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## Regulatory focus and reliance on implicit preferences in consumption contexts

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### Abstract

The present research tested the assumption that implicit preferences fit the eagerness of a promotion focus, but not the need for safe judgments and decisions of a prevention focus. In three studies, we assessed individual differences in implicit preferences for consumer goods and investigated their influence on self-regulatory behavior. In line with expectations, implicit preferences predicted choice intentions (Study 1), single and repeated choices between consumer goods (Study 2), and the amount of product consumption (Study 3) better for individuals in a promotion focus than in a prevention focus. The results were found with two different measures of implicit preferences.

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Imagine that Tim is attending a conference in France. To his great pleasure he meets his former supervisor, Sharon, who asks Tim how everything is going. Enthusiastically, Tim outlines his ambitious plans and his hopes for his future career. At this moment, a waiter is offering a delicious French pastry as well as healthy fresh grapes. Tim feels pulled toward the pastry. Will he follow his spontaneous impulse? In this article, we draw on regulatory focus theory to advance the idea that the current self-regulatory orientation of an individual has an important impact on consumption behavior in these contexts. With regard to Tim's choice in the example, we assume that he would more likely rely on his impulsive response when his current self-regulatory orientation is determined by hopes and ideals related to his career, than when his current self-regulatory orientation is determined by thoughts about his responsibilities in teaching or his plans to obtain a safe lifetime position.

### Regulatory focus theory

Regulatory focus theory (Higgins, 1997, 1998, 2002) suggests that self-regulatory orientations are a major source

for differences in evaluation, behavior, and experiences. Specifically, the theory distinguishes between a promotion and a prevention focus as two basic motivational orientations that direct information processing and self-regulatory behavior. The theory proposes that even if most people try to approach pleasant states and to avoid unpleasant states, they can do so in different ways. First, promotion- and prevention-focused individuals are assumed to differ in their strategic inclinations to approach a desired end state. Promotion self-regulation is concerned with approaching matches with a desired state, whereas prevention self-regulation is concerned with avoiding mismatches with a desired state. For example, to keep a slim figure, a promotion-focused individual would be more likely to exercise (approach a match), whereas a prevention-focused individual would be more likely to avoid eating fatty foods (avoiding a mismatch). Furthermore, the theory posits that promotion-focused individuals are more sensitive to the presence and absence of positive outcomes, and prevention-focused individuals are more sensitive to the presence and absence of negative outcomes. For instance, a promotion-focused individual might be more aware that exercising will help in maintaining a slim figure, whereas a prevention-focused individual might be more aware that the consumption of fatty food would make keeping a slim figure more difficult. In the

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language of signal detection theory, promotion-focused individuals are expected to behave in a way that helps them to ensure hits (e.g., doing something to slenderize) and to avoid errors of omission (e.g., not doing something to slenderize), whereas prevention-focused individuals should behave in a way that helps them to avoid errors of commission (e.g., doing something wrong, such as eating fattening food) and to ensure correct rejections (e.g., not doing something wrong). Thus, promotion-focused individuals should be more eager, whereas prevention-focused individuals should be more vigilant.

Regulatory focus theory (Higgins, 1997, 1998, 2002) also suggests differences in the determinants of the two regulatory orientations. For example, for a promotion focus, basic needs for nurturance, a framing of outcomes as gains or non-gains, and an enhanced accessibility of wishes, aspirations, and hopes (referred to as ideals) are assumed to be determinants. By contrast, needs for security, a framing of outcomes as losses or non-losses, and an enhanced accessibility of obligations, duties, and responsibilities (referred to as oughts) are assumed to be the determinants of a prevention focus.

The predominant regulatory focus of an individual in a certain context can be determined by the chronic regulatory focus strength that individuals might have developed during socialization (Lockwood, Jordan, & Kunda, 2002; Higgins et al., 2001) as well as by an enhanced accessibility of a specific focus in the context. The latter can be influenced by the characteristics of a task (Shah, Higgins, & Friedman, 1998) and the experiences of the individual in the present or a preceding context (Higgins, Roney, Crowe, & Hymes, 1994).

Recent research has demonstrated comprehensively the impact of regulatory focus and its determinants on behavior (e.g., Florack & Hartmann, 2007; Förster, Higgins, & Taylor Bianco, 2003; Zhou & Pham, 2004). A study by Förster et al. (2003), for instance, showed the impact of chronic and induced regulatory focus on speed and accuracy. In one study, participants completed a simple drawing task. When participants moved closer to the goal of completing the drawing, the authors observed faster performance for promotion-focused participants, but also more errors. Prevention-focused participants were more careful and made fewer mistakes than promotion-focused participants, but also worked more slowly on the task.

### Regulatory focus and information processing

In addition, researchers have repeatedly argued that focus-specific orientations of individuals manifest not only in behavior, but also in information processing (e.g., Florack, Scarabis, & Gosejohann, 2005; Förster & Higgins, 2005; Lee & Aaker, 2004; Murali, & Pons, 2009; Pham & Higgins, 2005; Wang & Lee, 2006). A basic assumption from this line of research is that a promotion focus should lead to eager and risky information processing strategies in the same way that it leads to eager and risky behavioral strategies. By contrast, according to this perspective, a prevention focus should lead to vigilant information processing strategies in the same way that it leads to vigilant behavioral strategies. Friedman and Förster (2001)

integrated this basic assumption into regulatory focus theory by proposing that the regulatory focus itself informs the individual which behavioral *as well as* which information processing strategy is adequate in a specific context. In detail, they suppose that the mere activation of a promotion focus is related to a perception of the environment as safe and benign, whereas the mere activation of a prevention focus is related to a perception of the environment as threatening. As a consequence, the activation of a promotion focus should lead to riskier information processing strategies than the activation of a prevention focus (Friedman & Förster, 2001).

The consequences of differential information processing by promotion- and prevention-focused individuals are manifold (Florack, Ineichen, & Bieri, 2009; Friedman & Förster, 2001; Herzstein, Posavac, & Brakus, 2007; Pham & Avnet, 2004, 2009; Murali & Pons, 2009). Herzstein et al. (2007), for instance, showed that prevention-focused individuals more carefully draw inferences about the potential risks of a new product than promotion-focused individuals, even if the related disadvantages were equally important to promotion- and prevention-focused participants. Similarly, Murali and Pons (2009) found that effortful attribute processing, which is generally preferred by individuals who are motivated to maximize the accuracy of decisions, is favored more by prevention-focused individuals than by promotion-focused individuals. Friedman and Förster (2001) demonstrated that promotion-focused individuals more than prevention-focused individuals develop an eager creative thinking style when working on a task.

Pham and Avnet (2004) showed in a series of studies that the activation of a promotion focus leads to a reliance on “risky” affective responses, whereas the activation of a prevention focus strengthens the “save” elaboration on substantive information regarding a product. In one study (Study 3), the authors manipulated the regulatory focus of participants and presented participants with an ad for a dictionary. This ad had either an attractive or an unattractive appeal, and was based on either a strong or weak advertising message. In line with their hypotheses, the authors found that the affective responses toward the appeal of the ad were more important for individuals in a promotion focus than for those in a prevention focus, while the strength of the advertising message was more important for individuals in a prevention focus than for those in a promotion focus. In a similar study (Pham & Avnet, 2009, Study 2), the same authors demonstrated that promotion-focused individuals are more likely than prevention-focused individuals to rely on their mood when evaluating a product.

Since reliance on ad-elicited affect or mood is an eager and risky information-processing strategy, which is contrasted by a more careful consideration of substantive information, the studies of Pham and Avnet (2004, 2009) support the assumption that the strategic orientations of promotion and prevention also manifest themselves in information processing, leading to a differential use of feelings or immediate internal responses. The reported results are corroborated by other research on human information processing showing that states of eagerness, but not states of vigilance, encourage a reliance on heuristics and

general knowledge structures (Bless, Schwarz, Clore, Golisano, & Rabe, 1996; Bodenhausen, Kramer, & Süsser, 1994), and that less risk-averse individuals more than risk-averse and vigilant individuals are open to relying on information that cannot easily be justified (Shafir, Simonson, & Tversky, 1993). In summary, evidence suggests that states of eagerness and vigilance that are associated with a promotion and a prevention focus, respectively, indeed lead to different information processing strategies. Promotion-focused individuals tend to rely on riskier, heuristic information processing, while prevention-focused individuals tend to rely on safer, systematic information processing.

As an extension of this reasoning, the influence of regulatory focus on information processing strategies becomes apparent also when considering how individuals vary in how much they rely on implicit preferences. Implicit preferences can be considered to arise from the ability to memorize implicit reinforcement values, which are based on the experience of associative learning and probabilistic reinforcement outcomes (Frank, Cohen, & Sanfey, 2009). Implicit preferences can be contrasted with preferences derived from explicit memory, which, for example, is based on the encoding of distinct episodes and facts. Several information processing models from social psychology take these distinct functions of memory systems into account (Epstein & Pacini, 1999; Smith & DeCoster, 2000; Strack & Deutsch, 2004; Strack, Werth, & Deutsch, 2006; Wilson, Lindsey, & Schooler, 2000). In particular, all these models make predictions about an associative memory system that slowly forms associative representations of typical sequences and patterns of perceptions, experiences, and behaviors, which are the source of implicit preferences. They contrast this system with a second system that integrates semantic and episodic representations in an analytical and propositional way.

An important aspect of implicit preferences is that they provide individuals with the possibility of eager and fast decisions, but that they do not provide individuals with a secure base of choice, which might be more important for vigilant individuals. Hence, promotion-focused individuals should be more likely to rely on implicit preferences than prevention-focused individuals. To illustrate this point, let us go back to our introductory example where Tim had to choose between French pastries or fresh grapes. It might be that Tim immediately remembered that every time he had visited this particular place he had some of these pastries and he remembered that the taste has been delicious every time. This episodic memory would be a very safe base for the choice. However, it might be that Tim had not visited this place and eaten these pastries yet. In this case, he still might have built implicit preferences through probabilistic reinforcement learning in similar places where he had similar pastries. Maybe, in some of these cases the pastries were good. Then, Tim might possess an implicit preference for the pastries even if he does not remember a single case where he ate similar pastries. We assume that Tim would be more likely to rely on his implicit preferences when making a choice in an eager state of promotion focus than when making a choice in a vigilant state of prevention focus.

When considering this hypothesis, it is important to note that implicit preferences are different from the concepts examined in the research of Pham and Avnet (2004, 2009). In most of their studies, Pham and Avnet focused on explicit feelings, for example, toward an ad. Even if explicit feelings and implicit preferences both match the needs of eager information processing, they represent different constructs. While explicit feelings represent the conscious affective evaluation of an object in a specific context or in past episodes, implicit preferences are based on associative and probabilistic learning. In addition, implicit preferences need not to be consciously accessible (Strack & Deutsch, 2004). As reported above, Pham and Avnet (2009, Study 2) tested in one study the differential reliance on mood under a promotion or a prevention focus, as well. Again, the reliance on mood fits the needs of eager information processing in the same way implicit preferences do. However, mood does not have its base in associative memory processes. It is an incidental state. By contrast, implicit preferences are represented in associative memory traces associated with a target object.

In the present research, therefore, we set out to examine the relation between implicit preferences for consumer products and consumer behavior as a function of regulatory focus. Our basic assumption was that because of their non-propositional and intangible nature, implicit preferences do not suit the needs of prevention-focused individuals for safe and well-justified judgments and decisions, while the reliance on implicit preferences fits the eager information processing style of promotion-focused individuals for whom speed is more important than accuracy (Förster et al., 2003). Specifically, we tested the hypotheses that implicit preferences have a stronger influence on consumption intentions (Study 1), consumer choices (Study 2), and the actual amount of consumption (Study 3) in promotion-focused individuals than in prevention-focused individuals. To strengthen the validity of our results, we measured two different indicators of implicit preferences that are both theoretically and empirically closely related (Scarabis, Florack, & Gosejohann, 2006): associations of the target objects with the self (Study 1 and 2) and associations of the target object with valence (Study 3). *Associations of objects with the self* are developed by possession, prior use, or the imagination or wish to possess the object (cf. Brunel, Tietje, & Greenwald, 2004). They represent a main aspect of implicit preferences (Greenwald et al., 2002). *Evaluative associations* are connections between an object and positive or negative valences. They are based, among other factors, on prior learning and experience with the object (Gibson, 2008; Smith & DeCoster, 2000). Past research has shown that both measures predict behavior particularly well under conditions that foster associative processing, such as under conditions of high cognitive load (Friese, Hofmann, & Wänke, 2008), low need for cognition (Florack, Scarabis, & Bless, 2001), low trait self-control (Friese & Hofmann, 2009), or when individuals focus on their affective reactions toward choice options as opposed to rational considerations (Scarabis et al., 2006; for an overview, see Friese, Hofmann, & Schmitt, 2008).

## Study 1

In Study 1, we examined the hypothesis that implicit preferences are an important determinant of consumption intentions for individuals in a promotion focus, but not for those in a prevention focus. To test this hypothesis, we induced the regulatory focus with an ideal or ought priming (cf., Higgins et al., 1994; Pham & Avnet, 2004) and asked participants to indicate their intention to consume one of two offered burgers. To measure implicit preferences for the two burgers, we applied an implicit association test (IAT, Greenwald, McGhee, & Schwartz, 1998) measuring associations of the relevant burger brands with the self.

### Method

#### Participants and design

Forty high school students were randomly assigned to either a promotion focus or a prevention focus condition. Their ages ranged from 17 to 19 years ( $M=18.18$ ,  $SD=.75$ ). The students were visitors to an open house at the University of Münster for high school students interested in studying at the university.

#### Procedure

Participants were told that they could take part in a study on advertising and consumer behavior. First, all participants filled out a short questionnaire that was used to induce a promotion focus or a prevention focus. Then participants were told that we were interested in advertising effects. To embed the measure of consumption intention into this cover story, an advertisement for a burger (Big Mac) was shown on a computer screen and, then, participants had to indicate whether they would like to eat this burger or another burger (Whopper). After the indication of the consumption intention, participants completed the implicit association test (Greenwald et al., 1998) and indicated their age and sex.

#### Manipulation of regulatory focus

To induce a promotion focus or a prevention focus, we adapted a manipulation from Higgins et al. (1994; see also Liberman, Idson, Camacho, & Higgins, 1999; Pham & Avnet, 2004). In the promotion focus condition, participants were asked to think about their aspirations and hopes, and to list two of their past and two of their current aspirations and hopes. In the prevention focus condition, participants were asked to think about their duties, obligations, and responsibilities, and to list two of their past and two of their current duties, obligations, and responsibilities. The manipulation is based on the assumption of regulatory focus theory that the regulation of behavior according to duties, obligations, and responsibilities is a main characteristic of a prevention focus, and that rendering these concepts highly accessible activates a prevention focus. By contrast, the regulation of behavior according to aspirations and hopes is a main characteristic of a promotion focus, and rendering these concepts highly accessible should activate a promotion focus (Higgins, 1997).

#### Measure of implicit preferences

We used an adapted version of the implicit association test (IAT, Greenwald et al., 1998), with the category labels *self* versus *other* and *Whopper* versus *Big Mac* as a measure of implicit preferences. Similar adaptations of the IAT have been successfully used in previous research (e.g., Egloff & Schmukle, 2002; Greenwald et al., 2002; Scarabis et al., 2006). The categories *self* and *other* were represented by five self-related words (e.g., “me”; “mine”) and five other-related words (e.g., “other”; “your”). The categories *Whopper* and *Big Mac* were each represented by five pictures. The IAT consisted of five experimental blocks. Three blocks included a simple classification of pictures of burgers (“Whopper” versus “Big Mac”) or self- and other-related words. Relevant for the computation of the measure of implicit preferences were two blocks with a combined discrimination task. During these blocks, participants had to classify pictures to the categories *Whopper* and *Big Mac* and words to the categories *self* and *other* using two response keys where each response key was assigned to two categories. During the first combined block, *Whopper* and *other* shared one response key, and *Big Mac* and *self* shared the other response key. During the second combined block, this setup was reversed: *Big Mac* and *other* shared one response key, and *Whopper* and *self* shared the other. Each combined block contained 35 trials. The order of word or picture presentations was predetermined, but the specific word or picture that was presented was randomized. To calculate an IAT score, we computed the D-algorithm proposed by Greenwald, Nosek, and Banaji (2003), such that more positive values indicate a stronger association between the self and *Whopper* and a weaker association between the self and *Big Mac*. To estimate internal consistency, we created four mutually exclusive subsets of trials and calculated the IAT scores separately for each subset. Cronbach’s alpha for these scores was .85.

#### Consumption intention

We measured consumption intention with 5 items (“I fancy this burger”; “I would like to taste the burger”; “I am interested in tasting the burger”; “I would like to buy the burger”; “I will buy the burger in the future”). Participants indicated their intention to consume either the *Big Mac* or the *Whopper* on 6-point bipolar scales (1 = *The Big Mac very much*; 6 = *The Whopper very much*). We averaged the answers into a combined scale ( $\alpha=.91$ ). Higher values indicate a stronger consumption intention for a *Whopper* as compared to a *Big Mac*.

### Results

#### Data preparation and preliminary analyses

To prepare the data for multiple regression analyses (cf., Aiken & West, 1991) predicting the consumption intention, we z-standardized all continuous variables. In addition, we dummy coded the experimental conditions (0 = promotion focus, 1 = prevention focus). The experimental conditions did not differ significantly with respect to the consumption intention

( $M_{\text{Promotion}} = 3.61$ ,  $SD = 1.18$  versus  $M_{\text{Prevention}} = 3.33$ ,  $SD = 1.21$ ,  $t(38) = .73$ ,  $p = .472$ ).

#### Impact of implicit preferences on choice intentions

We hypothesized that in the promotion focus condition individuals would be more likely to rely on their implicit preferences when forming consumption intentions than in the prevention focus condition. To test this prediction, we first computed zero-order correlations between the implicit preferences and the consumption intention. In line with our hypothesis, the implicit measure was significantly correlated with the consumption intention in the promotion focus condition,  $r(20) = .69$ ,  $p = .001$ , but not in the prevention focus condition,  $r(20) = -.13$ ,  $p = .579$ . To test the differential reliance on implicit preferences in a promotion and prevention focus more appropriately, we additionally performed a multiple regression analysis on consumption intentions. As predictors, we entered the experimental condition, the implicit preferences, and their interaction. The results of this analysis confirmed our hypothesis. The interaction between implicit preferences and the regulatory focus condition was significant (Fig. 1),  $\beta = -.83$ ,  $t(36) = 2.57$ ,  $p = .015$ . Simple slope analyses (Aiken & West, 1991) revealed that, as expected, implicit preferences were a good predictor of consumption intentions in the promotion focus condition,  $\beta = .68$ ,  $t(36) = 3.32$ ,  $p = .002$ , but not in the prevention focus condition,  $\beta = -.17$ ,  $t(36) = .65$ ,  $p = .519$ .

#### Discussion

An important aspect of implicit preferences is that they provide individuals with the possibility of eager and fast decisions, but that they do not provide individuals with a secure base of choice, which might be more important for vigilant individuals. Hence, we assumed that individuals in a promotion focus, which is characterized by eager and risky information processing and

behavior (e.g., Florack, Scarabis, & Gosejohann, 2005; Friedman & Förster, 2001; Förster & Higgins, 2005; Herzstein et al., 2007), are more likely to rely on implicit preferences than individuals in a prevention focus, which is characterized by vigilance orientations. The results of Study 1 provide the first evidence for this hypothesis. Individual differences in implicit preferences were better at predicting consumption intentions when a promotion focus was induced than when a prevention focus was induced. Previous research has already shown that individuals rely on other cues than implicit preferences that provide promotion-focused individuals with a means for fast decisions that fit their eagerness (e.g., Pham & Avnet, 2004). However, no study has shown the increased reliance of promotion-focused individuals on implicit preferences.

#### Study 2

In Study 1, we asked participants to imagine a choice situation between two burgers and to indicate consumption intentions. However, we did not measure real choice behavior. In Study 2, we tried to replicate the findings of Study 1 with different choice options: a real choice between fruit and chocolate items, and a simulated repeated-choice task. Objects of choice were fruit and chocolate. We used the same manipulation to induce regulatory focus and a similar measure of implicit preferences as in Study 1.

#### Method

##### Participants and design

Forty-five participants, mostly students from the University of Münster, were randomly assigned to either a promotion-focus or a prevention-focus condition. One participant was excluded from the analyses because he indicated that he was familiar with the experimental procedure. The age of the remaining participants ranged from 19 to 37 years ( $M = 23.41$ ,  $SD = 3.47$ ).

##### Procedure

All participants took part in the study after 12 pm. First, they filled out a short questionnaire, which was used to induce a promotion focus or a prevention focus. Then, they were asked to follow the instructions presented on a computer screen. As dependent measures, participants engaged in (a) a single-act choice task between some fruit and a chocolate bar as well as (b) a repeated-choice task. The order of these two measures was counterbalanced between participants. Next, participants completed the measure of implicit preferences. Finally, they indicated their age, sex, and occupation.

##### Manipulation of regulatory focus

To induce a promotion focus or a prevention focus, we applied the same manipulation as in Study 1.

##### Measure of implicit preferences

We used the same IAT as in Study 1 to measure implicit preferences with the following exceptions: We changed the

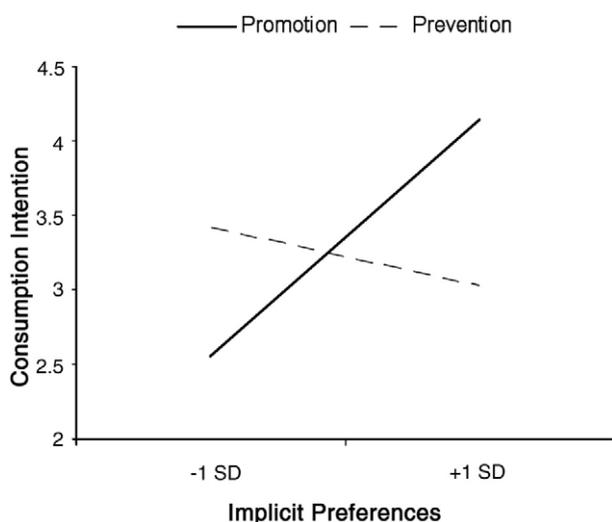


Fig. 1. Consumption intention as a function of implicit preferences and regulatory focus condition in Study 1. High values indicate stronger implicit preferences for the Whopper (compared to the Big Mac), higher intentions to consume a Whopper, and lower intentions to consume a Big Mac.

relevant categories. Instead of different burger brands, participants had to categorize pictures of different well-known German brands of chocolate (e.g., “Milka,” “Ritter Sport”) and different fruit items (e.g., apples, bananas) as belonging to the categories of *chocolate* or *fruit*. As in Study 1, this task was combined with the classification of words representing the self or others in the critical phases of the procedure, which consisted of 25 trials each. To calculate the IAT score, we computed the D-algorithm proposed by Greenwald et al. (2003), such that more positive values indicated a stronger association between the self and chocolate. We computed the reliability in the same way as in Study 1. Cronbach’s alpha for the IAT score was .66.

#### Single-act choice task

Participants read on the computer screen that they had the opportunity to choose between fruit and chocolate as a reward for their participation. The two options were presented on the screen with two big pictures and an assigned value of .30 EUR each. Participants made their choice by clicking on one of the two pictures.

#### Repeated-choice task

In addition to the single-act choice task, we added a task that measured preferences repeatedly, and that allowed us to calculate reliability estimates. At the beginning of this task, participants were informed that they had to select items on a screen based on whether they would fit better with themselves or with another person. They then saw two big buttons on the screen labeled “I” for themselves and “you” for the other person. To familiarize participants with the task, first, words appeared on the screen that were related to themselves (e.g., “mine”; “for me”) or another person (e.g., “yours”; “for you”) and participants had to press either the “I” or the “you” button. After six of these test trials, self- or other-related words, fruit names (e.g., apple, banana), and chocolate brand names (e.g., “Milka,” “Ritter Sport”) appeared randomly on the screen for 60 trials. The responses were recorded. We computed the relative frequency of the chosen chocolate (fruit) items by dividing the number of chocolate (fruit) items that participants selected for themselves by the number of all presented chocolate (fruit) items. High values indicate that participants selected a relatively high number of chocolate (fruit) items for themselves. To assess the reliability of the repeated-choice task, we created four mutually exclusive subsets of selections and calculated the relative frequency of chosen items separately for each subset. Cronbach’s alpha was .84 for the choice of chocolate items and .87 for the choice of fruit items.

#### Results

##### Data preparation and preliminary analyses

To prepare the data for multiple regression analyses (cf., Aiken & West, 1991), we first z-standardized all continuous measures and dummy-coded the experimental condition (0=promotion focus, 1=prevention focus). We coded the choice as 0 for fruit and 1 for chocolate. The experimental conditions did not differ significantly with respect to the single-act choice; promotion

focus: 65.2% chose chocolate; prevention focus: 57.1% chose chocolate,  $\chi^2(1, N=44) = .30, p = .583$ . For the repeated-choice task, there was a non-significant tendency for a higher relative frequency of chosen chocolate items,  $M_{\text{Promotion}} = .64, SD = .34$  versus  $M_{\text{Prevention}} = .48, SD = .28, t(42) = 1.72, p = .093$ ; and a lower relative frequency of chosen fruit items,  $M_{\text{Promotion}} = .62, SD = .33$  versus  $M_{\text{Prevention}} = .76, SD = .28, t(42) = 1.51, p = .140$ , in the promotion-focus condition compared to the prevention-focus condition.

#### Impact of implicit preferences on the single-act choice

We hypothesized that in a promotion focus individuals are more likely to base their choice on implicit preferences than in a prevention focus. To test this prediction, we first computed zero-order correlations between implicit preferences and choice. Consistent with our hypothesis, implicit preferences were significantly correlated with the choice between fruit and chocolate in the promotion-focus condition,  $r(23) = .54, p = .008$ , but not in the prevention-focus condition,  $r(21) = -.08, p = .734$ . In the promotion-focus condition, participants were more likely to choose chocolate the more chocolate was associated with the self. Further support for our hypothesis is provided by a binary logistic regression analysis on the choice with the regulatory focus manipulation, implicit preferences, and the interaction of the two variables as predictors. The binary logistic regression analysis yielded a significant interaction between implicit preferences and the regulatory focus (Fig. 2),  $\beta = -1.69, \chi^2(1, N=44) = 3.86, p = .049$ . Additional analyses of the two experimental conditions (Aiken & West, 1991) revealed that implicit preferences were a good predictor of choice in the promotion-focus condition,  $\beta = 1.49, \chi^2(1, N=44) = 5.05, p = .025$ , but not in the prevention-focus condition,  $\beta = -.20, \chi^2(1, N=44) = .13, p = .718$ .

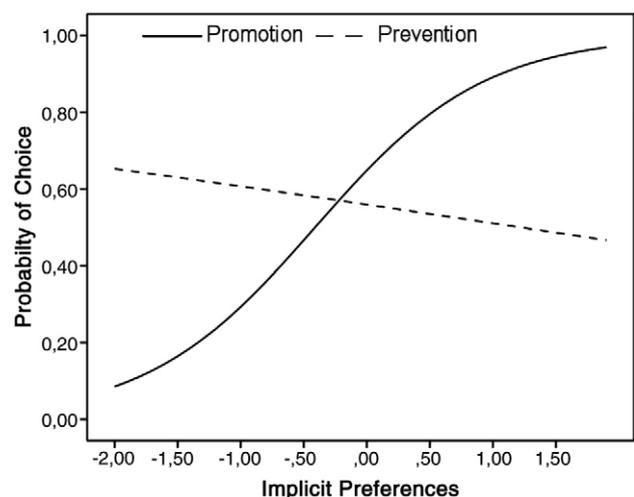


Fig. 2. Probability of choice of fruit versus chocolate as a function of implicit preferences and regulatory focus condition in Study 2. High values indicate stronger implicit preferences for chocolate (compared to fruit), and a higher probability of choosing chocolate.

### *Impact of implicit preferences on the repeated-choice task*

We expected that in the promotion focus condition the relative frequency of chosen chocolate items would increase with stronger implicit preferences for chocolate whereas this relation should be weaker in the prevention focus condition. To test this hypothesis, we first computed zero-order correlations of implicit preferences with the relative frequency of chosen chocolate items. Consistent with our hypothesis, implicit preferences were significantly correlated with the relative frequency of chosen chocolate items in the promotion-focus condition,  $r(23) = .65$ ,  $p = .001$ , but not in the prevention-focus condition,  $r(21) = -.30$ ,  $p = .181$ . Congruently, a multiple regression analysis including regulatory focus condition, implicit preferences, and their interaction showed a significant interaction between implicit preferences and regulatory focus, predicting the relative frequency of chosen chocolate items,  $\beta = -.95$ ,  $t(40) = 3.41$ ,  $p = .002$ . Simple slope analyses (Aiken & West, 1991) showed that implicit preferences were a good predictor of the relative frequency of chosen chocolate items in the promotion-focus condition,  $\beta = .63$ ,  $t(40) = 3.83$ ,  $p = .001$ , but not in the prevention-focus condition,  $\beta = -.32$ ,  $t(40) = 1.42$ ,  $p = .165$ .

Similarly, we expected that in the promotion-focus condition the relative frequency of chosen fruit items would increase with weaker implicit preferences for chocolate compared to fruit (this equals stronger implicit preferences for fruit compared to chocolate, because the IAT is a relative measure) whereas this correlation should be weaker in the prevention-focus condition. In contrast to our expectations, the correlations of implicit preferences with the relative frequency of chosen fruit items approached significance both in the promotion-focus condition,  $r(23) = -.41$ ,  $p = .051$ , and in the prevention-focus condition,  $r(21) = -.39$ ,  $p = .082$ . A multiple regression analysis on the relative frequency of chosen fruit items with the regulatory focus manipulation, implicit preferences, and their interaction as predictors did not yield a significant interaction effect of regulatory focus and implicit preferences,  $\beta = .01$ ,  $t(40) = .04$ ,  $p = .97$ . Participants in both the promotion- and the prevention-focus conditions chose more fruit items for themselves the weaker their implicit preferences for chocolate were compared to fruit.

### *Discussion*

Study 1 showed that implicit preferences may predict purchase intentions better for promotion-focused than for prevention-focused individuals. Study 2 extends this finding by showing that this moderator effect of regulatory focus holds true for the prediction of real choices as well. We found the predicted moderator effect not only for a single-act choice between fruit and chocolate, but also in a repeated-choice task for the selection of chocolate items. Interestingly, in the repeated-choice task, the effect emerged only for the prediction of the relative frequency of choices of chocolate, but not for the prediction of the relative frequency of choices of fruit. The correlations of implicit preferences with the relative frequency of chosen fruit items were moderately high for both promotion-

and prevention-focused participants. There are several possible explanations for this finding. First, the category of chocolate may be more homogeneous than the category of fruit. For instance, an individual might like apples, but not pears. Hence, it could be argued that our dependent measures may not have been specific enough to reflect the expected moderator effects. However, the internal consistencies of both the repeated-choice task of fruit and of chocolate were quite high and similar in magnitude. Also, there were notable correlations between implicit preferences and the repeated choices of fruit in both conditions. Hence, at odds with this alternative explanation, the different fruits seem to have been reliably associated. Second, there may be more reasons to not choose chocolate than to not choose fruit. For example, even if implicit preferences for chocolate are very strong, a prevention-focused individual might think that she or he should not eat chocolate because of the caloric content or because it is bad for the teeth. By contrast, if implicit preferences for fruit are strong, there are fewer reasons to not choose fruit.

### **Study 3**

The aim of Study 3 was twofold: First, we sought to extend the findings of Studies 1 and 2 to yet another consumer behavior. Choice intentions and real choices may be regarded as important antecedents of consumers' ultimate intentions with regard to food products: They wish to consume the product. Extending our findings to actual consumption would provide further strong evidence for our theoretical assumptions. This is especially true because in contrast to choice behaviors, actual consumption occurs over a considerable time span. Second, we used a different indicator of implicit preferences. Theoretically, it could be suspected that prevention-focused individuals evaluate themselves less positively than promotion-focused individuals. As a result, associations between an object and the self (as used in Studies 1 and 2) could be less diagnostic for prevention-focused individuals, but this effect could not necessarily be generalized to other indicators of implicit preferences. Therefore, we employed the most widely used indicator of implicit preferences in Study 3: evaluative associations (cf. Fazio & Olson, 2003).

In detail, we tested the assumption that individual differences in evaluative associations of a single food product (potato chips) predict consumption behavior better for participants in a promotion focus than for those in a prevention focus. To induce the regulatory foci, we used gain/non-gain frames and loss/non-loss frames, respectively (cf. Florack et al., 2009).

### *Method*

#### *Participants and design*

Ninety-eight female participants, mostly students from various disciplines at the University of Basel, were randomly assigned to either a promotion-focus or a prevention-focus condition. They received 15 Swiss Franks plus a cup worth 7 Swiss Franks (together, worth approximately \$18 US at the time of data collection) in exchange for their participation. We

excluded 4 participants because of experimenter error, computer failure, or a failure to follow instructions during the focus manipulation (see below). The age of the remaining sample ranged from 14 to 53 years ( $M=23.91$ ,  $SD=6.98$ ).

#### Procedure

Data collection was done in groups of up to 4 persons and took place between 3 and 6 pm. Participants were invited to participate in a market research study. They first completed the measure of implicit preferences. Then, participants worked on a task, which included the regulatory focus manipulation. After the focus manipulation, participants were asked to engage in a product test of a bag of potato chips, which they tried and rated on a number of dimensions. Finally, they completed some closing questions including an explicit attitude measure and a question on the amount of time that had passed since their last food intake.

#### Manipulation of regulatory focus

To induce the regulatory foci, we applied a manipulation, which has been used successfully in previous research (Florack et al., 2009). The manipulation consisted of a gain/non-gain framing to induce a promotion focus and a loss/non-loss framing to induce a prevention focus, which was further accentuated by focus-specific instructions for a task completed by the participants (for similar framing manipulations, see Förster et al., 2003; Higgins, Shah, & Friedman, 1997; Sengupta & Zhou, 2007). In the *promotion focus condition*, participants were shown a variety of cups in four different colors and told that they could gain or not gain one of the cups during the course of the following task. Then, the experimenter asked participants to complete a modified version of the d2 attention task (Brickenkamp, 2002) and told participants that if they managed to solve more than 70% of the task correctly, they would receive one of the cups they had seen at the end of the study in addition to their regular compensation. In the *prevention-focus condition*, participants were shown the same cups, told to choose one as an extra compensation for their attendance, and to place the cup in front of them on their desk. Then, the experimenter told participants that it would be possible to lose or not lose the cup during the course of the following task. In detail, participants were told that if they did not manage to commit less than 30% errors, they would have to give back the cup they had received earlier. Thus, although the performance criterion was objectively identical in both conditions, participants in the promotion-focus condition were led to focus on approaching correct responses and the possibility of gaining or not gaining a cup. Participants in the prevention-focus condition were led to focus on avoiding errors and the possibility of losing or not losing the cup they had obtained earlier.

#### Measure of implicit preferences

As a measure of implicit preferences, we used a single category IAT with just one target category (SC-IAT, Bluemke & Friese, 2008; Karpinski & Steinman, 2006) with the category labels *pleasant*, *unpleasant*, and *chips*. Each category was

represented by five stimuli that had been used successfully in previous research (Friese, Hofmann, & Wänke, 2008). In the first combined block, participants sorted stimuli from the categories *pleasant* and *chips* with one response key, and negative stimuli with the other response key. This assignment was changed in the second combined block such that *unpleasant* and *chips* shared a response key. Each combined block contained 70 trials in a predetermined random order. All participants completed the SC-IAT in the same order because we were interested in individual differences and not in mean IAT effects (Egloff & Schmukle, 2002; Gawronski, 2002). For each category, the number of stimuli per block was determined such that the proportion of left and right key responses was 3:4 in the first combined block, and 4:3 in the second combined block. IAT scores were calculated based on stimulus pictures using the D-algorithm proposed by Greenwald et al. (2003), such that more positive values indicate a more positive reaction to potato chips. We calculated the reliability in the same way as in Studies 1 and 2. Cronbach's alpha was .78.

#### Explicit measure

Participants were asked to evaluate the product potato chips on two 7-point bipolar rating scales with *very negative* versus *very positive* and *not delicious at all* versus *very delicious* as poles. The two ratings were combined to form the explicit attitude index ( $\alpha=.82$ ).

#### Potato chip consumption

Each participant received a 90 g serving of a well-known Swiss brand of potato chips on a plate. The empty bags were placed next to the plates on participants' desks. Participants were given 8 min to taste and rate the potato chips. They were informed that they were free to request an additional bag of potato chips if they wished for more (no one did). During the product test, participants answered several questions referring to the size of the chips, their color, packaging, and the like to bolster the cover story. After 8 min, the remaining potato chips and the bags were removed from participants' desks. Following the session, the amount eaten by each participant was determined by the experimenter with a kitchen scale. The remaining potato chips were put back into the respective bag and the final weight was subtracted from the initial weight. Amount eaten served as the main dependent variable.

#### Results

##### Data preparation and preliminary analyses

To prepare data for multiple regression analyses and to arrive at correct standardized beta-weights, we *z*-standardized all continuous variables and dummy coded the experimental conditions (0=promotion focus, 1=prevention focus). However, for ease of interpretation, the raw scores for potato chip consumption in grams are reported below and also in Fig. 3. To correct for a skewed distribution of potato chip consumption, we log-transformed the distribution (Vohs & Heatherton, 2000). For data analysis, we included all participants who ate a minimum of 5 g (approximately 5

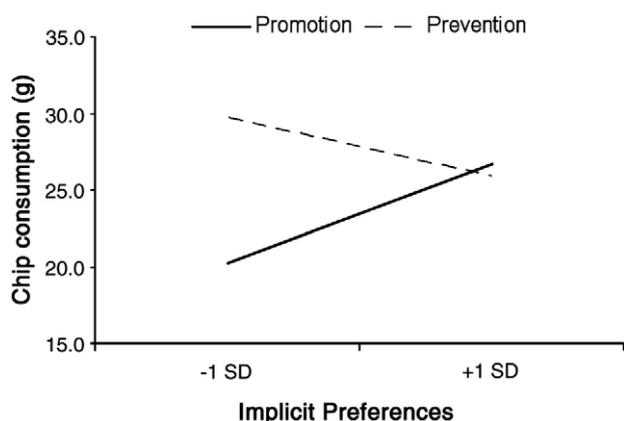


Fig. 3. Potato chip consumption in grams as a function of implicit preferences and regulatory focus condition in Study 3. High values indicate stronger implicit preferences for potato chips and a higher consumption in grams.

potato chips). Experimental conditions did not differ significantly with respect to potato chip consumption,  $M_{\text{Promotion}}=23.56$ ,  $SD=12.58$  versus  $M_{\text{Prevention}}=27.40$ ,  $SD=15.58$ ,  $t(80)=.90$ ,  $p=.372$ ; explicit attitudes,  $M_{\text{Promotion}}=5.50$ ,  $SD=1.12$  versus  $M_{\text{Prevention}}=5.38$ ,  $SD=1.30$ ,  $t(80)=.43$ ,  $p=.666$ ; and time since last food intake,  $M_{\text{Promotion}}=2.40$  h,  $SD=1.08$  versus  $M_{\text{Prevention}}=2.57$  h,  $SD=1.90$ ,  $t(80)=.50$ ,  $p=.620$ .

#### Impact of implicit preferences on potato chip consumption

We hypothesized that the potato chip consumption of participants in the promotion-focus condition would be more strongly driven by implicit preferences than the potato chip consumption of participants in the prevention-focus condition. To test this hypothesis, we first inspected the zero-order correlations between implicit preferences and potato chip consumption. In line with the hypothesis, the correlation between implicit preferences and potato chip consumption approached significance in the promotion-focus condition,  $r(39)=.30$ ,  $p=.062$ , but was close to zero in the prevention-focus condition,  $r(43)=-.07$ ,  $p=.671$ . To investigate our hypothesis in more detail, we ran a multiple regression analysis on consumption. Inspection of the data revealed that explicit attitudes were reliably associated with potato chip consumption,  $r(82)=.54$ ,  $p<.001$ . Accordingly, we entered regulatory focus condition, implicit preferences, explicit preferences, and all two-way interactions into the equation. As hypothesized, the interaction between regulatory focus and implicit preferences was significant,<sup>1</sup>  $\beta=-.42$ ,  $t(75)=-2.23$ ,  $p=.028$ . Simple slope analyses (Aiken & West, 1991) revealed that, in line with our hypotheses, implicit preferences were a good predictor of potato chip consumption in the promotion-focus condition,  $\beta=.24$ ,  $t(75)=1.95$ ,  $p=.055$ , but were not significantly related to consumption in the prevention-focus condition,

$\beta=-.18$ ,  $t(75)=-1.26$ ,  $p=.212$  (see Fig. 3). The interaction between regulatory focus and explicitly measured attitudes,  $\beta=.24$ ,  $t(75)=1.27$ ,  $p=.208$ , and the interaction between implicit preferences and explicit attitudes were not significant,  $\beta=-.15$ ,  $t(75)=-1.36$ ,  $p=.179$ .

#### Discussion

Study 3 goes beyond the findings of Studies 1 and 2 in at least two important ways: First, it shows that the enhanced reliance of promotion-focused individuals on implicit preferences extends to the actual consumption of a food product that takes place over a time span of several minutes. Second, Study 3 found this effect for an additional indicator of implicit preferences, namely, evaluative associations. This finding suggests that promotion-focused participants rely on implicit preferences in behavior determination more generally, and not just on particular indicators of implicit preferences such as object-self associations or evaluative associations. Interestingly, we did not find differences in correlations of explicit attitudes with consumption between the promotion and prevention focus conditions. This further shows that the reliance on implicit preferences is conceptually different from the reliance on explicit evaluations. Indeed, the multiple regression analyses in which implicit preferences and explicit attitudes were entered simultaneously suggest that implicit preferences have an effect on consumption that goes beyond explicit evaluations.

#### General discussion

In the present studies, we tested the assumption that consumers in a promotion focus are more likely to use implicit preferences for behavior determination than consumers in a prevention focus. Implicit preferences evolve quickly from processing in an associative memory system (e.g., Epstein & Pacini, 1999; Smith & DeCoster, 2000; Strack & Deutsch, 2004; Strack et al., 2006). We argued that they fit the eagerness of a promotion focus, but that, because of their missing propositional nature, they do not suit the need for safe judgments and decisions involved in prevention-focused self-regulation. In three studies, we assessed individual differences in implicit preferences and investigated their influence on self-regulatory consumer behavior. As hypothesized, we found that implicit preferences influenced consumer behavior more strongly for consumers in a promotion as compared to a prevention focus.

These findings extend previous research in several ways. First, we measured individual differences in implicit preferences that are assumed to drive the behavior of individuals in a promotion focus. Previous research did not assess implicit preferences. Second, we showed the influence of implicit preferences for various forms of consumer behavior, including choice intentions (Study 1), real choices (Study 2), and consumption (Study 3). Further strengthening the confidence in these findings, the hypothesized effects were shown with different manipulations of regulatory focus. In addition, we obtained converging evidence across two different, but theoretically (Greenwald et al., 2002) and

<sup>1</sup> The interaction of regulatory focus and implicit preferences remained significant when the interaction between regulatory focus and explicit attitudes was not included in the regression equation. The correlation between implicit preferences and the explicit attitude was  $r(82)=.072$ ,  $p=.522$ .

empirically (Scarabis et al., 2006) related indicators of implicit preferences, object-self associations, and evaluative associations. This suggests that the underlying processes are general and not limited to specific kinds of associations.

Importantly, the results of the present studies cannot be explained by differences in the fit between the choice options and a promotion or a prevention focus (Florack & Scarabis, 2006; Florack et al., 2005; Förster, 2009; Lee, 2009; Higgins & Scholer, 2009). Focus-specific characteristics of the consumption objects can account for main effects of regulatory focus on consumption intentions and behavior (e.g., a general preference for healthy food in a prevention focus). They cannot, however, account for the moderated correlations of implicit preferences with consumption intentions and behavior.

#### *Alternative explanations*

As an alternative explanation, it could be argued that a participant's regulatory focus was confounded with mood in our studies. In detail, the promotion-focus manipulations may have induced a more positive mood than the prevention manipulations. This hypothetical confounding could account for the data because it is a well-documented finding that positive mood leads to heuristic information processing (e.g., Bless & Schwarz, 1999; Bodenhausen et al., 1994; Schwarz & Clore, 1996). Speaking against this hypothesis, neither Pham and Avnet (2004) nor Florack and Hartmann (2007) found significant effects on mood from the manipulations that we used in our studies. Thus, it seems unlikely that mood effects account for the results of the present studies.

Another alternative explanation is that a promotion focus takes up more cognitive resources than a prevention focus because it may entail the consideration of more alternatives than the narrower, more specific thought processes induced by a prevention focus (Liberman, Molden, Idson, & Higgins, 2001; Zhu & Meyers-Levy, 2007). However, in our research we offered participants only one (Study 3) or two (Studies 1 and 2) products and gave clear, simple, and few behavioral options. Thus, there were not multiple alternatives available. Therefore, it seems unlikely that the induction of a promotion focus led to high cognitive load through the consideration of many alternatives.

#### *Regulatory focus and impulsive eating behavior*

The current studies contain important implications for the understanding of impulsive consumption behavior. Sengupta and Zhou (2007) reported that impulsive eaters who experience a sudden and unplanned urge for food consumption develop a promotion focus when exposed to hedonically tempting food. The authors argue that because a promotion focus involves a disproportionate reliance on the hedonic benefits associated with eating the food, impulsive eaters end up exhibiting unhealthy eating behavior by eating a great amount of hedonic, but unhealthy food.

Our research speaks directly to the argument of Sengupta and Zhou (2007). Implicit preferences have been found to

predict impulsive behavior depending on the context (e.g., Friese, Hofmann, & Schmitt, 2008). Similarly, in the present studies, implicit preferences were correlated with self-regulatory consumer behavior for promotion-focused, but not for prevention-focused individuals. Thus, the current research provides further evidence for the link between a promotion focus and impulsive consumption behavior proposed by Sengupta and Zhou. In contrast to the current research, Sengupta and Zhou did not consider individual differences in implicit preferences. Their research was based on the assumption that the positive associations with the hedonic food items presented in their studies were shared across the participants in the studies. Interestingly, we found that individual differences in implicit preferences varied considerably between participants, and that this variability predicted consumption for consumers in a promotion focus, but not for consumers in a prevention focus. This finding suggests that consumers associating healthy food with the self or with a positive evaluation are likely to choose healthy food even when behaving impulsively.

Unlike in some previous studies (e.g., Chernev, 2004; Zhou & Pham, 2004), we found only marginal main effects of regulatory focus on choices and consumption. A reasonable expectation would be that an induction of a promotion focus compared to an induction of a prevention focus would increase choices of hedonic food items like chocolate. In Study 2, the single-act choice between chocolate and fruit was not affected by regulatory focus, and the effect of regulatory focus on the repeated choice was only marginal, even if there was a tendency for stronger preferences for chocolate and weaker preferences for fruit in the promotion condition compared to the prevention condition. An explanation for the weak effects of regulatory focus in our study is that there is considerable variability in implicit preferences, and that a promotion focus is related to a reliance on implicit preferences and not to hedonic food in general. Indeed, we expect that promotion-focused individuals can enjoy eating healthy food.

However, it is reasonable to assume that individuals with unhealthy eating behaviors associate themselves more strongly with hedonic food than healthy food. An important question, therefore, is how these individuals can modify their unhealthy behavior. Based on the results of the present studies, behavioral modification strategies might be successful if they attempt to establish a strong link between the self and healthy food. For example, participants in a behavioral modification program might strengthen implicit preferences for healthy food by, for instance, establishing a link between the self and healthy behavior through promoting healthy behavior in public. This technique is already well known (Stone, Wiegand, Cooper, & Aronson, 1997) and it should be particularly useful for modifying the behavior of promotion-focused individuals who rely on implicit preferences.

#### *Conclusion*

Taken together, the present research demonstrates that consumers' regulatory focus influences the degree to which

implicit preferences determine consumer behavior. Consumer choices and consumption behavior are more strongly driven by implicit preferences for consumers in a promotion focus than in a prevention focus. Thus, the present studies provide direct support for the growing literature by demonstrating that consumers in a promotion focus are more likely to rely on internal cues than consumers in a prevention focus.

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