

Using Implementation Intentions in Shopping Situations: How Arousal Can Help Shield  
Consumers Against Temptation

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### Abstract

Previous research has suggested that individuals who repeatedly experience self-regulatory failure in purchasing behavior have trouble shielding themselves against temptations. Because shopping is often accompanied by increased arousal, we examined whether attending to affective arousal could help people keep their attention focused. Before participants completed a visual distraction task embedded in a shopping context, we (a) instructed them to formulate an implementation intention with affective arousal as the eliciting cue and concentrating on the task as the intention, (b) instructed them to formulate the goal intention of concentrating on the task without mentioning an eliciting cue, or (c) gave them no further instructions. During the task, we recorded eye movements to measure the time they looked at the target products. The findings suggest that implementation intentions with affective arousal as an eliciting cue enable consumers who repeatedly perceive self-regulatory failure to focus their attention on their initial shopping goal.

*Keywords:* attention, eye tracking, arousal, implementation intentions, impulse buying

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### **Self-Regulatory Failure During Shopping**

Overcoming short-term temptations in order to pursue one's long-term goal is a central element of successful self-regulation (Baumeister & Heatherton, 1996). Shopping is a domain in which individuals' self-regulation often fails: Consumers frequently purchase more than planned, and they often purchase products that they cannot afford (Baumeister, 2002; Faber & Vohs, 2011). For example, in a recent representative survey in Germany, 37% of the respondents indicated that they often spend more money than planned (Arbeitsgemeinschaft Verbrauchs- und Medienanalyse, 2013). Whereas most people are aware that unplanned buying and overspending are problematic, people differ in their self-regulatory success in purchasing behavior (Horváth, Büttner, Belei, & Adıgüzel, 2015).

With the present research, we propose a technique to help consumers improve their self-regulation in purchasing behavior. This technique builds on insights from research on self-regulation, which indicate that impulsive buying goes along with increased affective arousal in shopping situations (Serfas, Büttner, & Florack, 2014) and that controlling visual attention can increase success in self-regulation (Mischel & Ebbesen, 1970). In particular, we propose that consumers who repeatedly perceive self-regulatory failure in purchasing behavior can use affective arousal as a cue for narrowing their attentional focus and shielding themselves against tempting products. In particular, we propose that implementation intentions (Gollwitzer, 1999) can be applied to link affective arousal and focus of attention in shopping contexts.

### **Arousal and Self-Regulatory Failure**

In line with Russell (2003), we view arousal as the activating component of affective experiences; its job is to prepare individuals for action. Accordingly, research with consumers visiting stores has found that buyers experience higher arousal than nonbuyers (Gröppel-

Klein, 2005). Moreover, research has characterized impulsive buying as purchases with high emotional arousal (Weinberg & Gottwald, 1982) and has found that buying impulsiveness is correlated with affective arousal during the exposure to pictures of shopping situations (Serfas et al., 2014). Finally, Kaltcheva and Weitz (2006) found that under certain conditions, arousal-inducing environments can increase the likelihood of impulsive purchases.

Thus, the literature implies that shopping and impulsive buying or unplanned purchasing are accompanied or sometimes even elicited by affective arousal. Because of this co-occurrence, affective arousal has the potential to act as a warning signal for consumers who have trouble self-regulating their purchasing behavior.

### **Visual Attention and Self-Regulatory Failure**

Self-regulation often involves a struggle between desire and willpower. As such, self-regulatory success can be enhanced by either reducing desire or increasing willpower (Hoch & Loewenstein, 1991). One way to reduce desire is to control visual attention. Work by Mischel and colleagues (Eigsti et al., 2006; Mischel & Ebbesen, 1970; Mischel, Ebbesen, & Raskoff Zeiss, 1972) has impressively shown that directing one's visual attention away from tempting stimuli facilitates the acceptance of a delay of gratification. However, whereas focusing one's attention away from tempting stimuli can support self-regulation, focusing one's attention on tempting stimuli can amplify existing urges and contribute to the breakdown of self-regulation (Field & Eastwood, 2005; Waters et al., 2003).

Visual attention plays a major role in shopping. Shopping contexts expose consumers to many attractive products and special offers that were designed to grab consumers' attention. Such visual stimulation is likely to increase the desire to purchase (Hoch & Loewenstein, 1991; Rook, 1987). Thus, being able to focus one's attention on the initial shopping goal (e.g., the carton of milk) and away from tempting distractions (e.g., vanilla ice cream) should reduce the likelihood of giving into temptation, whereas being unable to focus one's attention might lead to unplanned purchases.

In the light of the reasoning that attention is a key part of self-regulation, it is interesting to consider a recent study on the visual distractibility of consumers who are prone to self-regulatory failure in purchasing behavior (Büttner et al., 2014). In this study, the researchers applied a paradigm in which a target product was presented along with two different types of distractor products that varied in attractiveness. The researchers measured participants' focus on the target product with eye tracking. The results indicated that impulsive buyers focused less on a target product and more on distractor products than nonimpulsive buyers. Moreover, the results indicated that this difference reflects a general level of distractibility rather than a specific bias for attractive products because the attractiveness of the distractor category did not influence how much attention was allocated to a distractor. However, the results also imply that the difference in attention reflects domain-specific distractibility rather than a general attentional deficit: The differences in attention occurred only when the distraction paradigm was framed as a shopping task but not when it was framed as a task that was not related to shopping.

This study by Büttner et al. (2014) demonstrated that consumers who are prone to self-regulatory failure in purchasing behavior tend to activate a broad focus of their visual attention in shopping contexts. When considering the research on visual attention and self-regulation (Field & Cox, 2008), it seems reasonable to assume that such a broad attentional focus can increase the likelihood of perceiving attractive products, developing a desire to purchase these products, and finally purchasing these products. By contrast, providing consumers with an opportunity to reduce their visual distractibility might strengthen their self-regulatory success in purchasing behavior.

### **Linking Arousal and Attention via Implementation Intentions**

Above, we referred to research that has indicated that shopping and impulsive buying in particular are accompanied by affective arousal and that a broad focus of attention may contribute to self-regulatory failure. In the present study, we decided to link the two mechanisms in order to strengthen consumers' self-regulatory success in purchasing behavior. The basic idea was to treat affective arousal as an internal cue for triggering a focus on a target product (vs. task-irrelevant distractors). In particular, we examined whether implementation intentions (Gollwitzer & Sheeran, 2006) that use affective arousal as an eliciting cue can facilitate the focus of attention on task-relevant target products (vs. distractors).

Forming implementation intentions is a self-regulatory technique that is effective in various areas of self-regulation (for a meta-analysis, see Gollwitzer & Sheeran, 2006). Most relevant for the present study, previous research demonstrated that implementation intentions can affect attentional processes, by showing that forming implementation intentions helped socially anxious individuals to ignore fear-related stimuli (Webb, Ononaiye, Sheeran, Reidy, & Lavda, 2010).

When using implementation intentions, individuals plan in advance when and where they want to act in a certain way. To do so, implementation intentions use specific cues to trigger an immediate reaction. In the form of "if-then" plans, they link these critical cues ("if" statement) to concrete goal-related responses ("then" statement) in a certain direction of action: If critical situation *x* occurs, then I set reaction *y*. Because of the direct link between the situation and a concrete reaction, an automatization of the reaction is likely, and no willpower is needed to execute the reaction (Gollwitzer, 1993, 1999). Implementation intentions are especially effective for individuals with low self-regulatory capabilities in the domain of interest (Meeks, Pitães, & Brewer, 2015; Webb et al., 2010).

A challenge in forming implementation intentions is the specification of a critical cue. Adriaanse, de Ridder, and de Wit (2009) recommended a specific cue but also argued that the cue should capture as many situations as possible for which self-regulation is relevant. Affective arousal is a specific cue that occurs in contexts with a high likelihood of unplanned purchases (Gröppel-Klein, 2005; Serfas et al., 2014). Thus, we regarded arousal as a cue that could satisfy the “if” part of an implementation intention and that triggers a reaction that can counteract unplanned purchasing. As a narrow focus of attention is supposed to reduce the likelihood of unplanned purchasing, we chose an attention-based reaction to counteract unplanned purchasing: focusing one’s attention on the task at hand.

We tested the effectiveness of implementation intentions with affective arousal as a cue that might help people focus their attention in shopping contexts in an experimental study with three conditions: (a) implementation intention with affective arousal as a cue and to focus on the task as a reaction (“If my affective arousal increases, then I will concentrate on my task”), (b) goal intention to focus on the task without mentioning an eliciting cue (“I will concentrate on my task”), and (c) control condition without specific instructions. In the main phase of the experiment, participants in all conditions performed a distraction task that was framed as a shopping task. In this task, we measured attention toward target (vs. distractor) products, and compared participants with high versus low perceived self-regulatory failure in purchasing behavior.

We hypothesized that, in line with previous research (Büttner et al., 2014), perceived self-regulatory failure would be correlated with reduced attention toward the target (vs. a distractor) product in the control condition. We further hypothesized that, in the implementation intentions condition, consumers who repeatedly perceive self-regulatory failure would be more successful at shielding their attention from distracting products and focusing on a target product than in the control condition. We measured participants’ success at shielding their attention with the time they spent dwelling at a task-relevant target product.

## Method

A methodological details appendix (MDA) provides information that supplements the method section of this paper. Specifically, we provide a flow chart for the procedure (MDA.1), details on participant recruitment and exclusion (MDA.2), details on materials and measurement (MDA.3), and the concrete task instructions (MDA.4).

### Participants

Overall, 76 female participants took part for 5 Euro as compensation (MDA.2). In accordance with standard procedures (Holmqvist et al., 2011), we excluded nine participants due to poor tracking quality (MDA.2). The final sample consisted of 67 women ( $M_{\text{age}} = 23.48$ ,  $SD_{\text{age}} = 3.90$ ).

### Design

We randomly assigned participants to one of three experimental conditions: the implementation intentions ( $n = 21$ ), the goal intentions ( $n = 22$ ), or the control condition ( $n = 24$ ). Perceived self-regulatory failure in purchasing behavior was a continuous predictor variable, and visual attention toward the target products (dwell time) was the dependent variable. Perceived self-regulatory failure did not differ across the experimental conditions,  $F(2, 64) = 0.25, p = .78$ .

### Apparatus and Stimuli

The stimulus monitor was a 22-inch screen with a resolution of 1680 x 1050 pixels and a refresh rate of 60 Hz. Participants were seated 70 cm away from the screen. Eye movement data were collected with an SMI RED 500 remote eye tracker (Sensomotoric Instruments GmbH, Teltow, Germany) with a sampling rate of 250 Hz.

We used pictures of three different product categories (MDA.3): groceries, decorations, and cosmetics. We selected groceries as the target products because buying groceries is common for most consumers. Cosmetics and decorations served as distractors

because products from both categories are often bought impulsively. We presented all pictures with a resolution of 200 x 200 pixels.

### **Procedure and Measures**

Initially, participants answered a questionnaire on demographics and self-regulatory failure in purchasing behavior. To measure perceived self-regulatory failure in purchasing behavior, we administered Raab, Neuner, Reisch, and Scherhorn's (2005) 16-item scale (e.g., "I often buy something just because it is cheap" or "I often buy something just because I feel like it"). Participants reported their agreement with these items on a 4-point scale ranging from 1 (*disagree*) to 4 (*agree*). We used the aggregated scale score ( $M = 1.78$ ,  $SD = 0.53$ ,  $\alpha = .89$ ). High values indicate that participants repeatedly perceive self-regulatory failure. We used the Raab et al. (2005) scale because it is an established and validated German scale that has been applied repeatedly in the area of problematic buying behavior (e.g., Neuner et al., 2005; Raab, Elger, Neuner, & Weber, 2011; Scherhorn, Reisch, & Raab, 1990). The scale has shown high correlations (mean correlation  $r = .65$ ) with other scales measuring impulsive buying or related tendencies that we measured in the present study as well (Faber & O'Guinn, 1992; Ridgway, Kukar - Kinney, & Monroe, 2008; Rook & Fisher, 1995).

After answering the questionnaire, participants completed a simulated shopping task (MDA.4). Whereas the general information about the task was the same for all participants, participants in the goal intentions and the implementation intentions condition received additional instructions. In the implementation intentions condition, we explained to the participants what affective arousal is (MDA.4). We then asked the participants to write down the following sentence and to read it aloud: "If my affective arousal increases, then I will concentrate on my task." We further asked participants to repeat the same procedure of writing the statement and reading it aloud two times. In the goal intentions condition, we asked participants to write down the sentence "I will concentrate on my task" and read it

aloud. The participants also had to repeat the procedure two times. In the control condition, participants did not receive additional instructions.

After the experimental manipulation (implementation intentions vs. goal intentions vs. control), participants worked on a simulated shopping task. The shopping task consisted of two steps. First, we introduced a common-day shopping scenario, i.e. grocery shopping. Specifically, we asked participants to imagine that they were hosting a dinner party for friends and needed to do the grocery shopping for it. Related to that grocery shopping, we presented a shopping list with 11 items they needed to buy and asked them to memorize the list. The list included only text (e.g., bread, cheese). We worked with a memorized list in order to rule out that participants' gaze on the list during the task interfered with our attention measure. Second, the participants viewed pictures of groceries and had to decide whether these items had appeared on the list. The second part of the simulated shopping task (Figure 1) was a modified version of the distraction paradigm by Büttner et al. (2014). In each trial, three products were presented simultaneously on the stimulus screen (Figure 2): a target product (a grocery item with a blue frame) and two distractor products (a decoration item and a cosmetic item). After 3,000 ms, the pictures disappeared and participants had to decide whether the item with the blue frame (i.e., the grocery item) had been on the list. Half of the grocery items that participants saw had appeared on the shopping list.

The distraction paradigm (Figure 1) consisted of six practice trials in order to familiarize participants with the task and 42 main trials. Each trial began with a fixation cross in the center of the screen. After the participants fixated on the cross for 1,500 ms, the fixation cross disappeared, and the stimulus screen appeared. In each trial, one random picture was drawn from each category (groceries, decorations, cosmetics) and randomly assigned to one of three predefined spots on the screen (Figure 2). Each of the 126 items (42 per category) was shown once, and the arrangement of the categories on the screen was equally distributed. The three products were presented for 3,000 ms.

During the presentation of the products, the dwell time on the target product (i.e., the grocery items) was measured with eye tracking. Dwell time is the time participants spend looking at a stimulus. We used dwell time on the target product as the dependent measure because focusing on the target product was necessary for task fulfillment and thereby indicated success in shielding one's attention from the distractors. Dwell time was averaged across the trials ( $M = 1,668$ ,  $SD = 527$ ).

### Results

To test our hypotheses, we computed a multiple linear regression analysis with dwell time (in ms) on the target product as the dependent variable. The predictors were the continuous measure of perceived self-regulatory failure (z-standardized), the dummy-coded experimental conditions, and the two-way interactions between each dummy variable and perceived self-regulatory failure. Table 1 provides an overview of the results of the multiple regression analysis. Table 2 provides mean dwell time for different levels of perceived self-regulatory failure in purchasing behavior and results from simple slope analyses for the three experimental conditions.

For the control condition, we hypothesized that consumers who repeatedly perceive self-regulatory failure in purchasing behavior would be less successful at focusing their attention on a target product while distractor products were presented. Due to the dummy coding that we chose, the test of this hypothesis was represented by the effect of perceived regulatory failure in the regression. In line with our hypothesis, perceived self-regulatory failure negatively predicted dwell time on the target products,  $B = -243.17$ ,  $p = .01$  (Table 1, line 1 and Table 2, line 1). Participants in the control condition who repeatedly perceive self-regulatory failure allocated less attention to the target products than those who seldom perceive self-regulatory failure.

Furthermore, we expected that implementation intentions would increase success in focusing on the target products—especially for consumers who repeatedly perceive self-

regulatory failure. Because the implementation intentions dummy variable (implementation intentions = 1, else = 0) was not significant,  $B = 182.31$ ,  $p = .24$ , there was no evidence for a main effect of implementation intentions. It is important to note, however, that the interaction between the implementation intentions dummy variable and perceived self-regulatory failure was significant,  $B = 417.64$ ,  $p = .01$  (Table 1, line 4). We further probed the interaction with a spotlight analysis. One standard deviation below the mean of perceived self-regulatory failure, the time spent looking at the target product did not differ between participants in the implementation intentions condition ( $M = 1,616$ ) and those in the control condition ( $M = 1,863$ ),  $B = -235.32$ ,  $SE = 214.62$ ,  $\beta = -.21$ ,  $t(61) = -1.10$ ,  $p = .28$ . One standard deviation above the mean of perceived self-regulatory failure, the time spent looking at the target product was higher for participants in the implementation intentions condition ( $M = 1,964$ ) than for the participants in the control condition ( $M = 1,377$ ),  $B = 599.95$ ,  $SE = 232.02$ ,  $\beta = .53$ ,  $t(61) = 2.59$ ,  $p = .01$ . This is in line with our hypothesis and shows that forming implementation intentions increased the time spent dwelling on the target product for participants who repeatedly perceive self-regulatory failure in purchasing behavior.

We further examined whether forming goal intentions had the same effect as forming implementation intentions. Neither the goal intentions dummy (goal intentions = 1, else = 0),  $B = -18.90$ ,  $p = .90$  (Table 1, line 3), nor the interaction between the goal intentions dummy and perceived self-regulatory failure,  $B = 175.61$ ,  $p = .23$  (Table 1, line 5), were significant. Thus, participants who formed goal intentions did not differ from participants in the control condition in terms of the attention they allocated to the target product.

### Discussion

With the present research, we examined whether affective arousal could be treated as a cue that helps consumers focus their visual attention in shopping contexts. In a simulated shopping task, we presented target products along with two distractors. The present study demonstrates the robustness of the finding that consumers who repeatedly perceive self-

regulatory failure in purchasing behavior are also more prone to being visually distracted by task-irrelevant products (Büttner et al., 2014). In contrast to the study by Büttner et al. (2014), the present study assessed self-regulatory failure in purchase behavior immediately prior to the main task. Although, this might have activated the awareness of some participants' poor self-regulatory behavior, the basic finding regarding the distractibility seems to be robust and not altered by measuring perceived self-regulatory failure. In line with our central hypothesis, the present results indicate that, for consumers who repeatedly perceive self-regulatory failure in purchasing behavior, implementation intentions with affective arousal as a eliciting cue are effective at helping people focus their attention on relevant products.

By showing the effectiveness of implementation intentions in the self-regulation of attention in shopping contexts, the present research extends previous research that demonstrated that implementation intentions are effective for enhancing self-regulation in several contexts such as sticking to a diet (Achtziger, Gollwitzer, & Sheeran, 2008) or reducing the undesired effects of ego-depletion (Webb & Sheeran, 2003). In particular, our research provides two main contributions to the literature on implementation intentions. First, we showed that arousal can be used as a cue that triggers goal-directed behavior. Previous research has used implementations to regulate arousal (Azbel-Jackson, Butler, Ellis, & Reekum, 2015) or to overcome the effects of arousal (Webb et al., 2012) but did not use arousal as a signal for eliciting desired behavior. The application of arousal as an eliciting cue in implementation intentions is promising because an increase in affective arousal is often regarded as leading to impulsive responses (Ariely & Loewenstein, 2006; Loewenstein, Weber, Hsee, & Welch, 2001). Second, we extended and generalized recent research on the role of implementation intentions in attentional control. Previous research has found that implementation intentions can be used to ignore negative, threat-related stimuli (Webb et al., 2010). The present research shows that implementation intentions are also successful at focusing attention when the distracting stimuli are positive. Furthermore, the present research

used eye tracking as a direct measure of visual attention, a method that has not been applied in previous studies on implementation intentions and attention.

Linking arousal and attentional focus via implementation intentions is also important because it might counteract another mechanism that links arousal and attention and potentially contributes to unplanned purchases. Gable and Harmon-Jones (2010) have demonstrated consistently across various studies that high approach-motivated (i.e., arousing) affect narrows visual attention, whereas low approach-motivated positive affect broadens visual attention. In a typical impulsive purchasing situation, this mechanism implies that when a shopper sees a tempting product that elicits a strong approach motivation, the focus of his or her attentional motivation narrows to this particular product, thus ultimately increasing desire and the likelihood of an unplanned purchase. However, if the consumer has formed an implementation intention that is triggered by arousal, this should help the person focus back on his or her original task and thus reduce the effect of focusing on products that the consumer had not planned to purchase. Future research might study whether implementation intentions also block a shopper's focus on attractive products after such products are perceived with a broad focus of attention.

It is important to note that the findings of the present study allow us to rule out the possibility that increased goal commitment was solely responsible for the observed effects of implementation intentions (Locke, Frederick, Lee, & Bobko, 1984). Participants in the implementation intentions condition showed reduced visual distractibility compared with the participants in the control condition, whereas participants in the goal intentions condition did not differ from those in the control condition. The superiority of implementation intentions over simple goal intentions is a standard finding from previous research (Gollwitzer & Sheeran, 2006) and underscores the idea that implementation intentions go beyond forming goal intentions and committing to them.

To conclude, consumers who repeatedly perceive self-regulatory failure in purchasing behavior might benefit from the findings of the present research. These consumers could form implementation intentions as the participants in our study did (“If my affective arousal increases, then I will concentrate on my task”) and periodically bring such intentions to mind. If they do so, anytime they enter a store, the arousing atmosphere and the arousal they feel might activate the formulated implementation intention, and the consumers might automatically focus on their shopping goal and shield their attention from attractive products and special offers. In this way, products that consumers might otherwise buy would not even tempt them. However, for a real-world application it is important to keep in mind that the concrete specification of the implementation intention is important (Adriaanse et al., 2009). The implementation intention that was formed in the present research might not work when consumers do not have a specific shopping-task, such as buying specific products. In this case, consumers need to form an implementation intention that specifies a different goal-related response (“then” statement) than in our study.

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**Tables**Table 1. *Regression Coefficients from the Multiple Linear Regression Analysis*

	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Perceived self-regulatory failure (z-standardized)	-243.17	93.83	-.46	-2.59	.01
Implementation intentions dummy (implementation intentions = 1; else = 0)	182.31	152.46	.16	1.20	.24
Goal intentions dummy (goal intentions = 1; else = 0)	-18.90	149.91	-.02	-0.13	.90
Implementation Intentions Dummy x Perceived Self-Regulatory Failure	417.64	163.42	.37	2.56	.01
Goal Intentions Dummy x Perceived Self-Regulatory Failure	175.61	143.21	.19	1.23	.23

*Note.* dependent variable: visual attention on the target product (dwell time in ms);  $df = 61$ ;  $R^2 = .15$ .

Table 2. Mean Dwell Time on the Target Product for Different Levels of Perceived Self-Regulatory Failure and Simple Slope Analyses for Each Experimental Condition

	$M_{\text{low}}^{\text{a}}$	$M(SD)^{\text{b}}$	$M_{\text{high}}^{\text{c}}$	$B$	$SE$	$\beta$	$t$	$df$	$p$
Control condition	1863	1620 (439)	1377	-243.17	93.83	-.46	-2.59	61	.01
Goal intentions condition	1673	1605 (586)	1537	-67.56	108.19	-.13	-0.62	61	.54
Implementation intentions condition	1616	1790 (561)	1964	174.47	133.80	.33	1.30	61	.20

*Note.* predictor: self-regulatory failure in purchasing behavior (z-standardized); dependent variable: visual attention on the target product (dwell time in ms);

<sup>a</sup> Mean visual attention 1 *SD* below the mean of perceived self-regulatory failure. <sup>b</sup> Mean dwell time. <sup>c</sup> Mean dwell time 1 *SD* above the mean of perceived self-regulatory failure.

**Figure Captions**

*Figure 1.* Sequence of the distraction paradigm.

*Figure 2.* Schematic depiction of the six possible arrangements of the products on the stimulus screen.

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