



The discrepancy between implicit and explicit attitudes in predicting disinhibited eating



Stephanie P. Goldstein^a, Evan M. Forman^{a,*}, Nachshon Meiran^b, James D. Herbert^a,
Adrienne S. Juarascio^a, Meghan L. Butryn^a

^a Drexel University, United States

^b Ben Gurion University of the Negev, Israel

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ABSTRACT

Disinhibited eating (i.e., the tendency to overeat, despite intentions not to do so, in the presence of palatable foods or other cues such as emotional stress) is strongly linked with obesity and appears to be associated with both implicit (automatic) and explicit (deliberative) food attitudes. Prior research suggests that a large discrepancy between implicit and explicit food attitudes may contribute to greater levels of disinhibited eating; however this theory has not been directly tested. The current study examined whether the discrepancy between implicit and explicit attitudes towards chocolate could predict both lab-based and self-reported disinhibited eating of chocolate. Results revealed that, whereas neither implicit nor explicit attitudes alone predicted disinhibited eating, absolute attitude discrepancy positively predicted chocolate consumption. Impulsivity moderated this effect, such that discrepancy was less predictive of disinhibited eating for those who exhibited lower levels of impulsivity. The results align with the meta-cognitive model to indicate that attitude discrepancy may be involved in overeating.

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1. Introduction

Obesity has reached epidemic proportions in the United States, with 68% of the population now identified as overweight or obese (Flegal, Carroll, Ogden, & Curtin, 2010). Becoming overweight or obese can lead to serious health concerns such as diabetes, heart disease, and stroke (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). A growing line of research has determined that disinhibited eating is associated with long-term weight gain (Lowe, 1995; Moens & Braet, 2007; Stunkard & Messick, 1985). Disinhibited eating occurs when an individual is unable to control intake and overeats in response to internal (e.g., emotional stressors) or external (e.g., presence of palatable foods) cues despite his or her intentions not to do so (Keller, 2008).

1.1. Implicit and explicit attitudes

Prior research has indicated that attitudes about food, such as whether a certain food is viewed positively or negatively, can also strongly influence eating behavior, including disinhibited eating (Hofmann & Friese, 2008; Hofmann, Gschwendner, Friese, Wiers, & Schmitt, 2008; Hofmann, Rauch, & Gawronski, 2007). Attitudes can be

grouped into two broad categories based on how each forms through different systems of reasoning: implicit attitudes and explicit attitudes (Gawronski & Strack, 2004; Olson & Fazio, 2006; Rydell & McConnell, 2006). Implicit attitudes tend to be automatic in nature, such that individuals are often not consciously aware of them and are hypothesized to form due to associative reasoning (Gawronski & Bodenhausen, 2007; Rydell & McConnell, 2006). Explicit attitudes are more deliberative in nature and are typically within conscious awareness; they are believed to form through logical processes (Gawronski & Bodenhausen, 2007; Rydell & McConnell, 2006). This grouping of attitudes is a hallmark of the dual-process model.

The dual-process model holds that both implicit and explicit attitudes regarding a target are evaluative (e.g., positive and/or negative), but are not necessarily concordant with one another (Petty, Brinol, & DeMarree, 2007). For example, someone could have a positive implicit attitude towards chocolate (driven by associations to its immediate hedonic properties) while simultaneously reporting, through explicit attitudes, a lesser liking towards chocolate (driven by associations to its unhealthy attributes). The meta-cognitive model extends the dual-process model by positing that individuals will have both negative and positive implicit and explicit attitudes towards one object, and they can tag each evaluative attitude as either true or false (Petty et al., 2007). When there is an inconsistency in these evaluative attitudes, and one judges both attitudes as true, the meta-cognitive model predicts that discrepancy will produce enhanced attention and information processing towards the attitudinal target (Brinol, Petty, & Wheeler,

* Corresponding author at: Department of Psychology, Stratton Hall, 3141 Chestnut St., Philadelphia, PA 19104, United States. Tel.: +1 215 762 4021; fax: +1 215 762 8706.

E-mail address: evan.forman@drexel.edu (E.M. Forman).

2006). Existing research on attitude discrepancy suggests that this affects decision-making more broadly (Petty et al., 2007). However, limited research comparing implicit and explicit attitudes has been conducted in the realm of eating behavior.

1.2. Attitude discrepancy and disinhibited eating

Friese, Hofmann, and Wanke (2008) have performed a series of studies revealing that implicit and explicit attitudes towards food often differ and that, under varying circumstances, one type of attitude tends to be more predictive of eating behavior than the other. Studies show that when individuals have high cognitive capacity, meaning when there is no distraction or other stimuli to attend to, explicit attitudes are more predictive of food choice (Friese et al., 2008). Conversely, when individuals have low cognitive capacity, implicit attitudes will predict food choice (Friese et al., 2008). Implicit attitudes also predict food choice when individuals are emotional (e.g., after watching an upsetting film) or when there is low inhibitory control (e.g., self-control resources have been depleted, high levels of impulsivity; Friese et al., 2008). Whereas prior research has identified the conditions under which implicit and explicit attitudes predict disinhibited eating, it did not examine whether the discrepancy between implicit and explicit attitudes predicts such behavior.

Given that disinhibited eating involves a discrepancy between intent and behavior, it is possible that attitude discrepancies towards food drive disinhibited eating. The meta-cognitive model would suggest that such an attitude discrepancy would lead to enhanced attention to the food object, making it more likely that one will overeat even when globally attempting to restrain from eating a particular food (Coelho, Polivy, Herman, & Pliner, 2009; Federoff, Polivy, & Herman, 2003).

1.3. Impulsivity as potential moderator

If attitude discrepancy predicts disinhibited eating, it would be helpful to determine what other factors might impact this relationship. One variable that might moderate the relationship between attitude discrepancy and disinhibited eating is impulsivity (Hofmann & Friese, 2008; Hofmann et al., 2007; Lattimore, Fisher, & Malinowski, 2011). Previous research has shown that individuals who are more impulsive are more likely to act on automatic attitudes, and specifically that impulsivity heightens the effects of implicit food attitudes on overeating (Hofmann & Friese, 2008; Hofmann et al., 2007; Yeomans, Leitch, & Mobini, 2008). Attitude discrepancy is also theorized to influence behavior through automatic cognitive processes and can cause enhanced attention towards an attitude object (Brinol et al., 2006; Petty et al., 2007). This increased attention likely enhances temptation to eat, which will pose a greater inhibitory challenge. Thus, we hypothesize that those with higher levels of impulsivity will be more affected by attitude discrepancy.

1.4. Current study

Whereas previous studies have investigated the role of implicit and explicit attitudes in overeating (e.g., Czyzewska & Graham, 2008; Friese et al., 2008; Hoefling & Strack, 2008; Stroebe, Henk, Schut, & Kruglanski, 2007), no study to date has directly investigated the role of attitude discrepancy in disinhibited eating. In the current study we measured disinhibited eating of chocolate by means of both self-report and a behavioral measure of consumption. The primary aim of the current study was to determine if attitude discrepancy would predict disinhibited eating. We additionally hypothesized that both implicit and explicit attitudes would each be related to consumption, based on prior work documenting their ability to predict eating behavior in a variety of situations (Craeynest et al., 2005; Czyzewska & Graham, 2008; Friese et al., 2008; Roefs & Jansen, 2002). A secondary aim was to examine the effects of a potential moderator, impulsivity. Based on previous

literature, we expect impulsivity, as measured by a laboratory task, to moderate the relationship between implicit attitudes and disinhibited eating. However, we hypothesized that the moderation effect of impulsivity on attitude discrepancy would predict disinhibited eating over and above any other effects, such that attitude discrepancy would more predictive of disinhibited eating among those who are more impulsive.

2. Material and methods

2.1. Participants

Participants were 95 healthy weight or overweight (mean body mass index = 23.55 kg/m², range = 17.59–38.22 kg/m², *SD* = 3.88 kg/m²), female undergraduate students enrolled in psychology courses from a private university in Philadelphia, Pennsylvania. College women were selected due their known tendency towards higher restraint levels, which was borne out in the current sample (Eating Inventory restraint subscale mean = 53.95, *SD* = 19.17). Participants were between the ages of 18 and 31 years (*M*_{age} = 19.87, *SD* = 2.16), and the samples were 67.4% Caucasian (*n* = 64), 26.3% Asian (*n* = 25), 3.2% African American (*n* = 3), 2.1% Latino (*n* = 2), and 5.3% other ethnicity (*n* = 5). Recruitment was conducted from August 2011 through December 2011 through fliers as well as in-class announcements. The study was also posted on a secure online database that distributes extra credit in psychology courses in exchange for research participation.

Eligibility requirements for the study were consuming chocolate at least once a month and being a female student. Exclusion criteria were chocolate-related allergies, diabetes, pregnancy, and a history of and/or current eating disorder. Upon completion of the study, participants received extra credit in a psychology course.

2.2. Measures

2.2.1. Implicit attitudes about chocolate

Implicit attitudes were measured by performance on an Implicit Associations Test (IAT; Greenwald, McGhee, & Schwartz, 1998). IATs require participants to respond quickly to images presented on a computer screen so that the association between two ideas may be assessed. Due to the nature of the assessment (that participants must respond quickly), there is no time for complex deliberation. The test is therefore thought to tap uncensored, immediate associations between ideas. The measure yielded from IATs is a *D* score. The *D* score is based on the notion that participants take longer to respond to associations inconsistent with beliefs (e.g., pairing “negative” pictures with chocolate, on the assumption that chocolate is a positively valenced stimulus) and shorter to respond to associations consistent with beliefs (e.g., pairing “positive” pictures with chocolate). Thus, a *D* score is the ratio between mean reaction times (reaction times consistent with beliefs subtracted from reaction times inconsistent with beliefs) and pooled standard deviations. A positive *D* score implies that one has a positive implicit attitude towards chocolate, and a negative *D* score implies that one has a negative implicit attitude towards chocolate. In the current study, we used the single-category IAT (Karpinski & Steinman, 2006). Previous research using the IAT has demonstrated that the test can effectively measure implicit attitudes in various settings (Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Greenwald et al., 1998). Variations of this measure have also been used successfully in weight attitude research and implicit food preference research, which suggest that it may also be a useful tool to measure implicit relations towards food (Craeynest et al., 2005; McKenna, 2010).

During the instruction phase of the IAT, participants were told that their task was to use the computer keyboard to sort images, which appeared in the center of the screen, into one of three categories: “good,” “bad,” and “chocolate”. Participants were told that the words

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