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Why Companies Should Make Their Customers Happy: the Neural Correlates of Customer Loyalty

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In this study, we attempt to expand our understanding of the basis of affective bonds customers built with companies and brands. We conducted a brain-imaging study to assess differences in neural activations between loyal and disloyal customers of a department store during fictitious purchasing decisions. Based on prior findings in the literature, we assumed that for loyal customers, the exposure to the store brand would modulate their decision via an emotion-based path. The results suggest that loyal customers as compared to disloyal customers have established affective bonds to the store, which is might be the underlying psychological driver of their repurchases.

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Why Companies Should Make Their Customers Happy: The Neural Correlates of Customer Loyalty

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INTRODUCTION

The relevance of customer loyalty for company success is widely acknowledged in the literature as well as in practice (Chaudhuri and Holbrook 2001; Dick and Basu 1994; Gwinner, Gremler, and Bitner 1998; Oliver 1999; Reichheld and Sasser 1990). While relationship marketing approaches have emphasized the importance of building personal relationships with their customers, the affective foundations of customer loyalty has received less attention and is less understood than the cognitive or rational basis of customer loyalty (Chaudhuri and Holbrook 2001; Fullerton 2003). However, initial studies could show that for customer loyalty the relative strength of affective loyalty antecedents is more significant as compared to normative or "rational" ones (Fullerton 2003, Evanschitzky and Plassmann 2005). Given the homogeneity of most of today's product and service markets and other characteristics that may constrict the customer's use of "rational" criteria for product evaluation, brand-induced affect may represent a global evaluation measure more readily used by customers as empirical evidences from neighboring disciplines suggest (e.g. Bechara et al. 1997; Bechara and Damasio 2005 and also Slovic, Finucane, Peters and MacGregor 2002, 2004; Yeung and Wyer 2005).

In this paper, we attempt to expand our understanding of the basis of emotional bonds customers built with companies and brands. Past research could show that people sometimes use affective reactions to a stimulus as information about its reward value (Schwarz and Clore 1988, Yeung and Wyer 2004). As recent studies on consumer decision-making propose that most information processing and, in particular, the processing of emotions is subconscious (see for reviews Bargh, 2002; Fitzsimons et al., 2002; Woodside, 2004; Zaltman, 2003) we followed the approaches from Ambler et al., Deppe et al., McClure et al. and Yoon et al. and employed functional brain imaging techniques to investigate the neural correlates of customer loyalty (Ambler, Braeutigam, Stins, Rose, & Swithenby, 2004; Deppe, Schwindt, Kugel, Plassmann & Kenning, 2005; McClure et al., 2004; Yoon, Gutchess, Feinberg, & Polk, 2006).

The paper is organized as follows. First, we review concepts of customer loyalty and the role of emotions within these concepts. Then, we provide a review of neuropsychological literature on the neural foundations of emotion-based decision-making and offer hypotheses on their implications for customer loyalty. In the following, we describe our empirical study and present our results. We conclude with implications for managers and suggestions for future research.

CONCEPTUAL FRAMEWORK

Loyalty Concept

Historically, loyalty was understood as observable repurchase behavior. It was defined as a biased (nonrandom) repeat purchase of a specific brand (from a set of alternatives) over time by a consumer using a deliberate evaluation process (Jacoby and Kyner 1973). Jacoby and Chestnut (1978) later asserted that also psychological states of a consumer had to be examined to analyze loyalty. In accordance with this reasoning, customer loyalty has been defined by Oliver (1999) as "a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future." The repetitive same-brand or same brand-set purchasing would occur among loyal customers, despite situational influences and marketing efforts that could potentially enable switching behavior. Accordingly, commitment, i.e. the extent to which the customer desires to maintain a continued relationship with the firm or brand, is understood as the underlying psychological mechanism of loyalty (Allen and Meyer 1990; Morgan and Hunt 1994). Recently, customer commitment was found to be composed of different dimensions (Bansal, Irving, and Taylor 2004; Fullerton 2003). On the one hand, these are more rational aspects such as a lack of alternatives and institutional or technical requirements to use a specific product (Bendapudi and Berry 1997). On the other hand, these are affective aspects understood as an emotional attachment customers built with companies and brands (Fournier 1997; Fullerton 2003; Thomson, MacInnis, and Park 2005).

In contrast to traditional studies we attempted here to gain complementing insights by separating behavioral and psychological aspects through the use of two different data sources. Firstly, we extracted "real" purchasing behavior from a club card database of a department store including customers' monthly spending and number of purchase days within a period of 6 months. Secondly, we investigated the underlying psychological states by means of functional brain imaging. In the neuropsychological literature a great body of studies is devoted to the impact of emotions on behavior and decision-making (for reviews, see for example O'Doherty 2004; Schultz 2006). In the following we attempt to give an introductory overview about these studies.

Neuropsychological Background

One initial common conclusion relating to the neuropsychological foundations of decision-making refers to the role of emotion in human decision-making (e. g. Bechara 2004; Bechara and Damasio 2005; Bechara, Damasio, and Damasio 2004; Paulus 2005). It is suggested that "rational" or advantageous decision-making depends on prior emotional processing related to the specific decision parameters (Bechara et al. 1997). This notion is based on neurobiological evidence that seeking rewards and avoiding punishments guides the behavior of both, humans and animals (for reviews, see for example O'Doherty 2004; Schultz 2006). In constantly changing environments, it is necessary to adapt decision-making strategies by updating changes of reward contingencies. Thus, central to the organization of such behavior is the ability to estimate the reward value of stimuli, predict when rewards will occur and integrate these predictions into decision-making strategies.

Two areas found to be involved in the representation of rewards and punishments are the orbitofrontal cortex (OFC) and the amygdala. Human (O'Doherty, Kringelbach, Rolls, Hornak, Andrews 2001) and animal (Rolls, Sienkiewiczs, Yaxley 1989) studies have confirmed the role of OFC in coding for stimulus reward from a variety of sensory modalities, such as taste (Kringelbach, O'Doherty, Rolls, and Andrews 2003), olfaction (Gottfried, Deichmann, Winston, Dolan 2002), somatosensory (Rolls, O'Doherty, Kringelbach, Francis, Bowtell McGlone 2003), auditory (Blood, Zatorre, Bermudez, Evans 1999), and vision

(Aharon, Etcoff, Ariely, Chabris, O'Connor, Breiter 2001) as well as for more abstract rewards such as money (Elliott, Newman, Longe, Deakin 2003) or sports cars (Erk, Spitzer, Wunderlich, Galley, Walter 2002). Furthermore, various studies have revealed that the amygdala is involved in the processing of aversive (Morris et al. 1996) and pleasant (Canli et al. 2002) stimuli.

In most consumption decision situations, however, rewards are not received immediately, but at a later point in time and can be understood as a consequence of the decision. Thus, the ability to predict future rewards is crucial for consumer decision-making. Neuroimaging studies have found brain regions such as the amygdala, OFC, and striatum to be correlated with reward predictions (Gottfried, O'Doherty, and Dolan 2003; Knutson and Cooper 2005; O'Doherty et al. 2004; Schultz, Dayan, and Montague, 1997).

Then, the learning of stimulus-reward-response associations is required to integrate anticipated and experienced values into the decision-making process. Neuroscientific studies in this context have revealed that the dorsal striatum might play a crucial role in processing contingencies between responses and rewards (O'Doherty 2004; Zink et al. 2005). Additionally, areas of emotional memory such as the ventromedial prefrontal cortex (VMPFC) need to be involved in order to retrieve rewarding memories and relate them to the stimulus (Bechara and Damasio 2005; Paulus 2005). In the context of consumption decisions an initial study by Deppe at al. could show that an activation network linking the ventromedial prefrontal cortex, the striatum and anterior cingulate cortex (ACC) is involved in brand preference judgments (Deppe, Schwindt, Kugel, Plassmann, Kenning 2005). Deppe et al. (2005) described the network as an affective and self-referencing path during brand choice. Against this background our hypothesis was that the underlying neural activation patterns of reward attribution to stimuli customers feel emotionally attached to would be similar to Deppe et al.'s findings.

Thus, we hypothesize:

H: During brand choice, loyal customers as compared to disloyal customer will show a greater activity in the striatum, VMPC and ACC.

In the following, we describe our empirical study to test this hypothesis.

EMPIRICAL STUDY

The empirical study was designed to investigate differences in brain activity of loyal customers as compared to disloyal customers of a department store.

Participants and Study Design

A total of 300 customers of a local department store were chosen randomly from a department store's club card database of which 22 (9 females, 13 males, median age 46) were recruited, after several screening procedures, to participate in an fMRI study. Exclusion criteria were relating to fMRI safety (e.g., metal or implanted devices in the body, claustrophobia), factors known to affect brain organization, function, or blood flow (such as handedness, pharmaceutical / drug use, psychiatric, neuropsychological and medical disorders). Furthermore, participants were selected to proceed to the fMRI task only if they were either classified for the last six month as "A" customer (monthly spending of 250 EUR or more for clothing and 5 or more monthly shopping days) or "C" customers (monthly spending of 50 EUR or less for clothing and 1 or less monthly shopping days).

All participants were healthy, right-handed and, gave their written consent to participate in the study in accordance with the guidelines of the University Medical School Ethical Committee. The sample size is smaller than in typical in behavioral studies, however, it is representative of fMRI studies (see e.g. Desmond and Glover 2002; Murphy and Garavan 2004).

Experimental Procedure and Design

Participants were imaged during one functional run while making choices between two out of four department stores where they would buy different types of clothing. The experimental paradigm was designed to investigate systematic differences of neural processing during purchase decisions in the presence or absence of the specific target department store (T, the department store from which we extracted the subject pool), in contrast to three other department stores, which were classified as diverse (D_1, D_2, D_3). Nine different pieces of clothing (P1, P2;…, P9) were chosen, that could be bought in all four department stores. They were neutral in the sense that no brand name or other criteria that allow an identification of a special brand were visible. The stimuli were presented as follows. In middle of each stimulation, a piece of clothing (P1, P2,…, P9) was shown. Slightly above that piece of clothing, on the left and on the right side, the logos of two department stores were presented. These were either the target store brand (T) and one of the diverse store brands (D1, D2, or D3), or two of the diverse store brands, resulting in sequences of TDPz and DDPz stimuli (or simplified TD and DD). The order of the stimuli was randomized referring to brands as well as to pieces of clothing. Each subject had to make a total of 120 decisions (60 TD and 60 DD).

We employed a one-factorial event related design (Bandettini & Cox, 2000; Buckner, 2003; Dale, 1999; Friston, Zarahn, Josephs, Henson, & Dale, 1999) with an inter-stimulus-interval (ISI) of 5 seconds each and a randomized stimulus presentation. In order to avoid response-related activations and movement artifacts we did not request for any feedback during scanning (Deppe et al. 2005).

The subjects were instructed to choose between two stores, according to where they would prefer to buy the piece of clothing shown on the screen. Thus, the store brand itself functions as the only selection criterion. After the fMRI scan, participants were asked to provide general personal information. Then, participants were compensated EUR 25 per hour, thanked and debriefed.

Data Acquisition

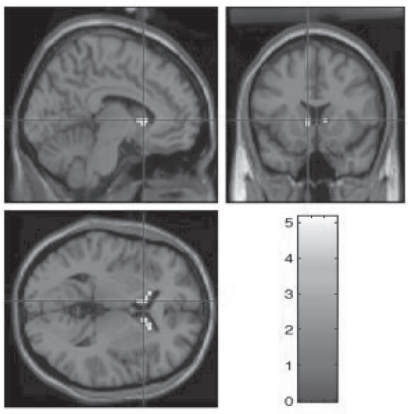
All fMRI data were acquired from a 3.0 Tesla whole body scanner (Intera T30, Philips, Best, NL). Prior to the functional data acquisition structural T1 weighted datasets were acquired for anatomical identification. The functional T2* images were acquired using single-shot gradient echo-planar imaging (EPI) sequence that covered nearly the whole brain. The data set consisted of 36 transversal slices of 3.6 mm thickness without gap. Images were acquired every three seconds (TR).

In combination with the fMRI measurement, data about the subjects' monthly spending at the target store and the number of shopping days per month in the fashion segment, were extracted from the department's store club card database.

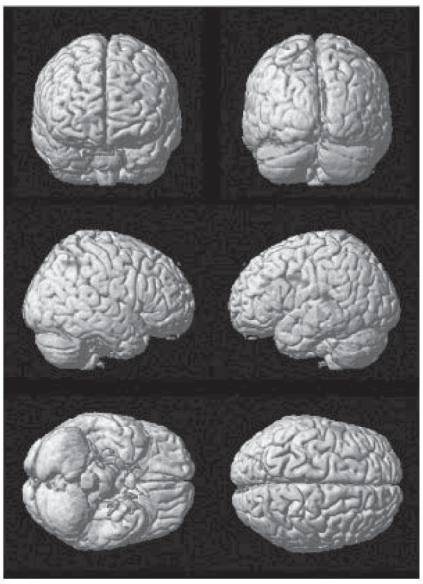
Data Analysis

All acquired fMRI data were preprocessed using Statistical Parametric Mapping (SPM2; Wellcome Department of Cognitive Neurology, London, UK). For the statistical analysis, we specified regressors of a General Linear Model (GLM) according to our experimental design at the single-subject level. We then calculated contrast images for the events when T was present (TD) compared to when the T was not present (DD). These single-subject contrast images were used for a random effects analysis at the group level.

FIGURE 1
Results from random effects group analysis



A: Anatomical assignment of most pronounced activity differences ($p_{SVC} < 0.001$ (corrected, cluster-level), $t = 5.15$) within the striatum between A-customers and C-customers. The three orthogonal section represent planes at the Montreal Neurological Institute (MNI) atlas at (-7, 14, 4).



B: Three-dimensional overview of different activation patterns of A-customers (red, n=8) compared to C-customers (green, n=14) when T is present ($p < 0.005$, cluster size > 15).

The sample was divided into two groups (A- and C-customers) based on a customer value index (monthly spending and number of monthly shopping days). A two-sample t-test was calculated on the group level to compare neural activations patterns of the two groups when T was present.

Results

The most pronounced increased activation in the presence of T in the group of A-customers compared to C-customers was found in the striatum (see Figure 1A). This area was revealed to be involved in the representation of reward prediction (Gottfried, O'Doherty, and Dolan 2003; Knutson and Cooper 2005; O'Doherty et al. 2004; Schultz, Dayan, and Montague, 1997). Zink, Pagnoni, Martin, Dhamala, & Berns (2003) found increased activity in the particular part of the striatum that we are reporting here, in response to the prediction of behaviorally relevant rewards, as compared to "only" unexpected rewards which are represented in other parts of the striatum.

Furthermore, other areas involved in the TD decision of A-customers as compared to C-customers, confirm to Deppe et al.'s First-Choice-Brand activation pattern (Deppe et al. 2005, see Figure 1 B).

The brain areas shown in Figure 1 are the activation network linking VMPFC, striatum, and ACC. Deppe et al. (2005) described the network as an emotion-based and self-referencing information processing mode during brand choice. This network was found to be involved in decisions when the subject's first choice brand was present. Conversely, where only second or lower-ranked brands were available, the underlying neural network represents an analytical weighing of alternatives, mathematical calculation, strategic thinking and object recognition (Deppe et al., 2005). In particular in the present study, both the latter and areas involved in semantically processing such as reading and speaking were found to be activated increasingly.

DISCUSSION

In this paper, we attempt to expand our understanding of the basis of emotional bonds customers built with companies and brands. We conducted an fMRI study to assess differences in neural activations between loyal and disloyal customers of a department store. Based on prior findings in the literature, we assumed that for loyal customers the store brand would modulate the underlying information processing via an emotion-based decision path, as compared to disloyal of the respective store.

As a result, we were able to replicate Deppe et al.'s neural correlate of brand preference for the particular case of store brands (Deppe et al., 2005). In addition to Deppe et al.'s findings (Deppe et al., 2005), we linked the neural activation patterns to the actual buying behavior of the subjects. We showed that, for customers with a high monetary customer value (A-customers) the presence of the specific store brand acts as a rewarding signal during the choice task, whereas customers with a low monetary customer value (C-customers) do not reveal such a rewarding activation pattern.

Implications for relationship management

Our findings offer some important insights for management. It can be noted that for a company, it is not sufficient to concentrate on 'bounding' customers for instance with technical requirements (e.g. hard- and software which is only compatible with specific operating systems) or general price promotions, but encourage customers in creating affective bonds to the company or its brands. This could be achieved by for example personalizing the commu-

nication with the customer and provide the basis for emotional events the customers links to the company or brand.

Limitations and future research

The interpretation of our empirical findings are based on binary decision making tasks conducted in a controlled laboratory environment and thus, do not reflect the richness of brand choices in a real-world shopping situation. Hence, further refinement of the experimental design, such as integrating more mobile brain imaging methods, will be needed in the future.

Furthermore, we focused only on the link between one department store and their customers' loyalty. Future studies should broaden our findings by investigating multi-brand-loyalty linkages.

In addition, we linked the neural activation patterns to past buying behavior. In following studies it might be useful to investigate whether the rewarding store brand effects can also predict future purchasing behavior. This could be implemented either by a panel data analysis over a longer period of time before *and* after the fMRI scanning or by including customers' purchasing intentions (i.e. attitudinal loyalty).

In conclusion, we could deepen the understanding of the psychological states underlying customer loyalty by providing initial neurobiological evidences of "the tie that binds" customers to companies and brands.

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