Prof. Dr. Thorsten Teichert[1], Dr. Michela Schröder-Abé[2], Daniel Wagenführer[3]

[1] University of Hamburg, Von-Melle-Park 5, 20146 Hamburg, Germany, +49-40-42838-4643, teichert@econ-uni-hamburg.de

[2] Otto-Friedrich-Universität Bamberg, Markusplatz 3, 96047 Bamberg, Germany, +49-951-863-1867, michela.schroeder-abe@uni-bamberg.de

[3] University of Hamburg, Von-Melle-Park 5, 20146 Hamburg, Germany, +49-40-42838-7834, wagenfuehrer@econ-uni-hamburg.de

Do they really mean what they say: Comparing explicit and implicit measures of consumers´ attitudes towards innovative brand extensions

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Abstract

Implicit associations and attitudes constitute a considerable part of consumers' decision making processes. Hence assessing consumer attitudes with implicit measures constitutes a promising research approach (Friese, Wänke, & Plessner, 2006), especially in low involvement and spontaneous purchase decision situations. Recently first applications of implicit attitude measures diffused into marketing research practice. The most common implicit measure is the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). This paper investigates the degree of convergence of implicit and explicit measures and their predictive validity in the case of innovative product offerings. Consumer attitudes were measured in an online-experiment (n=285) referring to different brand extension scenarios. In particular, line-extensions as well as concept extensions were modelled in a two-by-two design. Implicit and explicit attitude measures regarding the hypothetical brand extension products were assessed. Their predictive validity was investigated by comparing derived predictions to "real" choices. Results show (a) that implicit measures were correlated with explicit measures of consumers purchase intentions for brand extensions. The moderate convergence of implicit and explicit measures indicates a cross-validation (convergent validity) of both methods. However, the remaining differences between both methods are not negligible and thus need to be investigated. (b) Implicit measures outperformed the explicit measures in predicting the "real" choices of customers. The findings of this article may lead to a deeper understanding of consumer decision making behaviour and thereby create valuable insights for applying implicit measures in marketing research practice.

Introduction

Investigations of consumer attitudes and purchase decision processes are traditionally based on the idea of conscious information processing. Recently, this approach has been

challenged. Non- conscious consumer attitudes are seen as a valuable part of decision making processes (Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005). Hence, implicit associations and attitudes may provide valuable explanations for consumer's decisions (Friese, Wänke, & Plessner, 2006). It has been argued that non-conscious processes account for persuasion and choice behaviour of consumers (Fitzsimons, 2002). Alba, Chartrand, Huber, Kardes, Menon, and Raghubir (2002) argued that non-conscious attitudes underlie and hence even determine conscious behaviour. Greenwald and Banaji (2005) initially proposed that individuals may have conscious and non-conscious attitudes at the same time, both partially reflecting their actual behaviour. This idea is conform to the theory of the MODE dual-processes model (Fazio & Towles-Schwen, 1999) and the Elaboration Likelihood Modell by Petty and Cacioppo (1986). Chartrand (2005) identified three types of conscious decision making processes with non-conscious processes underlying: "(a) environmental features that trigger an automatic process, (b) the automatic process itself and (c) the outcome of the automatic process". The meaning and influence of conscious and non-conscious process in combination is not been cleared yet (Dimofte, 2010).

Dimofte (2010) postulates an implicit-explicit discrepancy distinction describing that explicit and implicit attitudes may diverge due to several reasons. Payne, Burkley, and Stokes (2008) examined whether correlations between implicit and explicit tests were influenced by the similarity in task demands. They argue that implicit measures tap something unconscious or automatic responses, whereas explicit measures reflect intentional edited responses. Several studies revealed the explicit-implicit measurement distinction in case of well-established brands and products (e.g. Maison, Greenwald, & Bruin, 2004). However, studies in the context of new product development are missing. We address this major research gap and investigate in this paper the convergence and discrepancies between implicit and explicit attitude measures in case of innovative product concepts.

There is a high need for answering this research question because success of new products can still not be forecasted sufficiently (Goldberg, Lehmann, & Mazursky, 2001). Traditional methods of market research fail regularly because explicit attitudes towards new products emerge over time while experiencing initial products offerings (Rosa & Spanjol, 2005). In contrast hereto, consumers possess generic beliefs about the compatibility of even radically new product offerings with deep-lying motives and associations (Zaltman, 2003). Thus we expect that an implicit measurement of consumers´ attitudes may deliver valuable insights for the new product development even in the very early stages of concept development.

Background of the implicit measure

The Implicit Association Test (IAT) is the most popular implicit measurement method. Originally developed by Greenwald, McGhee, and Schwartz (1998) the IAT emerged as a state-of-the art research method regarding implicit associations in social psychology, consumer behavior and marketing research applications. Developed as a method to uncover prejudice in the psychology (e.g., prejudice against people with a different skin color), the method recently emerged into marketing related research. The Classic-IAT is well established in Psychology and an empirically validated method for measuring implicit attitudes (e.g. Dimofte, 2010).

Characterisation of the IAT

The Implicit Association Test (IAT) in its classic version is build on a sequence of different classification tasks of two target concepts. Participants are instructed to correctly respond to target and attribute stimuli shown at the screen by pressing corresponding keys on the keyboard while being under time pressure. Response times are compared between two concepts and relative time differences of target-attribute combination tasks are computed. The calculated time difference indicates the strength of the association between target and attribute, for example between evaluative attributes (e.g. good) and the extension products. To measure these association between to target concepts, the IAT-procedure consists of seven measuresments blocks illustrated in the following table:

Task Block	Description	Items (left)	Items (right)	Trials
1	Practice 1: compatible Targets	Coca Cola lemonade images	River crisps images	20
2	Practice 2: Emotional Attributes	Pleasant words	Unpleasant words	20
3	Compatible setup test	Coca Cola lemonade + pleasant words	River Crisps + unpleasant words	20
4	Compatible test	Coca Cola lemonade + pleasant words	River Crisps + unpleasant words	40
5	Practice 3: incompatible Targets	River crisps images	Coca Cola lemonade images	20
6	Incompatible setup test	River crisps images + pleasant words	Coca Cola lemonade + unpleasant words	20
7	Incompatible test	River crisps images + pleasant words	Coca Cola lemonade + unpleasant words	40

Table 1. Tasks and measurements of the Classic-IAT (example 1 from IATs in this study)

To avoid systematical errors regarding learning effects during the procedure the position of the blocks 1,3 and 4 are switched with those of blocks 5,6 and 7 for half of the subjects (compare Greenwald, Nosek, & Banaji, 2003). The measurements result in a score named D-

Score, which is calculated by latency differencies regarding the compatible and incompatible practice and test blocks: In principle, the latency difference of block 6 and 3 (D_1) and block 4 and 7 (D_2) are calculated. These latency differences unveil the implicit prejudice reagrding the target attribute (here: Coca Cola lemonade and River crisps). Simplified, the D-Score is computed by the mean of D1 and D2 (neverthless, several additional analysis procedure steps are required to achieve the correct score; please see Greenwald, Nosek, and & Banaji, 2003, p. 214 for the complete scoring algorithm). Summing up, the IAT-measures are latency differences regarding two target concepts. The basic idea is, that subjects could link a preferred target with pleasant words in a shorter time then a non-prefered one.

One advantage of Implicit attitude measures are seen in the superiority to explicit measures because they are less susceptible to social desirability and reflect valid representations of consumers' attitudes (Gawronski, Lebel, & Peters, 2007). Numerous studies showed that the IAT is a valuable method to provide measures of association strengths in psychological as well consumer behaviour studies (for an overview see Greenwald, Poehlmann, Uhlmann, & Banaji, 2008). Some reliability (test-retest reliability) and validity aspects (convergence validity) of the IAT however was critizised by some authors. As a convention, implicit measures (namely the D-Score) are used on aggregated group level to obviate this reliability issue.

The implicit-explicit distinction leads to the questions, (1) to which extend and (2) why implicit and explicit measures may diverge and (3) which is the correct measure in special circumstances. A meta-analysis of 122 studies by Greenwald, Poehlman, Uhlmann, & Banaji (2008) showed an average correlation of implicit measures and the criterion variables of .274. In most cases behavioural intention was used as criterion (prediction variable). Explicit measures showed comparable results (r=.361). One possible explanation of implicit-explicit measurement divergence is that both measure aim at the same construct but measure different aspects of it (Dimofte, 2010). Another possible explanation is that implicit attitudes are formed over the time and reflect a holistic attitude toward an object like a brand or product. Explicit measures even might reflect the self-evident and recently formed attitudes (Wilson, Lindsey, & Schooler, 2000). These are consciously in the mind of the customer. Deep-lying attitudes are non-conscious and hence can only be elicited by implicit measures. Recently, Payne, Burkley, and Stokes (2008) proposed, that implicit attitudes are formed by time and changed by experiences and expertise. Thus changed attitudes are part of a holistic attitude, but are not conscious. To sum up, Hofmann, Gawronski, Gschwendner, Le, and Schmitt (2005) showed in their meta-anylsis of 126 studies, that there is a mean correlation of

.24 between IAT-measures and self-reportes (explicit measures). They propose, that low implicit-explicit correlations „can be due to (a) motivational biases in explicit selfreports, (b) lack of introspective access to implicitly assessed representations, (c) factors influencing the retrieval of information from memory, (d) method-related characteristics of the two measures, or (e) complete independence of the underlying constructs". Therefore implicit measurements need to be evaluated in the field of marketing and market research application.

Exemplary existing studies in the field of Marketing

The IAT emerged only recently into marketing research applications and has been applied only in limited context situations so far. As an example, Maison, Greenwald, and Bruin (2004) investigated the predictive validity of an IAT for simple brand choices. Based on multiple regression analysis they showed in three consecutive experiments, that implicite measures correlated significantly with explicit measures when respondents were confronted with simple brand logos. Participants' implicit and explicit attitudes toward Coca Cola and Pepsi were investigated and used to predict „real" purchase behaviour. Implicit and explicit measures were highly correlated ($r = .70$), and both explicit and implicit measures significantly predicted real purchase behavior (with a predictive power of similar size; expl.: $\beta = .44$; impl. $\beta = .39$). Implicit and explicit measures convergence with a correlation coefficient of $r = .70$. The authors concluded that implicit measures are a good predictor of consumers brand choice.

Steinman and Karpinski (2008) used the Single-Category IAT to examine the predictive validity of implicit measures toward attitude and use of the single brand „GAP". They found that explicit and implicit measures as well as the interaction of both measures predicted the attitude toward and the use of the brand. Gibson (2008) demonstrated that implicit attitudes towards well-known brands (Coca-Cola vs. Pepsi) can be altered using evaluative priming for participants with preexisting neutral attudes.

Other studies applied techniques to test consumers reaction toward specific conditions, as time pressure (Friese, Wänke, & Plessner, 2006) or cognitive load (Friese, Hofmann, & Wänke, 2008). All examined studies focused however on the evaluation of single attributes of a product (e.g., brands) at a time. Hence, information and decision processes were always simplified to an unidimensional evaluation regarding the single examined marketing stimuli only. This limits the external validity of the studies. More complex experimental settings are needed to better mirror real decision making processes. Real decision making processes combine at least information about brands and attributes simultaneously. Following this idea,

we choose a more complex decision situation to prove (a) predictive validity of implicit measure and (b) to examine convergence of implicit and explicit measures.

From a content perspective, the above mentioned studies focused on well-established consumer attitudes. A key focus of marketing activities, the acceptance of new products, was not yet adressed by the research regarding implicit attitudes in marketing research. We argue that implicit attitudes might as well be a valuable predictor of choice in case of product innovations. Attitudes towards really new products are not established in the mind of the customer but are based on an overall impression which might serve as a valuable predictor of choice. Many purchases of new products are made spontaneously or under time presssure (e.g. Friese, Wänke, Plessner, 2006), so that the implicit measure might be a more valid predictor of consumers choice Furthermore, one main issue in new product development is that joint decision-making process needs to reflect consumers' preferences (Fuchs, Prandelli & Schreier, 2011). This attitude formation process needs be evaluated in a holistic approaches integrating explicit and implicit attitudes formation. Especially in low-involvement situations implicit information processing might be a valuable predictor of choice.

Experiment

The following experiment focuses on the examination of implicit and explicit attitude measures regarding hypothetical brand extensions as innovative products. Attitudes towards brand extensions might be influenced by implicit theories in the mind of consumers more than by single brand traits (Yorkston, Nunes, & Matta, 2010). Accordingly, consumers' initial impressions of a brand extension are built on spontaneously elicited affective reactions (Yeung & Wyer Jr, 2005). The study investigates convergence of explicit (conscious) and implicit (non-conscious) measures toward brand extension products. Item-measurement scales based on key success factors of brand extensions were used to predict conscious behaviour. Implicit measures are retrieved utilizing the classic version of the Implicit Association Test (Classic-IAT) (Greenwald, 1998).

Two brands and two product categories are investigated simultaneously in a 2x2-design. A manufacturer brand (Coca Cola) is compared with a trade brand (River Cola). Furthermore, product categories are divided into line- and concept extensions. This design was purposefully chosen as it allows for a-priori expectations about preferred products and brands: The well-known brand (Coca Cola) should exhibit superior preferences compared to the trade brand (River Cola). In addition, a line-extension of the existent product category

(organic-lemonade) is expected to be preferred against not-existing concept-extensions (crisps). This setting thus allows for quick benchmarks and check of face-validity.

Method

Participants and general procedure

285 subjects were recruited and polled by a web-based questionaire. The study was performed in Germany. 50.2 percent of the subjects were male (48.2 female). The mean age of the participants was 42.46 years (SD = 14.26). Subjects were selected from a stratified sample to achieve equal gender distribution. Participants were randomly assigned to one of six experimental conditions. Experimental conditions consisted of all paired combinations of brands (Coca-Cola and River Cola) and products (Organic-lemonade and Potato crisps). Table 1 lists the six experimental conditions, whereby products of the same brand are compared in IAT 1 and IAT 2, whereas the other IATs constitute comparisons between the manufacturer and trade brand.

			Coca Cola	
			Organic-lemonade	Potato crisps
			IAT-1	
River Cola	Organic-lemonade	IAT-2	IAT-4	IAT-5
	Potato crisps		IAT-6	IAT-3

Table 2. Measures of the Classic-IAT

The sequence of explicit and implicit measure was counterbalanced in order to control for possible order effects. Study subjects were confronted with a distraction task after completing this first part. A two minutes lasting tetris game was used as distractor. After that, subjects were asked to answer choice-based conjoint options.

The analyses start with the examination of predictive validity for Classic-IAT measurement toward the brand extension products. Real choice behaviour of the subjects is predicted by choice-based conjoint analysis and latent class segmentation. Based on this predicted choice behaviour, the convergence of explicit and implicit measures is evaluated.

Implicit attitude measures

The classic version of the IAT by Greenwald , McGhee, and Schwartz (1998) was used. The category labels were a combination of brand and product (e.g., Coca Cola organic lemonade). From this, four pictures of equal size and quality were generated as target stimuli. Five generic positive and negative words were used as attribute stimuli in the IAT-task. German words were pretested and of equal length.

Explicit attitude measures

A questionaire was designed to elicit explicit attitudes of consumers regarding the brand extension products. Four relevant factors were retrieved from a literature review of relevant key success constructs toward brand extension (e.g. Aaker & Keller (1990); Smith & Park (1992); Bottomley & Holden (2001); Mao & Krishnan (2006), Sattler & Voelckner (2007)): Parent-brand conviction, quality of the parent brand, fit (concept consistency), and purchase intention (PI) as a dependent variable exhibiting consumers'behavioral intentions.

Choice behaviour

Choice behaviour in a purchase situation was modelled by stated choices in a discrete choice experiment. An optimal design from Street, Burges and Louviere (2005) was chosen with twelf choice-sets consisting of each two choice options. Subjects were randomly assigned to one of two conditions: (a) with time-presssure condition and (b) without time-pressure condition. This set-up is comparable to Friese, Wänke and Plessner (2006) and was used to ensure that aggregated choice behaviour is neither solely deliberate nor spontaneous. Hence, we tried to simulate for a realistic choice behaviour regarding fast moving consumer goods.

Results

Implicit measures

The implicit measures are based on the Classic-IAT which provides information about reaction times as indicator for perceived concept compatibility. From this, D-Scores measures are computed with the improved algorithm by Greenwald, Nosek, & Banaji (2003). Several procedures were used to check for reliability of D-Scores. Therfor an unadjusted score (U) is compared with two further scores: (R1) is a rectified score on the basis of subjects, which whose D-Scores are consistent (both measurements show equal D-Score polarity); for (R2) D-Scores were computed for subjects, whose latency- (<300ms) and error-rates are lower than

twenty percent over all measures. The following table shows the results of these investigations, whereby higher scores indicate a better concept fit.

brand-specific product extension scores	Line versus Concept Extension (organic-lemonade (baseline) vs. potato crisps)		
Coca-Cola (IAT 1)	U: .18 (SD= .45; n=55)	R_1: .24 (SD= .52 n=39)	R_2: .29 (SD= .46; n=34)
River-Cola (IAT 2)	U: .07 (SD= .46; n=44)	R_1: .09 (SD= .53; n=31)	R_2: .10 (SD= ,52; n=28)

U: unadjusted Scores; R_1=Rectified Score 1; R_2=Rectified Score 2

Table 3. Means (D-Scores) for the implicit measures (Brand-related scores)

Table 2 displays the results from the IAT-Versions 1 and 2, in which within-brand comparisons are investigated (see Table 1). It can be seen that a line extension elicits more positive implicit attitude in comparison to a broader concept extension. The brand-related IAT-Scores reveal e.g. that the line-extension product (organic-lemonade) of the well-known brand Coca Cola are more prefered than the concept-extension product (crisps) with scores improving from 0.18 (U) in the overall sample to 0.29 (R2) for those observations fulfilling high reliability (internal consistency) targets. Results of the unknown brand (River-Cola) are positive as well indicating that consumers show also preferences for the line extesion product: But these values are less strong (U=0.07 to R2=0.1) compared with the scores of Coca-Cola.

Table 3 shows the comparison scores (D-Scores) which are gained by between-brands comparisons. IAT 3 and 4 provide information about brand comparisons of identical products (being it either a line or concept extension), whereas IAT 5 and 6 represent comparisons in which both brand (Coca or River Cola) as well as product type (line or concept extension) are contrasted. A positive score reflects a better concept fit of the product marked in the column, a negative score a fit of the row. For example, an U = 0.28 in IAT 6 shows that Coca Cola organic-lemonade is implicitly better valued than River Cola Crisps; whereas next to no difference is revealed in the comparison between River-Cola organic-lemonade and Coca Cola Potato crisps (U=0.02).

Between-Brands product extension comparisons		Coca Cola (baseline = compatible stimulus)	
		Organic-lemonade	Potato crisps
River Cola (incompatible stimulus)	Organic-lemonade	*(IAT-4)* U: .11 (SD= .41;n=43) R_1: .13 (SD= .53; n=24) R_2: .15 (SD= .55; n=22)	*(IAT-5)* U: .02 (SD= .45; n=49) R_1: -.02 (SD= .53; n=29) R_2: .07 (SD= .54; n=26)
	Potato crisps	*(IAT-6)* U: .28 (SD= .38; n=31) R_1: .34 (SD= .55; n=24) R_2: .33 (SD= .41; n=22)	*(IAT-3)* U: .22 (SD= .48; n=65) R_1: .26 (SD= .54; n=50) R_2: .29 (SD= .48; n=46)

U: unadjusted Scores; R_1=Rectified Score 1; R_2=Rectified Score 2

Table 4. Means (D-Scores) for the implicit measures

Results show in accordance to expectations that consumers almost always prefer products by the global brand (Coca Cola) as compared to the no-name brand (River-Cola). Indifference of the implicit prejudices is only found in the comparison between River organic-lemonade and Coca Cola crips (IAT5). The effects show much clearer results when consistency-checked data are used only. In this case, organic-lemonade is preferred when comparing it on intra- and inter-brand comparison. This result supports the assumption that line-extensions are more preferred than concept-extensions. Results further show (Figure 1), that the relative advantage of the well-established manufacturer brand (Coca-Cola) improves in case of a concept extension of both products. This highlights the value of within the established product category.
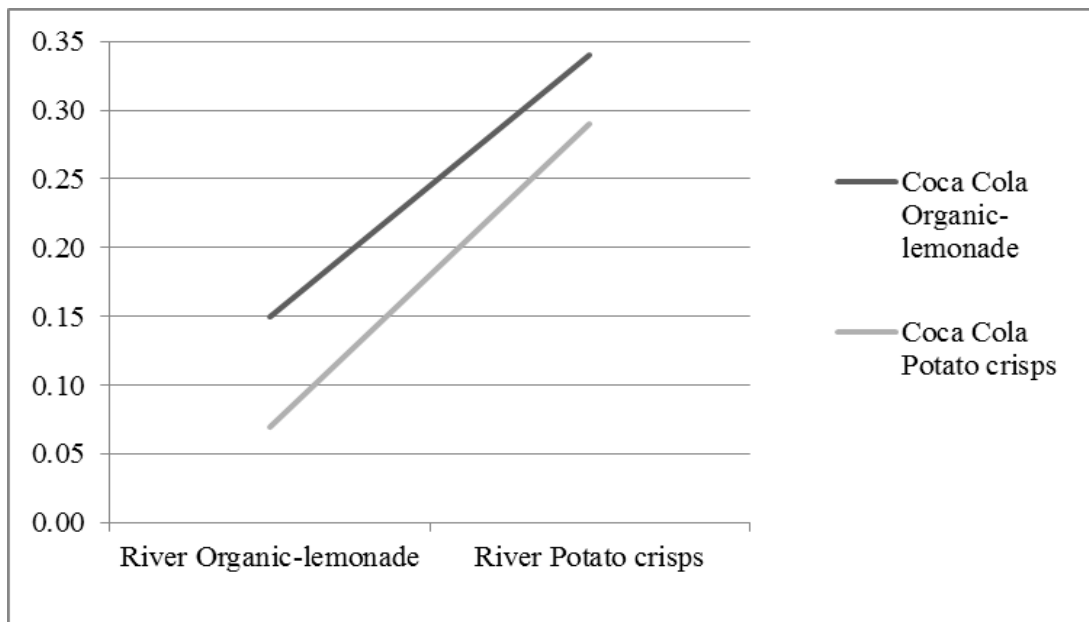
Figure 1: Implicit attitude towards Coca-Product against River-Product Offering

Convergence of implicit and explicit attitudes

Several procedures were executed to examine the convergence between implicit and explicit measures. First of all, a variable for the explicit measures to compare with the implicit measures was computed. Following this, the difference between the purchase intention between those two products, which are examined in implicit measurement procedure, needs to be calculated (e.g. implicit measure is IAT 1: Coca Cola organic-lemonade vs. Coca Cola crisps – explicit measure: Purchase intention Coca Cola organic-lemonade vs. purchase intention Coca Cola crisps). Z-transformed values of the computed variables were used to achieve the same aggregated data-level compared with the IAT-Scores. Afterwards the computed proxy for explicit measurement variable (namely purchase intention) could be analysed in comparison with the z-transformed D-Scores of the IAT.

The correlation of these both variables (implicit and explicit) are not significant and low correlated (r = .075; p = .203). Comparing the mean differences of the both measures, there are either no significant differences based on the different IAT versions. Analysing the paired sampled mean differences regarding the polarity of the D-Score there are significant effects. The results are split up into the group of consistent and non-consistent D-Scores (R_2):

D-Scores	Polarity D-Scores	Measure	Mean	N	Significance
no consistency	Negative	implicit	-.6128	30	.067
		explicit	-.2757	30	
	Positive	implicit	.0435	60	.416
		explicit	.1675	60	
consistency	Negative	implicit	-1.3951	63	.000
		explicit	-.1085	63	
	Positive	implicit	.7736	134	.000
		explicit	.0377	134	

Table 5. Paired-sampled t-Test of mean differences

We found highly significant differences between implicit and explicit measures in case of consistent D-Score measures. D-Score show distinctive results while explicit measures show not very strong values. Thus, the implicit measures seem to be more reliable and valid in case of consistent D-Score measures and hence to be more predictive in choice prediction of the consumer.

Prediction of consumer behaviour

The prediction of the consumer behaviour consists of a three steps examination. First, subjects were split into two groups: One with positive and one with negative implicit attitudes. Like shown above, these two groups are different in their behaviour but do not articulate these different attitudes in explicit measurements. Hence, the aggregated estimation of utility-based choices might be problematic. Following this idea, choice-based conjoint data were analysed and latent-class segmentation was performed. The individual preference data include the estimation of the interaction effect between brand and product. Furthermore, the individual preference data of both groups were clustered by a hierarchical cluster analysis. Six groups were found: Two groups with preferences for products (Organic-lemonade (11.2%, crisps (6.3%)), two- groups with preference for brands (Coca Cola crisps (20.6%), River Cola (8.0%)) and two groups with concrete brand-product-preferences (Coca Cola Organic-lemonade (35.1%), Coca Cola Potato Crisps (18.8%)).

Based on these consumers' segments, measurement variables for implicit and explicit measures were computed. Due to the reason that not every revealed choice behaviour "fits" to the underlying implicit measures (IAT-variant which was polled by the subject), merely a subset of all subjects could be considered for this part of the study. For this instance 121 out

of 287 subjects could be examined. A table in the Appendix shows the methical approach in detail.

The correlations of the aggregated implicit and explicit measures with choice behaviour serve as a first indicator of predictive validity of the measurement procedures. All z-transformed mentioned measurement variables show valuable correlations among each other. Consumer purchase behaviour derived from CBC-experiment was significantly correlated with both measures: implicit ($r = .321$, $p = .000$) as well as explicit ($r = .266$, $p = .003$) measures of attitude measurement. These results lead to the assumption that both measures might be valuable predictors of consumers' choice.

Above findings indicate that both measures might predict the consumer choice in an appropriate way. But there is a distinction between implicit and explicit measures. Implicit and explicit measures correlate only to a small extend ($r = .168$, $p = .065$). Obviously, there is a difference between implicit and explicit measures despite implicit and explicit show comparable regression coefficient regarding the choice behaviour.

To explain these differences, a more fine-grained analysis is performed. We hypothesize that there might be a difference between "nearly" established brand-extension products and really new products. Line-extensions (here organic-lemonade) could serve as nearly established products which might be compatible with existing preference structures because of their comparability toward existing products of the brands. Concept-extensions are "really" new products and are most likely not compatible with existing preference structures of the established products of the parent brand. A compatible consumer choice is conform to the basic assumption, that (a) well-known manufacturer brands are more preferred than trade brands and (b) line-extension products are more preferred than concept-extension products. Hence we propose comparability (line-extensions) or incompatibility (concept-extensions) of these two products. Furthermore, compatible and incompatible consumer choices could be distinguished to analyse revealed differences between explicit and implicit measurements. Convergence between the measurements (explicit and implicit) and the stated choice preferences of the consumers (CBC-Analysis) regarding the compatible and incompatible groups will be evaluated. Convergence in this context denotes the same direction of consumer articulated choice (e.g., preference toward Coca Cola Organic-lemonade for both measures). The following table shows the results for this comparison:

Consumers choice	Consistency of D-Scores	Convergence with „real" consumer choice	Convergence (explicit measure)			Total
				No	yes	
Not compatible (preference of trade brand or **NOT** established product)	Not consistent	Convergence (implicit measure)	No	9	2	11
			Yes	2	3	5
		Total		11	5	16
	Consistent	Convergence (implicit measure)	No	9	4	13
			Yes	5	9	14
		Total		14	13	27
Compatible (preference of established brand or product)	Not consistent	Convergence (implicit measure)	No	3	4	7
			Yes	7	11	18
		Total		10	15	25
	Consistent	Convergence (implicit measure)	No	4	4	8
			Yes	24	21	45
		Total		28	25	53

Table 6. Predictivity of the implicit and explicit method

Statistical analyses of frequency-based differences between explicit and implicit measures and their convergence with choice behaviour measurement are divided into two parts. First classical chi-square statistics based on the groups are investigated. The asymptotical measures of crosstabs are significant (chi-square asymptotical significance =.026) in case non-compatible choice preferences. This implicates that the frequencies are not equally distributed regarding the non-compatible choice preferences. In a second step, the mean differences between the frequencies regarding implicit and explicit measures are compared. These differences are significant in case of compatible choice preferences and consistent D-Score measures. Implicit measures are significantly different from explicit measures (T=8.004; df = 66; p<0.000) in case of convergence between choice preference and implicit measures. The frequencies (implicit: 24; explicit: 4) indicates these significant difference.

Hence, main implicit-explicit distinction could be identified: There is a distinction between implicit and explicit measures if the implicit measure is consistent and the consumer prefers a compatible brand and respectively or product (e.g. Coca Cola organic-lemonade).

While the implicit measure is highly predictive (45 correct vs. 8 incorrect predictions), the explicit measure does not predict the stated consumer preference (25 correct vs. 28 incorrect). Overall, 67.8% of the implicit measures predicted correctly (82 vs. 39). The explicit measures performed significantly lower; just 47.9% of the explicit measures converged with the consumer choices (58 vs. 63). This result shows the broad opportunities of using implicit measures in our study approach. Implications from this first experiment are drawn in the following section of this paper.

The above discussed results lead to some further research implications which are congruent with some implications mentioned by other studies. First of all, Greenwald, Poehlman, Uhlmann, and Banaji (2008) mentioned demand for studies which combine explicit and implicit measures. The fundamental idea is that combined measures might explain more variance than either implicit and explicit methods. To validate these indicative results, a multivariate regression analysis was performed which combined implicit and explicit attitude measures as predictors for choice. Following the approach of Maison, D., Greenwald, A., & Bruin, R. (2004), a multiple regression analysis was significant (R^2 = .146), the regression coefficients for implicit (β = .284, t (118) = 3.299, p = .001) and explicit (β = .218, t (118) = 2.529, p = .013) show valuable predictive validity regarding the stated choice preferences of consumers (CBC-Experiment). Our results show that (a) both measures cover a significant share of predictive validity regarding choice behaviour prediction and (b) the combined measures predictive the stated choice preferences in an appropriate way.

Discussion and implications

The paper shows several implications for implicit measures and research approaches in marketing: (1) Implicit measures generate valuable insights into costumers' attitudes. (2) These measures can outperform classical explicit measurements approaches established in the marketing science. (3) The simultaneous computation of explicit and implicit measurement and examination of "real" choice behaviour is valuable. Following these three basic assumptions implicit measures might reveal new insights into customers' decision process and prediction of choice behaviour.

In our study we chose brand extensions to examine predictive validity of the implicit association test in contrast to explicitly expressed purchase intention toward new products. This approach of new product adoption behaviour was not subject to implicit associations test before. Results show that implicit attitudes outperform explicit ones, if product choices are consistent with existing value systems of the consumers. Hence, the consumers chose

products which are compatible with existing products. On the other side, they report explicitly not to choose these products. This means that consumers tend to report to choose more innovative products when they are confronted with the choice between "nearly" established products (line-extensions) and really new products (concept-extensions). Hypothetically, this fact is due to the reason that they tend to be more innovative and seek for varieties in there explicit attitudes and report this in these kind of measures.

Another possibly explanation is based on the explicit-implicit distinction by Dimofte (2010) that implicit measures could predict choices made under time pressure more accurately than explicit measures in case of not established product preferences. Based on the theory of involvement many products in marketing - especially fast moving consumer goods - do not force consumers to examine their choice intensively. In the concrete purchase situation decision are based on their existing, well established value system and past experiences. This hypothesis is congruent with the MODE-model of Fazio and Olson (2003). Thus, the findings lead to a deeper understanding of consumer information processing and decision making in low involvement situations.

The results show several implications for future research as well as marketing management. For future research in marketing a deeper understanding of implicit attitudes and the combination with simultaneous examination with explicit measurements and its abilities is needed. Existing studies in this field distinguish between spontaneous and deliberate decision making processes. These studies revealed that implicit methods are more predictive in spontaneous decision situations while deliberate purchase decisions are more exactly predicted by explicit measurement methods. Nevertheless, the "joint" predictivity of both measures was rarely investigated. Hence future research might concentrate on the combination and predictivity of both measures.

For marketing managers implicit research methods could offer valuable insights regarding new product acceptance and communication opportunities of key product features. Following this idea, marketing managers (a) could evaluate new product ideas and concepts based on implicit measurement methods and (b) test ideas for communication brand images and unique selling propositions. Especially in case of radically new ideas implicit measures might reflect hidden prejudices of consumers. Hence, this approach might complement existing methods to model consumer's acceptance and new product adoption behaviour. In besides, implicit measure could help to measure the strength of core brand image dimensions and valuable communication propositions. Thus this method may serve both in the development as well as in the communication of new product offerings.

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Appendix

Purchase behaviour		Implicit measure		Explicit measure
Segment	N	Implicit measurement variables	N	Explicit measurement variables
Organic-lemonade	32	CC-Org-lemonade vs. CC-Crisps (IAT1); RC-Org vs. RC-Crisps (IAT2)	14	PI CC-Org + PI RC-Org-lemonade - [PI CC-Crisps + PI RC-Crisp]
Coca-Cola Potato crisps (+IA)	54	CC-Crisps vs. CC-Org-lemonade (IAT1) / RC-Org (IAT 5) / RC-Crisps (IAT3)	31	PI CC-Crips - [MEAN PI CC-Org + PI RC-Org-lemonade + PI RC-Crisps]
River Cola	23	RC-Org vs. CC-Org-lemonade (IAT4); RC-Crisps vs. CC-Crisps (IAT 3)	10	PI RC-Org + PI RC-Crips - [PI CC-Crisps + PI CC-Crisps]
Coca Cola	59	CC-Org vs. RC-Org-lemonade (IAT4); CC-Crisps vs. RC-Crisps (IAT 4)	21	PI CC-Org + PI CC-Crisps - [PI RC-Org-lemonade + PI RC-Crisps]
Coca Cola Organic-lemonade	100	CC-Org vs. CC-Crisps (IAT1) / RC-Crisps (IAT6) / RC-Org-lemonade (IAT4)	43	PI CC-Org - [MEAN PI CC-Crisps + PI RC-Crisps + PI RC-Org-lemonade]
Potato Crisps (+IA)	18	CC-Crisps vs. CC-Org (IAT1); RC-Crisps vs. RC-Org-lemonade (IAT2)	2	PI CC-Crisps + PI RC-Crisps - [PI CC-Org + PI RC-Org-lemonade]

Appendix 1. Setup for convergence check

Illustration: A consumer's response in implicit measures, who prefers organic-lemonade reveals his "real" choice behavior (examined by the CBC-experiment), can be assessed by the comparison of IAT 1 and 2. All other IAT-variants reflect other combinations of brands and products. Thus, these comparisons are not utilizable for the mentioned choice behaviour.