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Regulatory Focus and Reliance on Internal Responses in Choice and Consumption

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Abstract

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## Experiment 1

### *Method*

*Participants and design.* Forty High School students were randomly assigned to either a promotion focus or a prevention focus condition. The age ranged from 17 to 19 years ( $M = 18.18$ ,  $SD = .75$ ). The students were visitors of 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 about advertising and consumer behavior. First, all participants filled out a short questionnaire which was used to induce a promotion focus or a prevention focus. Then, on a computer screen an ad for a burger (BigMac) was shown and 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 an implicit association test (IAT; Greenwald, McGhee, & Schwartz, 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, Roney, Crowe, and Hymes (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 aspirations and hopes 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 duties, obligations, and responsibilities, 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 highly accessible duties, obligations, and responsibilities activate a prevention focus. In contrast, the regulation of behavior according to aspiration and hopes is a main characteristic of a promotion focus and highly accessible aspirations and hopes should activate a promotion focus (Higgins, 1997).

*Implicit measure.* We used an adapted version of the implicit association test (IAT, Greenwald et al., 1998) with the category labels self / other and Whopper / BigMac as an implicit measure of internal preferences. The adapted self-other IAT has been successfully used in previous research (Scarabis, Florack, & Gosejohann, 2006). The categories self and other were represented by five self-related (e.g., “me”) and five other-related words (e.g., “other”). The categories Whopper and BigMac were each represented by five stimulus pictures. The applied IAT consisted of five experimental blocks. Three blocks included a simple classification of pictures of burgers (“Whopper” vs. “BigMac”) or self- and other-related words. Relevant for the computation of the implicit measure were two blocks with a combined discrimination task. During these blocks, participants had to classify pictures to the categories Whopper and BigMac and words to the categories self and other with two response keys whereas each response key was assigned to two categories. During the first combined block participants shared a response key for “Whopper” / “other” and “BigMac” / “self”. During the second combined block participants shared a response key for “BigMac” / “other” and “Whopper” / “self”. Each combined block contained 35 trials. The order of word or picture presentations were predetermined, but it was

randomized which word or picture was presented. All participants completed the IAT in the same order, because we were interested in individual differences and not in mean IAT effects (Egloff & Schmuckle, 2002; Gawronski, 2002). We measured the responses and the response latency. To calculate an IAT-score we computed the D-algorithm proposed by Greenwald et al. (2003) such that more positive values indicate a stronger association between the self and Whopper and a lower association between the self and “BigMac”.

*Consumption intention.* We measured consumption intention with 5 items (“I fancy this burger.”; “I would like to taste the burger”; “I am interested to taste the burger.”; “I would like to buy the burger.”; “I will buy the burger in future.”). Participants had to indicate their intention to consume either the BigMac or the Whopper on 6-point bipolar scales (1 = *The BigMac very much*; 6 = *The Whopper very much*). We averaged the answers into a combined scale (Cronbach’s alpha = .91). High values indicate a strong consumption intention for a Whopper, while low values indicate a strong consumption intention for a BigMac.

## Results

To prepare the data for multiple regression analyses (cf. Aiken & West, 1991) predicting the consumption intention, we z-standardized all continuous variables. As predictors, we entered the dummy coded experimental condition (0 = promotion focus, 1 = prevention focus) and the implicit measure, as well as their interaction.

In line with the hypotheses, the implicit measure was significantly correlated with the consumption intention in the promotion focus condition,  $r(20) = .67$ ,  $p = .001$ , but was not in the prevention focus condition,  $r(20) = -.07$ ,  $p = .784$ . Furthermore, a multiple regression analysis showed a significant interaction between the implicit

measure and the regulatory focus manipulation predicting the consumption intention,  $\beta = -.76$ ,  $t(36) = 2.36$ ,  $p = .024$ . The implicit measure was a good predictor of the consumption intention in the promotion focus condition,  $\beta = .68$ ,  $t(36) = 3.17$ ,  $p = .003$ , but was not in the prevention focus condition,  $\beta = -.08$ ,  $t(36) = .32$ ,  $p = .752$ . The main effect of regulatory focus was not significant,  $\beta = -.46$ ,  $t(36) = 1.76$ ,  $p = .087$ .

### *Discussion*

## Experiment 2

### *Method*

*Participants and design.* Forty-nine participants, mostly students from the University of Münster, were randomly assigned to either a promotion focus or a prevention focus condition. The age ranged from 29 to 37 years ( $M = 23.65$ ,  $SD = 3.69$ ).

*Procedure.* First, all participants 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. Half of the participants then chose between some fruit or a chocolate bar which was both said to have the value of 0.30 EUR. After the choice they worked on an item selection task and, then, completed the implicit measure. Finally, they indicated their age, sex, and occupation. The other half of participants worked on the tasks in the same order with the exception that the order of the choice task and the item selection task was switched.

*Manipulation of regulatory focus.* To induce a promotion focus or a prevention focus we applied the same manipulation as in Experiment 1.

*Implicit measure.* We used the same IAT as in Experiment 1 to measure the implicit preferences. However, we changed the 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 (e.g., apples, bananas) as belonging to the categories of chocolate or fruit. As in Experiment 1, this task was combined with the classification of words as fitting to themselves or to others in the critical phases of the procedure. To calculate an IAT-score we computed the D-algorithm proposed by Greenwald et al. (2003) such that more positive values indicate a stronger association between the self and chocolate.

*Choice.* 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 represented on the screen with two big pictures and an assigned value of 0.30 EUR. Participants made the choice by clicking on one of the two pictures.

*Repeated item selection task.* Since a single choice lacks in reliability and does not allow investigating gradual differences in preferences we added a measure in which participants had to select items repeatedly. At the beginning of this task, participants read that they had to select items on a screen based on whether they would fit better to themselves or better to another person. They, then, saw two big buttons on the screen that were labeled with “I” for themselves and “you” for the other person. To become familiar with the task, first, words appeared on the screen that were related to themselves (e.g., “mine”; “for me”) or another person (e.g., “your”; “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”, “Rittersport”) appeared randomly on the screen during 60 trials. The responses were recorded. We computed the relative frequency of chosen chocolate (fruit) items by dividing the number of chocolate (fruit) items that participants selected for themselves through the number of all presented chocolate (fruit) items. High values indicate that participants selected a relatively high number of chocolate (fruit) items for themselves.

### *Results*

To prepare the data for multiple regression analyses, we first z-standardized all continuous measures. Choice (fruit = 0, chocolate = 1) and the relative frequency of selected chocolate and fruit items in the item selection task served as dependent variables in the regression equations. As predictors, we entered the dummy coded experimental condition (0 = promotion focus, 1 = prevention focus) and the implicit measure, as well as their interaction.

*Choice.* As expected, the implicit measure was significantly correlated with the choice between fruit and chocolate in the promotion focus condition,  $r(24) = .50$ ,  $p = .013$ , but not in the prevention focus condition,  $r(25) = .07$ ,  $p = .726$ . In the promotion focus condition, participants were the more likely to choose chocolate the more the chocolate was associated with their self. In line with these correlations, a logistic regression yielded a significant interaction between the implicit measure and the regulatory focus manipulation,  $\beta = -1.97$ ,  $\chi^2 = 4.44$ ,  $p = .035$ . Additional analyses of the slope of the regression lines revealed that the implicit measure was a good predictor of choice in the promotion focus condition,  $\beta = 1.85$ ,  $\chi^2 = 4.46$ ,  $p = .035$ , but

was not in the prevention focus condition,  $\beta = -.12$ ,  $\chi^2 = .14$ ,  $p = .714$ . The main effect of the regulatory focus manipulation was not significant,  $\beta = .07$ ,  $\chi^2 = .05$ ,  $p = .832$ .

*Relative frequency of selected chocolate and fruit items.* In line with the hypotheses, the implicit measure was significantly correlated with the relative frequency of chocolate items participants selected for themselves in the promotion focus condition,  $r(24) = .56$ ,  $p = .005$ , but was not in the prevention focus condition,  $r(25) = -.11$ ,  $p = .603$ . Congruently, a multiple regression analysis showed a significant interaction between the implicit measure and the regulatory focus manipulation predicting the relative frequency of chocolate items participants selected for themselves,  $\beta = -.49$ ,  $t(45) = 2.51$ ,  $p = .016$ . The implicit measure was a good predictor of the relative frequency of chocolate items participants selected for themselves in the promotion focus condition,  $\beta = .42$ ,  $t(45) = 3.06$ ,  $p = .004$ , but was not in the prevention focus condition,  $\beta = -.08$ ,  $t(45) = .54$ ,  $p = .591$ . The main effect of regulatory focus was not significant,  $\beta = -.14$ ,  $t(45) = 1.01$ ,  $p = .317$ . However, neither in the promotion focus condition,  $r(24) = -.22$ ,  $p = .301$ , nor in the prevention focus condition,  $r(25) = -.36$ ,  $p = .08$ , the implicit measure was significantly correlated with the relative frequency of selected fruit items. Hence, the interaction between the implicit measure and the regulatory focus manipulation was not significant predicting the relative frequency of fruit items participants selected for themselves,  $\beta = -.08$ ,  $t(45) = -.39$ ,  $p = .70$ . Also, the main effect of the regulatory focus manipulation was not significant,  $\beta = .007$ ,  $t(45) = .15$ ,  $p = .881$ .

### *Discussion*

## Experiment 3

*Method*

*Participants and design.* Ninety-three female participants, mostly students of various disciplines of 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 approximately US\$ 18 at the time of data collection) in exchange for their participation. We excluded four participants because of experimenter error, computer failure, or not following instructions during the focus manipulation (see below). The age of the remaining sample ranged from 14 to 53 years ( $M = 23.70$ ,  $SD = 7.20$ ).

*Procedure.* Data collection was done in groups of up to four persons. It took place between 3 and 6 pm. Participants first signed an informed consent form before completing the implicit attitude measure. In the promotion focus condition, participants were shown a variety of cups in four different colors. They were told that they could win one of these cups in the course of the study. Details on how they could win the cup would follow later. In the prevention focus condition, participants were shown the cups, told to choose one as an extra compensation for their attendance and to place the cup in front of them on their desk. This was followed by the focus manipulation. After the focus manipulation, participants were asked to engage in a product test of a bag of potato chips that 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 time passed since last food intake. Participants in the promotion focus condition received a cup of their choice at the end of the study.

*Manipulation of regulatory focus.* To induce a temporary promotion or a temporary prevention focus we applied a regulatory focus manipulation which had been used successfully in previous research (Florack, Ineichen, & Bieri, in press). The manipulation is based on the finding that the regulatory focus which is activated in a task is likely to affect information processing and behavior in subsequent contexts (e.g., Florack & Hartmann, 2007; Sengupta & Zhou, 2007). This manipulation consisted of a gain / non-gain framing to induce a promotion focus and a loss / non-loss framing to induce a prevention focus (see for similar framing manipulations Förster, Higgins, & Taylor Bianco, 2003; Higgins, Shah, & Friedman, 1997; Sengupta & Zhou, 2007) which was completed by focus-specific instructions of the task. In detail, participants completed a modified version of the d2 attention task (Brickenkamp, 2002) and the experimenter told participants that it would be possible to gain or not gain a cup (promotion focus) or to loose or not loose a cup (prevention focus). In the promotion focus condition, participants were told that if they managed to solve more than 70% of the tasks correctly, they would receive one of the cups they had seen earlier at the end of the study in addition to their regular compensation. In the prevention focus condition, participants were told that if they would 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 to gain or not gain a cup. Participants in the prevention focus condition were led to focus on avoiding errors and the possibility to loose or not to loose the cup they had obtained earlier.

*Implicit measure.* As an implicit measure we used a Single Category IAT with just one target category (SC-IAT, Karpinski & Steinman, 2006) with the category labels *pleasant*, *unpleasant*, and *chips*. Stimuli of all three categories had been used successfully in previous research (Frieze, Hofmann, & Wänke, in press). Each category was represented by five stimuli. In the first combined block participants sorted stimuli of the categories *pleasant* and *chips* on one response key and negative stimuli on 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. To estimate internal consistency we created four mutually exclusive subsets of trials and calculated SC-IAT scores separately for each subset. Cronbach's alpha across these four scores 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 chips consumption.* Each participant received a 90-g serving of “Zweifel” potato chips on a plate. Zweifel is the best-known brand of potato chips in Switzerland. The empty bags were placed next to the plates on participants’ desks. Participants were given 8 minutes 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 the 8 minutes the remaining potato chips and the bags were removed from participants’ desks. Following the session, the amount eaten by each participant was determined. 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*

To correct for a skewed distribution of potato chips consumption we log-transformed the distribution. To prepare data for multiple regression analyses and to arrive at correct standardized beta-weights, we furthermore z-standardized all continuous variables. However, for ease of interpretation, the raw scores of potato chip consumption in grams are reported below and also in Figure 1. Consumption of potato chips served as the dependent variable. As predictors, we entered the dummy coded experimental condition (0 = promotion focus, 1 = prevention focus) and the implicit measure, as well as their interaction. For data analysis we included all participants who ate a minimum of 4 grams (approximately 5 potato chips).

Experimental conditions did not differ significantly with respect to potato chip consumption ( $M_{\text{Promotion}} = 23.56$ ,  $SD = 12.58$  vs.  $M_{\text{Prevention}} = 27.40$ ,  $SD = 15.58$ ,  $t(80)$

= .90,  $p = .372$ ), the implicit attitude measure ( $M_{\text{Promotion}} = .05$ ,  $SD = .53$  vs.  $M_{\text{Prevention}} = .12$ ,  $SD = .43$ ,  $t(80) = .73$ ,  $p = .466$ ), the explicit attitude measure ( $M_{\text{Promotion}} = 5.50$ ,  $SD = 1.12$  vs.  $M_{\text{Prevention}} = 5.38$ ,  $SD = 1.30$ ,  $t(80) = .43$ ,  $p = .666$ ), and time since last food intake ( $M_{\text{Promotion}} = 2.40$  h,  $SD = 1.08$  vs.  $M_{\text{Prevention}} = 2.57$  h,  $SD = 1.90$ ,  $t(80) = .50$ ,  $p = .620$ ).

*Potato chips consumption.* As expected, the zero-order correlation between the implicit measure and potato chips consumption approached significance in the promotion focus condition ( $r = .30$ ,  $p = .062$ ), but was close to zero in the prevention-focus condition ( $r = -.07$ ,  $p = .671$ ). To investigate our hypothesis in more detail we ran a multiple regression analysis ( $R^2 = .36$ ). Inspection of the data revealed that explicitly measured attitudes were reliably associated with potato chips consumption ( $r = .54$ ,  $p < .001$ ). Because explicitly measured attitudes were not in focus of our hypotheses, we controlled for the influence of this variable by entering it as a covariate in the multiple regression.

As anticipated, the main effect of explicitly measured attitudes was significant,  $\beta = .56$ ,  $t(81) = 6.04$ ,  $p < .001$ . Better evaluations were associated with increased consumption. The main effect of the experimental manipulation of regulatory focus was unreliably associated with consumption,  $\beta = .24$ ,  $t(81) = 1.33$ ,  $p = .186$ . Importantly, as hypothesized, the interaction between the experimental condition and the implicit measure was significant,  $\beta = -.44$ ,  $t(81) = -2.33$ ,  $p = .022$ . Additional analyses revealed that in line with hypotheses the implicit measure was a good predictor of potato chips consumption in the promotion focus condition,  $\beta = .26$ ,  $t(81) = 2.16$ ,  $p = .034$ , but was not significantly related to consumption in the prevention focus condition,  $\beta = -.18$ ,  $t(81) = -1.23$ ,  $p = .222$  (see Figure 1).

*Discussion*



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## Footnotes

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Table 1

Figure Captions

*Figure 1.* Grams potato chips eaten as a function of implicit attitude measure and focus condition in Study X.

Figure x

