Food Quality and Preference 49 (2016) 11–19

Contents lists available at ScienceDirect

Food Quality and Preference

journal homepage: www.elsevier.com/locate/foodqual

Sandwich or sweets? An assessment of two novel implicit association tasks to capture dynamic motivational tendencies and stable evaluations towards foods

Alexandra A. Kraus [a,*], Betina Piqueras-Fiszman [b]

[a] MAPP, Aarhus University, Bartholins Allé 10, 8000 Aarhus, Denmark
[b] Marketing and Consumer Behaviour Group, Wageningen University, Hollandseweg 1, 6706KN Wageningen, The Netherlands

ARTICLE INFO

Article history:
Received 1 May 2015
Received in revised form 18 September 2015
Accepted 16 November 2015
Available online 17 November 2015

Keywords:
Motivation
Implicit measures
Recoding free Implicit Association Test (IAT-RF)
Hunger
Food reward

ABSTRACT

Desire, purchase, and consumption of fast-moving consumer goods often follow actual motivational states instead of habitual preferences. This has led to an increasing interest within health sciences to investigate the causes for irrational eating behaviours among consumers, particularly with the use of indirect measurements. However, literature results on the relationship between dynamic, *motivational* concepts (e.g., *approach* or *avoidance* tendencies) and *evaluative* concepts (e.g., *positive* or *negative* associations) remain inconclusive, possibly due to the use of different experimental manipulations and methodologies to operationalize these. Our aim with this study is to contribute to this line of research by developing a novel methodology that is based on structurally identical *indirect* measurement procedures.

We measured *explicit desire* (motivation) and *liking* (evaluation) of two different foods (sandwich and sweets) on visual analogue scales, as well as implicit approach–avoidance tendencies and implicit positive–negative associations with two variants of the recoding-free Implicit Association Tests (IAT-RFs). At first, all participants ($N = 108$) unwrapped, smelled, and explicitly judged the two foods, then all watched a video clip (during which half of the participants were allowed to eat the sandwich but not the sweets), and finally they all performed the two indirect measurements. Thus, desire for the foods was experimentally manipulated between participants.

We hypothesized that a valid measure should show an interaction of food category (manipulated within participants) and desire fulfilment. Hence, explicit desire and implicit approach motivation should be higher for participants that were not allowed to consume the sandwich and fulfil their desire, compared to the group that was able to eat the sandwich during the experiment. Results confirm our hypothesis. The motivational IAT-RF correctly assessed approach tendencies towards the sandwich in the group that did not eat, and approach tendencies towards the sweets in the group that just ate a sandwich. In contrast, the evaluative IAT-RF measure did not reflect a clear "preference" towards any of the two popular products in both groups. This research provides a potentially relevant methodology for consumer studies' by offering a chance to differentiate between implicit motivational and evaluative concepts within consumer behaviour.

1. Introduction

Consumers' everyday decisions about their food purchases and consumption are based on multiple preferences linked to rather dynamic intrinsic and extrinsic motivations. Very recently, the study of different approaches to tap into motivational and evaluative concepts towards food and their involvement in the regulation of choice and eating behaviour has gained more and more interest among researchers (e.g., Epstein, Truesdale, Wojcik, Paluch, & Raynor, 2003; Finlayson, King, & Blundell, 2007, 2008; Havermans, Janssen, Giesen, Roefs, & Jansen, 2009; Kildegaard, Tønning, & Thybo, 2011). This movement could have been inspired by a general increased awareness of unconscious processes (e.g., Nisbett & Wilson, 1977; Wilson, 2002) and specifically, by dual process theories in the field of social cognition (e.g., Fazio, 1990; Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004; for a review, see Gawronski & Creighton, 2013). The common assumption of these

* Corresponding author at: isi GmbH, Sensory - Marketing - Research, Ascherberg 2, 37124 Rosdorf/Göttingen, Germany
E-mail addresses: alexandra.a.kraus@gmail.com, alexandra.kraus@isi-goettingen.de (A.A. Kraus), betina.piquerasfiszman@wur.nl (B. Piqueras-Fiszman).

http://dx.doi.org/10.1016/j.foodqual.2015.11.005
0950-3293/

theories is that two mental processes (e.g., controlled vs. automatic, explicit vs. implicit, reflective vs. impulsive) guide behaviour and judgment.

Most researchers in the food and nutrition domain agree on how to measure motivations towards and evaluations of foods directly, for instance, by using rating scales. These are widely used in circumstances where it is acceptable for the research purpose to draw participants' attention to what they consciously like and want to consume. However, in instances when participants might find questions too intrusive, or when the researchers require an impulsive (largely automatic) response (Strack & Deutsch, 2004), indirect measurement approaches are needed. Observational methods have traditionally been used to gather information on eating behaviour from individuals, but since these setups can be time-consuming and expensive, novel computer-based indirect procedures have been proposed as alternatives. Nevertheless, a clear agreement on how to collect, apply and validate them, has not been yet established (Tibboel et al., 2011).

1.1. Indirect measurement procedures to assess food-related motivational concepts

Epstein and colleagues developed an approach to investigate the incentive value of foods (a motivational concept, often referred to as 'wanting') that has been followed by several researchers. Saelens and Epstein (1996) used a test of relative reinforcement value of food and non-food rewards with equivalent perceived hedonic value based on subjects' willingness to "work" for the rewards in computer tasks. The results showed that the food reward had much greater reinforcement value for obese vs. lean women. Epstein et al. (2003) continued this line of research with a behavioural test in which participants had to work for points that could be traded for corresponding amounts of snack food. It was shown that deprived participants were more motivated (worked longer) to obtain their snack while their explicit liking evaluations for a range of foods did not vary as a function of food deprivation.

Finlayson and colleagues (e.g., Finlayson, Arlotti, Dalton, King, & Blundell, 2011; Finlayson et al., 2007, 2008) examined the significance of dual evaluative (liking) and motivational (wanting) components of food reward for appetite control with subjects in hunger and satiated states. In their studies, explicit wanting and liking were directly assessed with rating scales. Regarding what the authors referred to as 'implicit wanting', it was measured by a behavioural forced-choice method, in which two food stimuli from different categories were presented together and the subjects were asked to select the food they "most want to eat now". This 'implicit wanting' was operationalized as the time taken in each trial to choose between each pair of foods "*in line with other laboratories successful use of reaction time as an indicator of implicit processes (for example, the Implicit Association Test*; Greenwald, McGhee, & Schwartz, 1998)" (Finlayson et al., 2008, p. 121). Their results revealed an apparent dissociation between their explicit and 'implicit' wanting and liking measures, to which the authors argued that it "*provides support that implicit and explicit processes of food reward can be simultaneously measured and dissociated using a test meal*" (p. 127). Nevertheless, in agreement with Havermans (2012) and according to De Houwer, Teige-Mocigemba, Spruyt, and Moors (2009) normative analysis,[1] it is debatable that this forced-choice task indeed assesses an implicit component of wanting. Additionally, Havermans, in a correspondence paper with Finlayson and Dalton (2012), states that these findings should be treated a little more cautiously: "*The fact that 'liking' and 'wanting' have different neurophysiological correlates does not at all mean that the two processes are likely to function independently.*" "*We should be careful not to confuse our operational definitions for facts*" (p. 254).

More recently, Piqueras-Fiszman, Kraus, and Spence (2014) used an approach–avoidance procedure to assess people's implicit motivation towards positive (appealing) and negative (disgusting) foods. They experimentally manipulated the hunger state of their participants and found their indirect measurement procedure sensitive. For instance, both groups were significantly faster in approaching positive (vs. negative) foods; however, the hungry group was not faster in their reactions compared to the not-hungry group. This was surprising, since there was a strong effect of hunger in the self-reported wanting ratings for these foods. This implies that the implicit measures are very sensitive to motivations and also to other underlying factors, such as cognitive depletion (see Seibt, Häfner, & Deutsch, 2007 for a similar approach with food deprived vs. satiated participants).

1.2. Indirect measurement procedures to assess food-related attitudes and liking

In contrast to the procedures assessing motivational concepts, less variability exists for measuring evaluative components indirectly. Attitudes towards food have so far been assessed indirectly through facial affective expressions (e.g., Hoefling et al., 2009; Zinkernagel, Hofmann, Dislich, Gschwendner, & Schmitt, 2011), and by using procedures borrowed from implicit social cognition (for a review, see Nosek, Hawkins, & Frazier, 2011); particularly the Implicit Association Test (IAT; Greenwald et al., 1998) has become a common procedure in this line of research (for a review that includes a section on eating behaviour, see Roefs et al., 2011). For instance, Seibt et al., (2007; Experiments 1 and 2) manipulated the hunger of their participants and by means of an IAT measured that food deprivation led to a more positive immediate valence of food words. The IAT is a computer-based, response interference task where participants respond as quickly and accurately as possible to two types of target stimuli (e.g., high-fat foods vs. low-fat foods) and two types of attribute stimuli (e.g., positive vs. negative). As the measurement outcome, response latencies are assessed when stimuli appear on the computer screen and participants categorize them according to the four possible concepts with two assigned response keys. For instance, in one categorization task, high-fat and positive stimuli are assigned to one response key while low-fat and negative stimuli are assigned to another, whereas a second categorization task represents the opposite combination; and so blocks of these categorization tasks are presented in a counterbalanced order. Response latencies are assumed to be faster and/or false responses fewer when the associated concepts are combined congruently in the mind of the subject. The IAT thereby relates to the common idea of attitudes (e.g., Fazio, 1990; Fazio, Chen, McDonel, & Sherman, 1982).

In addition, previous research with indirect measurement procedures (not necessarily IAT) has demonstrated that implicit measures can help discriminate between different types of individuals: e.g., obese vs. normal weight controls (Roefs & Jansen, 2002); emotional vs. non-emotional eaters (Ayres, Prestwich, Conner, & Smith, 2011); restrained vs. non-restrained eaters (Hoefling & Strack, 2008; Houben, Roefs, & Jansen, 2010; Papies, Stroebe, & Aarts, 2009; Roefs, Herman, MacLeod, Smulders, & Jansen, 2005), and predict weight gain over one year (Nederkoorn, Houben, Hofmann, Roefs, & Jansen, 2010).

[1] The terms *implicit* and *indirect* (vs. *explicit* and *direct*) are often used interchangeably. In this paper, we will follow De Houwer and colleagues' normative analysis (De Houwer et al., 2009) where *implicit* (vs. *explicit*) refers to features of the psychological construct and translates to the measurement outcome (e.g., a score), and the term *indirect* (vs. *direct*) describes the characteristics of the specific measurement procedure and therefore refers to the means of measurement.