity of the Implicit Association Test in studies of brands, consumer attitudes, and behavior. *Journal of Consumer Psychology*, 14, 405–415.
- McConnell, A. R., & Leibold, J. M. (2001). Relations among the Implicit Association Test, discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology*, 37, 435–442.
- Mierke, J., & Klauer, K. C. (2001). Implicit association measurement with the IAT: Evidence for effects of executive control processes. *Zeitschrift für Experimentelle Psychologie*, 48, 107–122.
- Mierke, J., & Klauer, K. C. (2003). Method-specific variance in the Implicit Association Test. *Journal of Personality and Social Psychology*, 85, 1180–1192.
- Nosek, B. A., & Banaji, M. R. (2001). The go/no-go association task. *Social Cognition*, 19, 625–666.
- Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (in press). The Implicit Association Test at age 7: A methodological and conceptual review. In J. A. Bargh (Ed.), *Automatic processes in social thinking and behavior*. London: Psychology Press.
- Olson, M. A., & Fazio, R. H. (2001). Implicit attitude formation through classical conditioning. *Psychological Science*, 12, 413–417.
- Olson, M. A., & Fazio, R. H. (2002). Implicit acquisition and manifestation of classically conditioned attitudes. *Social Cognition*, 20, 89–104.

- Perugini, M. (2005). Predictive models of implicit and explicit attitudes. *British Journal of Social Psychology*, 44, 29–45.
- Rothermund, K., & Wentura, D. (2001). Figure-ground asymmetries in the Implicit Association Test (IAT). *Zeitschrift für Experimentelle Psychologie*, 48, 94–106.
- Rothermund, K., & Wentura, D. (2004). Underlying processes in the Implicit Association Test: Dissociating salience from associations. *Journal of Experimental Social Psychology*, 133, 139–165.
- Rudman, L. A. (2004). Social justice in our minds, homes, and society: The nature, causes, and consequences of implicit bias. *Social Justice Research*, 17, 129–142.
- Schmukle, S. C., & Egloff, B. (2004). Does the Implicit Association Test for assessing anxiety measure trait and state variance? *European Journal of Personality*, 18, 483–494.
- Schmukle, S. C., & Egloff, B. (2005). A latent state-trait analysis of implicit and explicit personality measures. *European Journal of Psychological Assessment*, 21, 100–107.
- Shiv, B., & Fedorikhin, A. (1999). Heart and mind in conflict: The interplay of affect and cognition in consumer decision making. *Journal of Consumer Research*, 26, 278–292.
- Steffens, M. C. (2004). Is the Implicit Association Test immune to faking? *Experimental Psychology*, 51, 165–179.
- Steffens, M. C., & Plewe, I. (2001). Items' cross-category associations as a confounding factor in the Implicit Association Test. *Zeitschrift für Experimentelle Psychologie*, 48, 123–134.
- Teachman, B. A., & Woody, S. R. (2003). Automatic processing in spider phobia: Implicit fear associations over the course of treatment. *Journal of Abnormal Psychology*, 112, 100–109.
- Walther, E., & Grigoriadis, S. (2004). Why sad people like shoes better: The influence of mood on the evaluative conditioning of consumer attitudes. *Psychology & Marketing*, 21, 755–773.
- Wänke, M., Plessner, H., De Houwer, J., Richter, L., & Gärtner, T. (unpublished). Measuring attitude change and predicting brand choice with the IAT. Manuscript submitted for publication.
- Wigboldus, D. H. J., Holland, R. W., & van Knippenberg, A. (2004). Single target implicit associations. Manuscript submitted for publication.
- Wilson, T., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review*, 107, 101–126.

This research was financially supported by a grant from the German Research Foundation given to the second author (WA 939/9-1). The authors thank Thomas Haar for helpful comments on an earlier draft of this manuscript, and Sandra Grieder for her help with the language.

Correspondence regarding this article should be sent to: Malte Friese, Institute of Psychology, University of Basel, Missionsstrasse 60/62, 4055 Basel, Switzerland (malte.friese@unibas.ch).