

Bridging the intention–behavior gap: Inducing *implementation intentions* through persuasive appeals

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Abstract

The potential of using implementation intentions—action plans that link a critical situational cue to a specific goal-directed behavior—to bridge the intention–behavior gap in consumer behavior has been limited by the practice of using explicit instructions to induce the construct. In two studies, we therefore tested the effectiveness of an indirect, persuasive strategy that benefits from the positive consequences of implementation intentions by ‘mimicking’ their underlying psychological processes. Experiment 1 showed that a strategy presenting vivid information on critical cues and appropriate behavioral responses affected mental imagery. Experiment 2 demonstrated that this strategy affected actual purchase behavior.

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Although an advertisement that succeeds in persuading a substantial proportion of the target audience to form the intention to purchase the advertised product or service would be considered highly effective, a meta-analysis of meta-analyses of the relationship of intentions and behavior has shown that, in fact, intentions explain only 28% of the variance in behavior (Sheeran, 2002). Fortunately, however, this proportion can be considerably increased if one succeeds in inducing an “implementation intention”. In contrast to goal intentions, which are plans to perform a given behavior at some unspecific time in the future, implementation intentions specify the time and the context in which the behavior is to be performed and thus reflect action plans that link a critical situational cue for action to a goal-directed behavior. In a meta-analysis based on more than 8000 participants, Gollwitzer and Sheeran (2006) demonstrated that inducing implementation intentions substan-

tially increased the likelihood that individuals will act on their intentions with an effect-size indicating a medium to strong effect.

In their review, Gollwitzer and Sheeran (2009) argued therefore that implementation intentions are well-suited to bridge the intention–behavior gap in the field of consumer psychology. Because this suggestion makes intuitive sense, it is surprising that the implementation intention construct has seen only scant research attention in the field of consumer research (Fennis & Stroebe, 2010). This may be attributable to the fact that the only way implementation intentions have been induced in past research has been by *explicitly instructing* participants to form such an intention (Baumgartner & Pieters, 2008), which may not be appropriate in many consumer influence settings. In fact, a sales representative or an advertisement that instructs people to form the intention to purchase the advertised product the next time they visit their supermarket is likely to induce reactance rather than compliance (cf. Wright, 2002). Providing explicit, face-to-face instructions to form implementation intentions may therefore not be an effective strategy for influencing consumer decision-making.

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The two studies reported in this article investigate whether it is possible to induce implementation intentions without explicit instructions and whether the effectiveness of implementation intentions can be achieved with more indirect strategies (Baumgartner & Pieters, 2008). Therefore, in the present paper we examined the possibility of ‘profiting’ from the positive consequences of implementation intentions by ‘mimicking’ their underlying processes using a more indirect approach to influence consumer behavior. That is, instead of using explicit, face-to-face instructions, we used non-personal persuasive appeals.

We propose that such a persuasion strategy should include the critical components that have been shown to result in successful, effective implementation intentions, i.e., information which links a good opportunity to act to a specific goal-directed behavior. Moreover, we argue that such a strategy will be particularly effective when it accommodates the basic psychological mechanism that drives the effectiveness of implementation intentions, i.e., the subjectively experienced ease with which critical situational cues and appropriate goal-directed responses can be accessed from memory. In two studies, we show that a persuasion strategy that fosters mental simulation using vivid appeals is particularly well-suited to play this role.

Implementation intentions

Many social and health psychological theories identify the presence of strong goal-intentions (e.g., “I intend to buy more fruits and vegetables!”) as the core predictor of goal-directed behavior (e.g., Ajzen, 1991; Carver & Scheier, 1982; Locke & Latham, 1990). However, even though intentions are believed to be the best predictor of behavior (Ajzen, 1991; Armitage & Conner, 2001), they account for less than one third of the variance in behavior (Sheeran, 2002; Webb & Sheeran, 2006). This frequently observed lack of correspondence between intentions and behavior (the ‘intention–behavior gap’; Orbell, Hodgkins, & Sheeran, 1997; Sheeran, Orbell, & Trafimow, 1999) led researchers to acknowledge that although having strong goal intentions is a necessary prerequisite, it is often not sufficient for goal-directed behavior (Gollwitzer & Oettingen, 1998). According to Gollwitzer (1999), in addition to strong goal intentions, implementation intentions, or plans concerning where, when and how one will perform the intended behavior, are frequently required to overcome this intention–behavior gap.

Unlike intentions that merely specify a desired end-state (“I intend to achieve Z”), implementation intentions specify the where, when, and how of goal-striving (“If I am in situation X, then I will perform goal-directed behavior Y”, Gollwitzer, 1999). For example, an implementation intention to support the intention to buy more organic food specifies a situation that represents a good opportunity for acting on this intention (e.g., ‘when I walk home from work at six o’clock and pass the bio-shop’) and then links this situation to a specific goal-directed action (e.g., ‘buying vegetables for dinner’) resulting in the following implementation intention; “If I walk home from work

at six o’clock and pass the bio-shop, then I will go inside and buy vegetables for dinner!”.

Making such specific action plans promotes acting on one’s intentions in two ways. First, by specifying a critical situation in advance, this situation becomes more accessible in memory which increases the likelihood that, when encountered, the situation is recognized as a good opportunity to act upon one’s intentions (Gollwitzer, 1999; Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2007). Direct evidence for such memory effects was provided by Aarts, Dijksterhuis, and Midden (1999), who demonstrated that for individuals who formed implementation intentions to perform a specific behavior in a specific location, cues identifying that situation were more cognitively accessible in a lexical decision task than for individuals, who were only induced to form general intentions. Second, by linking the situation to a specific goal-directed behavior, this behavior becomes activated *automatically* upon encountering the situation (Gollwitzer, 1999; Parks-Stamm et al., 2007; Webb & Sheeran, 2004, 2007, 2008). That is, after forming an implementation intention, the goal-directed behavior is initiated immediately (Cohen, Bayer, Jaudas, & Gollwitzer, 2008; Gollwitzer & Brandstätter, 1997), efficiently (Brandstätter, Lengfelder, & Gollwitzer, 2001; Gawrilow & Gollwitzer, 2008), and without conscious intent (Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009).

Implementation intentions and consumer decision making

Ever since the introduction of implementation intentions as a strategy to promote goal-directed action (Gollwitzer, 1993, 1999), their effectiveness has been demonstrated for various types of behavior, such as health-related, academic or prosocial behaviors (for a complete overview, see Gollwitzer & Sheeran, 2006, 2009). Interestingly, however, despite the obvious potential to affect various behaviors, demonstrations of the impact of implementation intentions in the consumer behavior field are largely absent (Fennis & Stroebe, 2010). To date, a mere two mere studies have investigated the application of implementation intentions to influence purchase and consumption behavior (Bamberg, 2002; Kardes, Cronley, & Posavac, 2005). More specifically, Bamberg (2002) showed that implementation intentions can promote the purchase of organically produced foods among students who received a monetary voucher in order to act as ‘test buyers’ in a bio-shop for a period of 7-days. Similarly, Kardes et al. (2005) demonstrated that implementation intentions increased the use of a free sample of a household liquid.

It is important to note that the two studies that have investigated the influence of implementation intentions in promoting goal-directed consumer behavior followed earlier studies by relying on explicit instructions. Although a strategy of explicitly instructing people to formulate implementation intentions for concrete goals may be effective, its usefulness in the consumer behavior field where influence agents often aim to promote the purchase of products (rather than the use of free samples) and where participants do not receive a monetary incentive to act as a test buyer appears limited for three reasons.

First, providing explicit instructions may not be *socially acceptable* in many situations (Baumgartner & Pieters, 2008). When aiming to persuade consumers to buy a certain product through advertising or personal selling, instructing people to formulate a specific if–then plan to buy this product in a given situation would seem inappropriate and will frequently prompt a reactance response since consumers are typically unwilling to comply with imperative instructions or recommendations from a source with a clear vested interest (see Clew & Wicklund, 1980; Wright, 2002). Hence, the consumer influence setting constitutes a context where explicit instructions to formulate implementation plans are probably viewed as a threat to personal freedom of choice. Indeed, evidence for the idea that instructing people to formulate an implementation intention to buy a specific product may backfire comes from Koestner et al. (2006). These authors showed that implementation intentions are only effective when instructions are delivered in an autonomy supportive manner, and not when participants are instructed to adhere to a predefined plan.

Second, explicit instructions are not *efficient* in many influence contexts. Consumers are frequently only briefly exposed to persuasive messages, for example when driving past billboards or when watching a television commercial. If these persuasive messages would include an explicit instruction to form implementation intentions, the brief exposure to this instruction would not allow for sufficiently deep encoding which is crucial to implementation intentions' effectiveness (Sheeran, Milne, Webb, & Gollwitzer, 2005; Webb & Sheeran, 2007, 2008).

Third, although previous research on implementation intentions has demonstrated its effectiveness in changing habitual behavior or instigating new behavior, most studies examined samples of individuals with *high motivation* to be exposed to an explicit instruction of how to behave in a certain context. Such high levels of motivation, however, are typically the exception rather than the rule when it comes to consumer behavior, where low motivation to be exposed to and process advertising and low involvement decision-making governs the bulk of acquisition and consumption choices made on a day-to-day basis (cf. Krugman, 1965). This, too, may limit the applicability of using an explicit instruction strategy to promote the formation of consumption-related implementation intentions.

In sum, since the potential for directly instructing consumers to form implementation intentions seems limited in the real world of consumer decision making, and may potentially even result in reactance responses, influence agents need more indirect strategies to benefit from the processes responsible for implementation intentions' effectiveness. In the present research, we test whether using persuasive appeals to provide consumers with key elements of implementation intentions—information about critical situations that are good opportunities to act and specific goal-directed responses—enabled us to mimic the crucial processes underlying implementation intentions' effectiveness (i.e., an increased mental accessibility of critical situations and specific goal-directed responses), and thus to promote increased goal-directed consumer behavior. In doing

so, we propose that it is important to present this information using an appeal that promotes the experienced subjective ease of accessing situational cues and appropriate behavioral responses.

Indirect induction of implementation intentions

The crucial difference between inducing general intentions compared to the induction of implementation intentions is that in the latter case individuals are asked to imagine the specific situation that is suited for the goal-directed behavior and to imagine performing this behavior in that situation. People are for example asked to visualize the plan (e.g., Holland, Aarts, & Langendam, 2006) or to imagine oneself enacting the plan (e.g., Adriaanse, de Ridder, & de Wit, 2009). Experimental evidence has shown that including a mental imagery component indeed promotes enacting the implementation intention, and it has been argued that this occurs because imagining an action is comparable to truly carrying it out as the same brain areas are activated (Knäuper, Roseman, Johnson, & Krantz, 2009). It is assumed that this process of mental simulation results in an enhanced consolidation of the behavior in long-term memory (Papies, Aarts, & de Vries, 2009). Such deep encoding of the critical cues and goal-directed behaviors is the key to the effectiveness of implementation intentions. Specifically, depth of encoding of the implementation intention influences the accessibility of cues and responses (Prestwich, Lawton, & Conner, 2003; Sheeran et al., 2005), which in turn affects the magnitude of implementation intention effects (Sheeran et al., 2005; Webb & Sheeran, 2007, 2008).

However, when a more indirect persuasion approach is used as is done in the present study, it is not possible to directly instruct participants to imagine enacting the implementation intention. Yet, persuasive appeals can be geared-up specifically to promote mental imagery. More specifically, previous research has shown that vivid (i.e., concrete, image-provoking) appeals can produce reliable increases in imagery processing (Fennis, Das, & Franssen, in press; Green & Brock, 2000; Keller & Block, 1997; MacInnis & Price, 1987; Petrova & Cialdini, 2005). Vividness in advertising can take different forms and previous studies have used various manipulations, such as the presence or absence of pictures (e.g., Kisilius & Sternthal, 1984), detailed product descriptions vs. expert ratings (Petrova & Cialdini, 2005), or using narrative vs. pallid information (Keller & Block, 1997; Mandel, Petrova, & Cialdini, 2006). In the present research, we follow the latter approach and manipulate vividness by varying the extent of narrative (vs. pallid) information in our persuasive appeals. We propose that using persuasive appeals with narrative information is a particularly effective strategy to foster mental imagery and thus to benefit from the key process underlying the effectiveness of implementation intentions.

The present research

Taken together, the present research thus investigates whether providing people with information about suitable 'if'

and ‘then’ cues in a persuasive appeal can mimic the previously demonstrated effectiveness of explicitly formulated implementation intentions, and promote goal-directed consumer behavior. This is assessed by investigating the effect on cognitive accessibility of the ‘if’ and ‘then’ cues (Experiment 1) as well as on actual goal-directed consumer behavior (Experiment 2). We hypothesize that a persuasive appeal that advertises the constituent components of effective implementation intentions can indeed enhance accessibility of critical cues and responses and promote goal-directed consumer behavior, but only when this information is presented in a vivid manner that promotes mental simulation. More specifically, we expect any impact of type of appeal (including or excluding information on critical cues and responses) on cognitive accessibility (Experiment 1) and/or actual goal-directed behavior (Experiment 2) to be moderated by vividness, such that the effects are more pronounced when a vivid, as opposed to pallid, appeal is used.

A key contribution of the present research lies in demonstrating the potential of an indirect persuasion strategy that benefits from the processes that are responsible for the effectiveness of implementation intentions that have been induced by explicit instructions. This is especially relevant in consumer influence settings where the induction of implementation intentions through direct instructions is hardly feasible or realistic. Thus, the present strategy, if successful, aids in bridging the intention–behavior gap in the consumer sphere. Additionally, the present study aims to extend findings from previous research that stressed the role of imagining future scenarios of enacting implementation intentions by examining the role of information vividness in a persuasive appeal to promote mental imagery of the critical components of implementation intentions.

Experiment 1

The first study tested whether a persuasive strategy including information on the critical components of effective implementation intentions can “mimic” the underlying processes observed with explicit instructions to form such plans and can promote an increased cognitive accessibility of critical situational cues and responses. More in particular, we expect this impact to be particularly pronounced when a vivid (as opposed to pallid) appeal is used.

Similar to the next study, the present experiment used a 2 (condition: goal intention vs. goal intention + implementation intention) \times 2 (vividness: high vs. low) between-subjects design. After viewing the content of a website, which served to manipulate the independent variables, participants responded to a perceptual identification task (e.g., Johnston, Dark, & Jacoby, 1985; Lee & Aaker, 2004) as the main dependent variable. In this task, which assessed the subjective ease of cue and response accessibility, target words were presented for a very brief, supraliminal time interval on the computer screen, and participants were asked to identify the word. We expected participants in the goal intention + implementation intention-condition to identify more target words correctly than participants in the goal-intention only condition. Moreover, if

participants indeed experienced increased mental imagery when forming an implementation intention using a more vivid as compared to a less vivid description of situational cues and responses, they should better be able to identify the target words presented.

Method

Participants and procedure

A total of 34 undergraduate students from Utrecht University (23 females, 11 males, mean age = 25.06 years, $SD = 8.10$ years) participated in this study in return for a raffle ticket for a 50 euro gift voucher. All participants were individually seated in front of a computer, and were asked to review a webpage advocating sustainable consumption by buying fair-trade products. Participants were randomly assigned to one of four versions of the web-page representing the manipulations of the two independent variables (condition and vividness). Participants were asked to press ‘enter’ to proceed to the next page for further instructions when they finished reviewing the webpage. They were then presented with the perceptual identification task designed to measure cognitive accessibility of the ‘if’ and ‘then’ cues.

Condition

All participants were exposed to a website advocating buying fair-trade products to stimulate sustainable consumption. They were merely asked to read the website but did not receive any additional instructions. The website in all conditions advocated the use of a pocket-guide listing fair-trade products for a variety of product categories (available at <http://www.fairfood.org>) to select sustainable products rather than regular alternatives. This advocacy was the same in all conditions thus ensuring that participants in the different conditions would not differ on the strength of the overall goal-intention.

In the implementation-intention condition, the website explicitly listed when, where, and how to use the pocket-guide. More specifically, in this condition the website listed the critical cues (the “if-part”) and the response (the “then-part”) needed to induce an implementation intention to use the pocket-guide when buying food products. The critical cues included three situations where using the guide would be suitable, 1) before product selection, i.e., at home when composing the shopping-list; 2) during product selection, i.e., at the supermarket while putting products in their shopping basket and 3) after product selection, i.e., at the cash-register checking the selected products while waiting in line. The response consisted of using the pocket guide to check and select the brands per product category that constitute a sustainable alternative to regular brands. In the goal-intention condition, participants were also persuaded to use the pocket-guide, but no information on critical cues was provided nor any information on the link between cues and the appropriate response.

Vividness

In line with previous research (e.g., Fennis et al., in press; Keller & Block, 1997; Mandel et al., 2006), we manipulated

information vividness in the persuasive appeal using either narrative or pallid information. More specifically, to induce mental simulation in the high vividness condition, participants read a narrative using concrete wording and describing a day in the life of a female undergraduate student (identified as “Kirsten de Graaff”), studying at the same university as the participant.

The introduction of the website in this condition read “A few weeks ago, I read an interesting story about the products you buy in the supermarket and was shocked to find out that the manufacture of these products often entails unfair, unsustainable processes, such as poor working conditions, damage to the environment and unfair world-trade. I wanted to do something about that and decided to start only buying sustainable products from that moment on”. Information on the key features of the fair-trade pocket guide (in all versions) and on the critical cues and responses (in the goal intention + implementation intention condition) was described in a scenario where this student went to the supermarket the next day and used the pocket guide in the designated contexts. In this scenario, the critical cues and responses were described as follows: “I checked the guide at three moments. First, while making a shopping list at home, which enabled me to assess whether there was a sustainable alternative to my regular brands. Next, I checked the pocket guide while I was in the store, at the point where I put the products in my shopping basket. Finally, I checked the pocket guide for sustainable products while waiting in line at the cash-register”.

In the low vividness condition, the same information was provided but in a pallid, abstract way. Hence, in this condition the introduction section read: “the manufacture of supermarket products often entails unfair, unsustainable processes, such as poor working conditions, damage to the environment and unfair world-trade. Fairfood wants to do something about that by promoting the buying of sustainable products”. Information on the key features of the fair-trade pocket guide (in all versions) and on the critical cues and responses (in the goal intention + implementation intention condition) was listed using bullet points. More specifically, in this condition, the message stated: “Check the Fairfood pocket guide in the following situations:

- At home while making a shopping list
- In the store at the point of putting products in a shopping basket
- While waiting in line at the cash-register”.

Perceptual identification task

We used an adapted version of the perceptual identification task as developed by Lee and Aaker (2004) to assess the cognitive accessibility of critical situational cues and appropriate behavioral responses. In this task participants are instructed that they will be exposed to a series of words that would be flashed very quickly on the computer screen one at a time, followed by a series of X- signs. They are asked to type in the word they thought they saw, and if they could not make out what word it was, they should guess what it might be. After typing in the word, they are requested to hit “Enter” and the next word would be presented. A total of 20 words (5 target and 15

filler words) were shown at a presentation rate of 50 ms each, backmasked until participants hit the “Enter” key. The 5 target words directly referred to the critical cues (shopping list, basket, cash-register) and the response (checking, sustainable). Examples of filler words are moment, head, lamp, and youthful. The first three trials were filler words that served as practice trials, and the five target words were randomly distributed among the remaining 12 filler words. At the end of the perceptual identification task, participants were debriefed and thanked. The number of correctly reproduced target words served as a measure of cognitive accessibility (cf. Lee & Aaker, 2004).

Results and discussion

A 2 (condition: goal intention vs. goal intention + implementation intention) × 2 (vividness: high vs. low) ANOVA was conducted on our measure of cognitive accessibility. The results showed a main effect of condition ($F(1, 30)=6.79, p=.01, \eta^2=.18$) while the main effect of vividness was not significant ($F<1$). In line with previous findings, the message aimed to induce goal intentions + implementation intentions resulted in the correct identification of more target words ($M=4.33, SD=.97$) than the goal intention-only message ($M=3.56, SD=1.03$). Of particular interest was the fact that the analysis also produced a significant interaction effect between condition and vividness ($F(1, 30)=5.15, p=.04, \eta^2=.15$).

In line with the hypotheses, simple main effects analyses showed that the effect of condition on accessibility of cues and responses was *only* significant when the information was communicated using a vivid appeal expected to foster mental simulation of situational cues and responses ($F(1, 30)=10.62, p=.003, \eta^2=.26$). More specifically, when using a narrative, the message containing references to critical cues and responses resulted in more correctly identified target words, than the control message (see Table 1 for means and standard deviations). In contrast, when statements low in information vividness were used, condition failed to increase cognitive accessibility of target words ($F<1$). Additional simple main effects analyses suggested that it was indeed vividness moderating the impact of condition, as hypothesized, rather than vice versa, since the simple main effects of vividness within each of the two conditions failed to reach significance (i.e., simple main effect of vividness within the goal intention + implementation intention condition: $F(1, 30)=2.75, n.s.$; simple main effect of vividness within goal-intention condition $F(1, 30)=2.41, n.s.$).

In sum, these results are the first to show that using an indirect, persuasive strategy that includes vivid information on the ‘if’ and ‘then’ parts of implementation intentions can be successful in affecting the key process responsible for the impact of implementation intentions on behavior—the experienced ease with which the situational cues and responses can be accessed from memory. As such, the present results are in line with previous findings that have relied on explicit instructions to induce implementation intentions.

Table 1

Means and standard deviations of cognitive accessibility (Experiment 1), purchase rates of sustainable products (Experiment 2), and ratio of sustainable to regular products (Experiment 2) as a function of condition and vividness.

Condition	Vividness											
	Low ^a		High ^a		Low ^b		High ^b		Low ^c		High ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Goal Intention	3.89	1.05	3.14	.90	1.73	1.72	1.13	1.23	.29	.33	.16	.17
Goal Intention + Implementation Intention	4.0	1.15	4.75	.46	1.67	1.35	2.85	2.64	.32	.29	.58	.67

^a Cognitive accessibility.

^b Sustainable product purchase rates.

^c Ratio of sustainable to regular products.

Experiment 2

In field Experiment 2, we extend the findings from Experiment 1 by assessing the viability of the proposed strategy in affecting overt consumer behavior. If the indirect persuasive strategy is capable of affecting the accessibility of cues and responses, then ultimately it should also affect behavior in order to be used as an alternative to explicit instructions as a strategy to induce the formation of implementation intentions. Similar to the previous findings, though, this impact on behavior should occur only when using an imagery-promoting appeal, i.e., a message that is high in information vividness. Hence, in line with the findings of Experiment 1, we expect the impact of type of condition on behavior to be moderated by the vividness of the provided information such that information on critical cues and behavioral responses will have a more profound effect on purchase behavior when this information is presented in a more vivid manner.

In addition, we extend the findings of Experiment 1 by including a manipulation check for the formation of goal-intentions and implementation intentions. If our manipulation is successful, participants in the goal intention + implementation intention condition should score higher on items assessing the formation of implementation intentions, but should not differ on their level of overarching goal-intentions (all participants were persuaded to use the pocket-guide). This would allow for ruling out the alternative explanation that any effects are attributable to participants in the implementation intention condition being more motivated to use the pocket-guide.

Method

Participants and procedure

A total of 217 undergraduate students (150 female, 67 male, mean age = 24.48 years, *SD* = 7.63 years), were initially contacted to participate in a field study, which consisted of two stages. The first stage involved the manipulation of the independent variables. The second stage pertained to the measurement of the dependent variables and took place one week after the first stage. The sample that completed both stages consisted of 88 participants. To check for differential sample dropout across conditions, a Chi-square analysis was performed, which showed that dropout rates were statistically

equivalent across the four conditions of the experimental design ($\chi^2 < 1$).

Using the same design and manipulations as in Experiment 1, all participants were asked to read a webpage advocating sustainable consumption by using a pocket guide to select fair-trade products. Participants were randomly assigned to one of four versions of the web-page representing the manipulations of the two independent variables. At the end of the first stage, all participants received the pocket guide.

Manipulation checks

In extension of the previous study and to assess whether mimicking the formation of implementation intentions by providing information on situational cues and behavioral responses proved successful, a series of manipulation check-items using 7 point Likert statements (1 = fully disagree, 7 = fully agree) was administered at T1. More specifically, two items checked whether the present procedure succeeded in inducing the required cue–response relationship (i.e., “It was fully clear to me when and where I will use the pocket guide”, and “I’m uncertain when and where I will use the pocket guide” (reversed item)). In addition, two Likert statements checked the formation of behavioral intentions (“I intend to buy sustainable products”, and “I’m not planning to buy any sustainable products in the near future” (reversed)). We expected condition (goal intention + implementation intention vs. goal intentions) to affect the scores on the first two, but not the latter two items.

Purchase behavior

One week after being exposed to the experimental conditions, participants were contacted by email and asked to register which food products they had purchased over the preceding period. To this end, a digital form was attached to the email-message specifying 30 product categories, and all leading brands per category. Participants completed the form by indicating which brands (if any) they had bought per category. The number of sustainable food products (range: 0–11, *M* = 1.9, *SD* = 1.98), and the ratio of sustainable to regular products purchased over the one-week period (*M* = .35, *SD* = .46) served as indices of sustainable purchase behavior. Finally, to explore the possibility that our treatment would affect overall rather than sustainable purchase rates, we recorded the total number of products purchased (i.e., sustainable + regular products; range: 0–26, *M* = 7.0, *SD* = 4.63).

Results and discussion

Manipulation checks

On the two items checking whether the present procedure succeeded in forming the required cue–response relationship, a series of two ANOVA's was performed with condition and information vividness as factors. This analysis showed that the condition manipulation proved successful: participants in the goal intention + implementation intention condition indicated to be more aware of when and where they were to use the pocket guide ($M=4.12$, $SD=.67$) than goal-intention only participants ($M=3.43$, $SD=.94$; $F(1,84)=14.47$, $p=.001$), and they were less uncertain about when and where they were to use the pocket guide ($M=1.76$, $SD=.76$) than goal-intention only participants ($M=2.30$, $SD=1.01$; $F(1,84)=8.17$, $p=.005$). No other main or interaction effect was significant.

A similar set of two ANOVA's on the manipulation check items for assessing the formation of behavioral intentions produced no main or interaction effects (all F 's < 1), suggesting that the type of condition did not differentially affect the formation of behavioral intentions, but only differed in the extent to which implementation intentions were induced.

Purchase behavior

First, a 2 (condition: goal intention vs. goal intention + implementation intention) \times 2 (vividness: high vs. low) ANOVA on the number of sustainable products purchased over the one-week period demonstrated that the proposed strategy was effective in line with predictions. That is, the results aligned with the previous findings and showed a main effect of condition ($F(1, 84)=4.02$, $p=.05$, $\eta^2=.05$), whereas the main effect of vividness failed to reach significance ($F < 1$). The main effect of condition indicated that the persuasive message including the cue–response information produced more purchases of sustainable food products ($M=2.43$, $SD=2.32$) than the control message ($M=1.41$, $SD=1.50$). Similar to the findings obtained in Experiment 1, this main effect was qualified by a significant interaction effect between condition and vividness ($F(1, 84)=4.63$, $p=.03$, $\eta^2=.05$). Additional simple main effects analyses to probe the interaction showed that the effect of condition on purchase behavior was only significant when the information was communicated using a vivid type of message ($F(1, 84)=10.48$, $p=.002$, $\eta^2=.11$). In line with Experiment 1, when using a narrative with concrete wording, the message fostering a goal intention + implementation intention resulted in more purchases of sustainable food products, than the message merely promoting the formation of a goal intention (see Table 1). In contrast, when information low in vividness was used, condition failed to affect purchase behavior ($F < 1$). Similar to the previous experiment, additional simple main effects analyses underscored our hypothesis of vividness moderating the impact of condition, rather than vice versa, since the simple main effects of vividness in each of the two conditions failed to reach significance (i.e., simple main effect of vividness within the goal intention + implementation intention condition: $F(1, 84)=3.75$, $p=.06$; simple main effect of vividness within goal-intention condition $F(1, 84)=1.15$, $n.s.$).

Second, a full factorial ANOVA on the ratio of sustainable to regular products purchased paralleled these results and showed that the increase in the number of sustainable products purchased actually translated into a higher sustainable to regular products ratio. Hence, the message including the cue–response information produced a higher sustainable to regular product ratio ($M=.49$, $SD=.57$) than the control message ($M=.22$, $SD=.26$; $F(1, 84)=5.63$, $p=.02$, $\eta^2=.05$). A significant interaction effect between condition and vividness qualified this main effect ($F(1, 84)=3.96$, $p=.05$, $\eta^2=.05$). Again, simple main effects analyses demonstrated that the effect of condition on the sustainable to regular product ratio was only significant when the information was communicated using a vivid type of message ($F(1, 84)=11.54$, $p=.001$, $\eta^2=.12$), indicating that when using vivid information, the message fostering a goal intention + implementation intention resulted in a higher sustainable to regular product ratio, than the message promoting the formation of a goal intention (see Table 1). In contrast, when information low in vividness was used, condition failed to affect the purchase ratio of sustainable to regular products ($F < 1$). Similar to the previous results, additional simple main effects analyses again supported our reasoning of vividness moderating the impact of condition, rather than vice versa, since the simple main effects of vividness within each of the two conditions again failed to reach significance (i.e., simple main effect of vividness within the goal intention + implementation intention condition: $F(1, 84)=3.28$, $n.s.$; simple main effect of vividness within goal-intention condition: $F < 1$).

Finally, an ANOVA on the total number of products purchased failed to produce any significant results (i.e., main effect of condition: $F < 1$; main effect of vividness: $F < 1$; interaction between condition and vividness: $F(1, 84)=1.61$, $n.s.$), suggesting that the previous effects were not attributable to increases in overall shopping behavior. This indicates that the ratio effect actually represents a *shift* from regular to sustainable products, rather than an increase in the number of sustainable products being bought in addition to regular ones.

In sum, the present results show that overall purchase rates remain unaffected by the proposed strategy while purchase rates of sustainable products increase in the expected conditions and do so at the expense of regular alternatives. Since the message mainly advocated using the pocket guide to foster the purchase of sustainable products, rather than actively replacing regular products with sustainable ones, the results suggest that the effectiveness of the persuasive strategy even reaches beyond the message's objective.

Thus, these results extend the previous findings by showing that using an indirect, persuasive strategy to induce implementation intentions with vivid wording not only produces enhanced cognitive accessibility of situational cues and responses (the proposed underlying construct responsible for their effectiveness) but also affects overt consumer behavior over an extended period of time. As such, the present findings attest to the viability and relevance of the implementation-intention construct in consumer influence settings, while simultaneously providing empirical support for the notion that an indirect persuasive appeal rather than explicit instructions to

formulate implementation intentions can be effective in promoting goal-directed consumer behavior.

General discussion

As Gollwitzer and Sheeran (2006) have demonstrated in their meta-analytic review, inducing implementation intentions substantially increases the likelihood that individuals will act on their intentions. However, in these studies implementation intentions were induced through explicit instruction, a strategy which would preclude the use of this powerful technique in the area of consumer behavior. The present research is the first to employ a more indirect, persuasive strategy in the consumer behavior domain. Use of this strategy will make it possible to utilize the impressive effects of implementation intentions also in the consumer sphere. With our strategy, people are not explicitly instructed to form an implementation intention, but rather are ‘seduced’ or persuaded to do so simply by advertising to them the constituent components of effective implementation intentions, i.e., the critical situational cues and the concomitant behavioral response in those situations.

The results of two experiments have shown that our more indirect strategy of ‘mimicking’ the formation of implementation intentions indeed works, but not unconditionally. Rather, in order to effectively mimic the effects of explicit instructions to form implementation intentions on the cognitive accessibility of relevant information as well as on actual behavior, our indirect strategy had to accommodate a key psychological mechanism responsible for their effectiveness. As previous studies have underscored, the effectiveness of implementation intentions in affecting behavior is largely a function of the extent to which critical situational cues and appropriate behavioral responses are easily accessible from memory. Hence, the ease with which the mental script of the event(s) can be imagined—i.e., the extent of mental imagery—strongly affects the impact of implementation intentions on behavior. Since mental simulation is thought to underlie the impact of implementation intentions, an indirect persuasive strategy can only be effective in mimicking the impact of explicit instructions to form implementation intentions to the extent that it fosters mental imagery. Following previous research (e.g., Fennis et al., *in press*; Mandel et al., 2006; Petrova & Cialdini, 2005) we used a persuasive appeal high in vividness (as opposed to a less vivid, pallid appeal) as a means to increase the extent of mental imagery.

More specifically, Experiment 1 showed that a more indirect, persuasive strategy can indeed be effective in promoting increased cognitive accessibility of both critical cues and behavioral responses. Moreover, although the message mimicking the formation of implementation intentions increased accessibility of cues and responses compared to the message only persuading people to form behavioral intentions, this result depended on the type of appeal. When the message advocating the formation of implementation intentions (i.e., urging participants to use a pocket guide with brands of sustainable products in three decision making situations) used vivid, concrete language mental imagery was promoted as witnessed by the increased accessibility of both critical cues and behavioral responses. In contrast, when the

message contained abstract, pallid wording, the implementation intention strategy failed to affect accessibility, compared to the goal-intention only message. Information vividness thus appears to be a necessary condition for inducing implementation intentions using other means than explicitly instructing people to form them.

The ultimate test of the effectiveness of the current indirect persuasive strategy lies in the ability to affect actual overt consumer behavior, and Experiment 2 was aimed to examine this issue. Similar to the pattern of results obtained for Experiment 1, we expected our persuasion strategy to indeed affect the predicted (purchase) behavior, but again only when using vivid, concrete language, fostering mental imagery. The results were in accordance with this notion. It should be noted that this effect could not be attributed to an increase in overall purchase behavior. In addition, we could rule out the alternative account of our strategy resulting in stronger intentions of participants in the goal intention + implementation intention condition, as both the goal intention and the goal intention + implementation intention message were found to affect behavioral intentions to the same extent. Hence, after a week of shopping, only the persuasive appeal using vivid language produced the target behavior to a larger extent, whereas the persuasive appeal low in vividness proved ineffective. As such, the present studies are the first to demonstrate the relevance of the implementation intentions construct in influencing consumer behavior, without having to resort to explicit instructions or having to rely upon high pre-existing levels of consumer motivation and intention.

The present research adds to recent findings that mental simulation may enhance implementation intentions’ efficacy (Knäuper et al., 2009). Although many implementation intention studies already include an instruction to foster mental simulation (e.g., Adriaanse et al., 2009), little empirical evidence for the assumed moderating role of mental imagery existed. Additionally, the present study is the first to test the moderating role of information vividness as a specific way to affect mental imagery on the effectiveness of implementation intentions. Furthermore, the present findings also add to the persuasion literature. Apart from overt behavior, past research has overwhelmingly focused on the effectiveness of persuasion variables on a limited set of outcome measures: beliefs, emotions, attitudes, and behavioral intentions (Eagly & Chaiken, 1993). The present research shows that certain types of persuasive appeals—containing concrete, imagery-provoking language—are well suited to affect a ‘new’ type of outcome measure with direct relevance for understanding consumer behavior: implementation intentions.

Limitations and future research directions

A few limitations of the present set of studies should be noted. First, Experiment 1 assessed cognitive accessibility of ‘if’ and ‘then’ cues by using a perceptual identification task developed to assess the accuracy of target words. Hence, future research might also assess response times as an alternative measure of accessibility. Moreover, future studies might profitably extend the present line of research by incorporating additional dependent

variables, such as the strength of the association between the if and then component or including potential moderating factors, such as pre-existing levels of goal-directed behavior. Second, in line with previous research investigating the cognitive processes underlying implementation intentions' effectiveness (e.g., Webb & Sheeran, 2004, 2007, 2008), one might argue that the cognitive accessibility effects demonstrated in (lab) Experiment 1, may mediate the impact of the type of persuasive strategy on actual behavior, as found in (field) Experiment 2. Since we found these results in two separate, independent studies, the present research cannot directly test the mediating role of accessibility. Hence, future research might include both accessibility and behavior indices in one design to test for mediation. Third, in our studies, we relied on a similar set of manipulations of both independent variables in the two experiments. It might be interesting to examine whether the present results are also obtained when alternative manipulations are used. For example, future research might profitably explore whether similar results are found when other types of vividness appeals are used, such as the presence of pictures (Keller & Block, 1997) or detailed product descriptions (Petrova & Cialdini, 2005). In addition, the present research used a web-ad format and allowed participants ample time to read the message. Future research could also examine other ad contexts where the opportunity for fostering the formation of implementation intentions is more limited. This would provide converging evidence for the notions outlined in the present paper. Finally, the present research relied on self-reports to assess purchase rates of sustainable products. Hence, future research might also want to consider more 'objective' means of behavior recording, such as using cash-register receipts.

In sum, the present results expand the "theatres of operation" of the construct of implementation intentions to situations where explicitly instructing people to form such intentions is untenable, unrealistic, unproductive or undesirable. The consumer-sphere being a case in point, many influence settings do not lend themselves well for explicit instruction, because people are either unable or unwilling to be told what to do by an external influence agent. Beyond the present setting, other situations that may be well-suited playing grounds for a more indirect strategy might include those types of behavior which might involve socially (un)desirable components, such as hooliganism, stereotyping or political extremism. Hence, fostering implementation intentions using persuasion may aid in bridging the intention-behavior gap in sustainable consumption and possibly other prosocial types of behavior.

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