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The Control of the Unwanted

*Peter M. Gollwitzer, Ute C. Bayer,
and Kathleen C. McCulloch*

How often does the will have to peek through the window, before the deed walks out of the door?

—Erasmus von Rotterdam (1466–1536)

Intentions to do more good and less bad are reliably associated with actual efforts in the intended directions (Ajzen, 1991; Godin & Kok, 1996; Sheeran, 2002). However, intention-behavior relations are modest, largely due to the fact that people, despite having formed strong intentions, fail to act on them (Orbell & Sheeran, 1998). Given this predicament, one wonders what people can do to facilitate the translation of intentions into behavior. In this chapter, it is suggested that people should engage in a second act of willing by making if-then plans (i.e., implementation intentions) that specify how the (goal) intention is to be realized. We argue that such plans produce automatic action control by intentionally delegating the control of one's goal-directed thoughts, feelings, and behaviors to specific situational cues. Thus, by forming implementation intentions, people can strategically switch from conscious and effortful control of their goal-directed behaviors to being automatically controlled by selected situational cues. We understand this type of automatic action control as strategic automaticity or instant habits (Gollwitzer, 1999), as it originates from a single act of will rather than being produced by repeated and consistent selection of a certain course of action in the same situation (i.e., principles of routinization; Anderson, 1987; Fitts & Posner, 1967; Newell & Rosenbloom, 1981).

The first part of the chapter discusses research that explores how implementation intentions can help people to promote getting started on their

goals. In the second part, we discuss findings on how people can use implementation intentions in an attempt to prevent straying off-course from goal attainment.

Implementation Intentions: A Strategic Attempt to Instill Automatic Self-Regulation

The concept of intention is central in human goal striving (e.g., Bandura, 1991; Fishbein & Ajzen, 1975; Gollwitzer & Moskowitz, 1996; Kuhl, 1984; Locke & Latham, 1990; Wicklund & Gollwitzer, 1982). In traditional theories on goal striving, the intention to achieve a certain goal is seen as an immediate determinant (or at least predictor) of goal-directed action. Accordingly, for decades research has dealt with the factors that make for strong intentions (Ajzen & Fishbein, 1980), and little attention was paid to mechanisms mediating the effects of intentions on behavior. Over time, evidence accumulated showing that forming strong intentions was only a prerequisite for goal attainment. To translate intentions into action, problems associated with the implementation of intentions need to be solved (Gollwitzer, 1996).

For instance, after having set a goal, people may procrastinate in acting on their intentions and thus fail to initiate goal-directed behavior. Moreover, in everyday life people normally strive for multiple, often even competing, goals, many of which are not simple short-term but long-term projects that require repeated efforts (e.g., starting a new business). Goal pursuit may come to an early halt because competing projects have temporarily gained priority and the individual fails to successfully resume the original project. Also, in order to meet their goals, people have to seize viable opportunities to act, a task that becomes particularly difficult when attention is directed elsewhere (e.g., one is absorbed by competing goal pursuits, wrapped up in ruminations, gripped by intense emotional experiences, or simply tired) and when these opportunities are not obvious at first sight or only present themselves briefly.

In all of these cases, automatic action control comes in handy as established routines linked to a relevant context release the critical goal-directed behavior immediately, efficiently, and without a conscious intent. Often, however, such routines are not established and the goal-directed behavior is not part of an everyday routine. As a substitute, people can resort to forming implementation intentions that strategically place the intended goal-directed behavior under direct situational control.

Goal Intentions versus Implementation Intentions

Gollwitzer (1993, 1999) suggested that automatic action control can be achieved strategically by forming implementation intentions that take the for-

mat, "If Situation X is encountered, then I will perform Behavior Y!" In an implementation intention, a mental link is created between a specified future situation and the anticipated goal-directed response. Holding an implementation intention commits the individual to perform a certain goal-directed behavior once the critical situation is encountered.

Implementation intentions are to be distinguished from goals. Goals have the structure of "I intend to reach Z!" whereby Z may relate to a certain outcome or behavior to which the individual feels committed. Gollwitzer (1993, 1999) refers to goals as *goal intentions* to make a strong distinction between goals and plans (i.e., implementation intentions). Both are acts of willing, whereby the first specifies an intention to meet a goal and the second refers to an intention to perform a plan. Commonly, implementation intentions are formed in the service of goal intentions as they specify the when, where, and how of goal-directed responses. For instance, a possible implementation intention in the service of the goal intention to eat healthy food would link a suitable situational context (e.g., one's order is taken at a restaurant) to an appropriate behavior (e.g., ask for a vegetarian meal). As a consequence, a strong mental link is created between the critical situation of the waiter taking an order and the goal-directed response of asking for a vegetarian meal.

The mental links created by implementation intentions are expected to facilitate goal attainment on the basis of psychological processes that relate to both the anticipated situation and the specified behavior. Because forming implementation intentions implies the selection of a critical future situation (i.e., a viable opportunity), it is assumed that the mental representation of this situation becomes highly activated, hence more accessible (Gollwitzer, 1999). This heightened accessibility should make it easier to detect the critical situation in the surrounding environment and readily attend to it even when one is busy with other things. Moreover, this heightened accessibility should facilitate the recall of the critical situation.

The Specified Situation

This accessibility hypothesis (i.e., the mental representation of the situation specified in the if-part of the implementation intention becomes highly activated) was tested in studies measuring how well participants holding implementation intentions attended to, detected, and recalled the critical situation (Gollwitzer, Bayer, Steller, & Bargh, 2002) as compared to participants who had only formed goal intentions. In a study using a dichotic-listening paradigm, it was observed that words describing the anticipated critical situation were highly disruptive to focused attention in implementation intention participants as compared to goal intention participants (i.e., the shadowing per-

formance of the attended material decreased). This finding implies that opportunities to act, as specified in implementation intentions, will not easily escape people's attention, even when people focus on other things (e.g., a stimulating conversation).

Also supporting the hypothesis that implementation intentions lead to high accessibility of the critical situation are the results of a study using the embedded figures test (Gottschaldt, 1926), where smaller a-figures were hidden within larger b-figures. Enhanced detection of the hidden a-figures was observed when participants had specified the a-figure in the if-part of an implementation intention (i.e., had made plans on how to create a traffic sign from the a-figure). In addition, the heightened accessibility hypothesis was tested via a cued recall procedure. Research participants had to form implementation intentions specifying when, where, and how they wanted to play prepared games from numerous predesigned options. Immediately, or 48 hours later, participants were given a surprise task to recall all of the options provided cued by where, when, and how. Options specified in implementation intentions were recalled better than nonspecified options, no matter whether recall was tested immediately or at a later point.

Further support for the accessibility notion comes from Aarts, Dijksterhuis, and Midden (1999) using a lexical decision task. Shorter lexical decision time was observed for those words that described critical cues specified in implementation intentions. As well, the faster lexical responses to these critical words (i.e., their heightened accessibility) mediated the beneficial effects of implementation intentions on goal attainment. These results imply that the goal-promoting effects of implementation intentions are based on the heightened accessibility of selected critical situational cues.

The Specified Goal-Directed Behavior

Forming implementation intentions involves first the selection of an effective goal-directed behavior, which is then linked to the selected critical situation. The mental act of linking a critical situation to an intended behavior in the form of an if-then plan leads to automatic action initiation in the sense that action initiation becomes swift, efficient, and does not require conscious intent once the critical situation is encountered. By forming implementation intentions, people can strategically switch from conscious and effortful action initiation (guided by goal intentions) to having their goal-directed actions effortlessly elicited by the specified situational cues. This postulated automatization of action initiation (also described as strategic "delegation of control to situational cues") has been supported by the results of various experiments that tested immediacy, efficiency, and the presence or absence of conscious intent.

Gollwitzer and Brandstätter (1997, Study 3) demonstrated the immediacy of action initiation in a study wherein participants had been induced to form implementation intentions that specified viable opportunities for presenting counterarguments to a series of racist remarks made by a confederate. Participants with implementation intentions initiated the counterargument more quickly than the participants who had formed the mere goal intention to counterargue.

In further experiments (Brandstätter, Lengfelder, & Gollwitzer, 2001, Studies 3 and 4), the efficiency of action initiation was explored. Participants formed the goal intention to press a button as fast as possible if numbers appeared on the computer screen, but not if letters were presented (Go/No-Go task). Participants in the implementation intention condition also made the plan to press the response button particularly fast if the number 3 was presented. This Go/No-Go task was then embedded as a secondary task in a dual-task paradigm. Implementation intention participants showed a substantial increase in speed of responding to the number 3 compared to the control group, regardless of whether the simultaneously demanded primary task (a memorization task in Study 3 and a tracking task in Study 4) was either easy or difficult to perform. Apparently, the immediacy of responding induced by implementation intentions is also efficient in the sense that it does not require much in the way of cognitive resources (i.e., can be performed even when dual tasks have to be performed at the same time).

A final set of two experiments (Bayer, Moskowitz, & Gollwitzer, 2002) tested whether implementation intentions lead to action initiation without conscious intent once the critical situation is encountered. In these experiments, the critical situation was presented subliminally, and its facilitating influences on preparing (Study 1) or performing (Study 2) the respective goal-directed behavior were assessed. In Study 1, the goal of asserting oneself against a rude experimenter was analyzed. Half of the participants were encouraged to set the goal of "telling her off" by pointing to her rude behavior (goal intention condition), while the other half was in addition asked to plan to do this as soon as they met her in person (implementation intention condition). Afterward, faces of either the rude experimenter or a neutral person were presented subliminally (primes), and the activation of knowledge relevant to rudeness (target words such as *offensive*, *mean*, *conceited*) was measured via reading latencies. Results indicated that after the subliminal presentation of the critical primes, implementation intention participants, but not participants who only had formed goals, showed faster reading times for words related to rudeness.

In Study 2, participants were asked to classify a series of geometric figures (e.g., circles, ellipses, triangles, squares) as rounded or angular objects by left or right button-press responses. All participants formed the goal intention to classify the figures as fast and accurately as possible. Implementation inten-

tion participants were in addition asked to make the following plan: "And if I see a triangle, then I press the respective button particularly fast!" Participants worked on a set of 240 figures, presented in succession on a computer screen. Some of the figures were preceded by the subliminal presentation of the critical figure (i.e., a triangle), whereas others were preceded by a control prime (i.e., a percent sign: %). In accord with the results of Study 1, participants in the implementation intention condition had faster classification responses for angular figures when the triangle instead of the percent sign was presented as a subliminal prime; no such effect was observed with goal intention participants. The subliminal priming effects observed in the experiments reported by Bayer, Moskowitz, et al. (2002) suggest that when planned via implementation intentions, the initiation of goal-directed behavior becomes triggered by the anticipated situational cue, without the need for further conscious intent.

One might wonder whether in addition to or even instead of the stimulus perception and response initiation processes described above, an increase of commitment may also promote implementation intention effects on goal attainment. However, this possible alternative process mechanism has not received any empirical support. For instance, when Brandstätter et al. (2001, Study 1) analyzed whether heroin addicts under withdrawal benefit from forming implementation intentions in handing in a newly composed curriculum vitae before the end of the day, they also measured participants' commitment to do so. While the majority of the implementation intention participants succeeded in handing in the curriculum vitae in time, none of the goal intention participants succeeded in this task. These two groups, however, did not differ in terms of their goal commitment ("I feel committed to compose a curriculum vitae," and "I have to complete this task") measured after the goal intention and implementation intention instructions had been administered. This finding was replicated with young adults who participated in a professional development workshop (Oettingen, Hönig, & Gollwitzer, 2000, Study 2), and analogous results are reported in research on the effects of implementation intentions on meeting health promotion and disease prevention goals (e.g., Orbell, Hodgkins, & Sheeran, 1997).

Implementation Intentions and Their Effects on Wanted Behavior

Given that implementation intentions facilitate attending to, detecting, and recalling viable opportunities to act toward goal attainment and, in addition, automate action initiation in the presence of such opportunities, people who form implementation intentions should show higher goal attainment rates compared to people who do not furnish their goal intentions with implemen-

tation intentions. This hypothesis is supported by the results of a host of studies examining the attainment of various types of goal intentions.

Types of Goals

As a general research strategy, goal intentions are selected for study that are not easily attained for reasons specified above (e.g., distractions, unpleasantness). Gollwitzer and Brandstätter (1997) analyzed a goal intention that had to be performed at a bad time (e.g., writing a report about Christmas Eve during the subsequent Christmas holiday). Other studies have examined the effects of implementation intentions on goal attainment rates with goal intentions that are somewhat unpleasant to perform. For instance, the goal intentions to perform regular breast self-examinations (Orbell et al., 1997), have cervical cancer screenings (Sheeran & Orbell, 2000), resume functional activity after joint replacement surgery (Orbell & Sheeran, 2000), and engage in physical exercise (Milne, Orbell, & Sheeran, 2002) were all more frequently acted upon when people had furnished these goals with implementation intentions. Moreover, implementation intentions were found to facilitate the attainment of goal intentions where it is easy to forget to act on them (e.g., regular intake of vitamin pills, Sheeran & Orbell, 1999; the signing of work sheets with the elderly, Chasteen, Park, & Schwarz, 2001).

Potential Moderators

The strength of the beneficial effects of implementation intentions depends on the presence or absence of several moderators. First, the more difficult it is to initiate the goal-directed behavior, the more apparent implementation intention effects are. For instance, implementation intentions were more effective in completing difficult as compared to easy goals (Gollwitzer & Brandstätter, 1997, Study 1). Moreover, forming implementation intentions was more beneficial to frontal lobe patients, who typically have problems with executive control, than to college students (Lengfelder & Gollwitzer, 2001, Study 2).

Second, the strength of commitment to the respective goal intention also matters. Orbell et al. (1997) reported that the beneficial effects of implementation intentions on compliance in performing a breast self-examination were observed only in those women who strongly intended to perform a breast self-examination. This finding suggests that implementation intentions do not work when the respective goal intention is weak. In line with this conclusion, the beneficial effects of implementation intentions on a person's recall of the specified situations (Gollwitzer, Bayer, et al., 2002, Study 3) can no longer be observed when the respective goal intention has been abandoned (i.e., the

research participants were told that the assigned goal intention need no longer be reached, as it had been performed by some other person).

Third, Sheeran, Webb, and Gollwitzer (2002) conducted two experiments that suggest that implementation intentions facilitate the initiation of goal-directed behavior only if the superordinate goal intention is activated. Experiment 1 showed that combining a goal-setting intervention with the formation of an implementation intention produced the greatest increase in study behavior compared to the goal-setting and implementation intention interventions on their own, and a no-intervention control condition. In Experiment 2, either a relevant or an irrelevant superordinate goal was activated outside of participants' conscious awareness. Implementation intentions affected the accessibility of respective behavior (as assessed in a lexical decision task) only when the relevant but not when the irrelevant goal had been activated.

An experiment (Bayer, Jaudas, & Gollwitzer, 2002) using the Roger and Monsell (1995) task switch paradigm also makes the point that implementation intention effects depend on the activation of the superordinate goal. In this study, we varied whether the task goal was related or unrelated to the stimulus specified in the if-part of the implementation intention (i.e., to respond to the critical stimulus particularly fast). Implementation intention effects were only observed when the activated goal was speaking to the formed implementation intention.

Fourth, the strength of the commitment to the formed implementation intention matters. In Gollwitzer, Bayer, et al.'s (2002) Study 3, the strength of the commitment to the implementation intention was varied by telling the participants (after an extensive personality testing session) that they were the kind of people who would benefit from either rigidly adhering to their plans (i.e., high commitment) or staying flexible (i.e., low commitment). The latter group showed lower implementation intention effects (i.e., cued recall performance for selected opportunities) than the former.

Fifth, the strength of the mental link between the if-part and the then-part of an implementation intention should also affect how beneficial forming implementation intentions turns out to be. For example, if a person takes much time and concentration encoding the if-then plan, or keeps repeating a formed if-then plan by using inner speech, stronger mental links should emerge, which in turn should produce stronger implementation intention effects.

Implementation Intentions and Their Effects on Unwanted Behavior

Research on implementation intentions conducted thus far has almost exclusively focused on the self-regulatory issue of getting started with goals that one wants to achieve. Certainly, goal attainment becomes more likely if the

critical problem of getting started has been tackled successfully. However, once a person has initiated goal pursuit, it still needs to be brought to a successful ending. People need to protect an ongoing goal from being thwarted by attending to attractive distractions or falling prey to conflicting bad habits (e.g., the goal of being fair with others may conflict with the habit of stereotyping and prejudging certain groups of people). In the following section, we describe the numerous ways in which implementation intentions can be used to help people to control the “unwanted” that could hamper successfully pursuing wanted goals.

Responding to Critical Situations With the Suppression of Unwanted Responses

In principle, implementation intentions can suppress the unwanted by using different strategies. For instance, if a person wants to be friendly and not unfriendly to a friend who is known to frequently make outrageous requests, she can protect herself from showing the unwanted unfriendly response by forming any of the following three implementation intentions, each of which has a particular strategy. The first type of implementation intention is geared toward controlling the unwanted by focusing on suppressing the unwanted response: “And if my friend approaches me with an outrageous request, then I will not respond in an unfriendly manner!” This implementation intention specifies the critical situation in the if-part of the implementation intention and not performing the unwanted response in the then-part. The second type of implementation intention focuses on facilitating the initiation of the respective wanted response: “And if my friend approaches me with an outrageous request, then I will respond in a friendly manner!” In this case, the critical situation is specified in the if-part, and the then-part entails performing the wanted response that is threatened by disruptive unwanted responses. Finally, the third type of implementation intention takes focus away from the critical situation: “And if my friend approaches me with an outrageous request, then I’ll ignore it!” In this variant, the critical situation is specified in the if-part of the implementation intention, and the then-part suggests showing no response (i.e., to ignore it). We have conducted various experiments that used these three types of implementation intentions to control unwanted spontaneous responding to distractions, as well as the activation of unwanted stereotypical beliefs and prejudicial feelings.

Suppressing Unwanted Spontaneous Attentional Responses

When concentrating on pursuing a current goal becomes threatened by attractive distractions, shielding one’s goal-directed behaviors from derailment

becomes an issue. Such shielding should be particularly hard when the distractive stimuli are so pronounced and attractive that attention is spontaneously directed toward them (e.g., beautiful objects and people). Being that the responses specified in implementation intentions are initiated in an automatic manner (i.e., are immediate and efficient, and do not require conscious intent), they should have a good chance in winning the horse race with spontaneous attentional responses toward distracting stimuli.

In research on the resistance to tempting distractions, participants are commonly asked to perform a task that is somewhat boring but demands much concentration. In the process of performing the task, participants are then distracted at random intervals by being presented with attractive attention-grabbing stimuli. For instance, Patterson and Mischel (1976) had children stick numerous pegs into a large pegboard placed on a desk, while attractive toys were shown in a nearby box dressed as a clown. Similarly, Gollwitzer and Schaal (1998) asked college students to perform a series of self-paced arithmetic problems presented on a computer screen, while distracting clips of award-winning commercials were interspersed at random intervals on a video screen mounted on top of the computer terminal.

Implementation intentions turned out to be more effective in protecting participants from these distractions (measured as level of performance on the task at hand) than mere goal intentions ("I will not let myself get distracted!"). However, it mattered whether implementation intentions were phrased as distraction-inhibiting ("And if a distraction arises, then I will ignore it!") or as task-facilitating ("And if a distraction arises, then I will increase my effort at the task at hand!"). Distraction-inhibiting implementation intentions always helped to ward off the distraction, no matter whether the motivation to perform the tedious task was low or high. Task-facilitating implementation intentions, on the other hand, could only achieve this when motivation to perform the tedious task was low. When motivation was high to begin with, task-facilitating implementation intentions did not help to escape distractions. Apparently, forming task-facilitating implementation intentions creates some kind of overmotivation under such circumstances and thus undermines performance.

The different effects of task-facilitating versus distraction-inhibiting implementation intentions suggest that effective willing appears (i.e., when motivation is high to begin with) more closely associated with "cold" cognitive strategies of guiding attention than with the "hot" determined mobilization of effort. It seems appropriate, therefore, to advise motivated individuals who suffer from being distracted (e.g., ambitious students doing their homework) to resort to forming implementation intentions that focus on the ignoring of distractions, rather than on the strengthening of efforts.

Suppressing Habitual Stereotypical and Prejudicial Responses

The use of stereotypes in impression formation can be controlled effectively by effortful correctional strategies (Bodenhausen & Macrae, 1998; Brewer, 1988; Devine, 1989; Fiske & Neuberg, 1990). However, the activation of stereotypes carries features of automaticity due to a long history of being repeatedly activated in the presence of members of the particular group (Bargh, 1999; Devine, 1989). Accordingly, stereotype activation should be more difficult to control than stereotype use, and the question arises as to whether people who have the goal to judge others in a fair manner can protect themselves from the automatic activation of stereotypes by forming implementation intentions focused on the suppression of the "bad habit" of stereotyping others. Again, if one applies the horse race metaphor, it seems possible that the response specified in the then-part of a fairness-oriented implementation intention can win out over the activation of stereotypical beliefs.

Findings of priming studies using short stimulus onset asynchronies (less than 300 ms) suggest that forming implementation intentions indeed inhibit the automatic activation of stereotypical beliefs (Gollwitzer, Achtziger, Schaal, & Hammelbeck, 2002). When participants had furnished their goal intentions of judging the elderly in a nonstereotypical manner with the respective implementation intention ("If I see an old person, then I tell myself: Don't stereotype!"), the typical automatic activation of stereotypical beliefs (assessed through pronunciation speed in a semantic priming paradigm) was even reversed. Implementation intentions were also found to effectively suppress the automatic activation of gender stereotypes in a study where participants had to play the role of a personal manager in a simulated hiring situation. When participants had formed the goal intention to judge women applicants in a nonstereotypical way and furnished this goal intention with the implementation intention to ignore the gender of a certain applicant ("If I see this person, then I will ignore her gender!"), no automatic activation of stereotypical beliefs about this woman (assessed through response latencies in a Stroop task using stereotypical words) was observed.

Finally, implementation intentions were also observed to suppress the automatic activation of prejudicial feelings in a study on homeless people. When participants' goal intentions to judge the homeless in a nonprejudicial manner were furnished with respective implementation intentions ("And if I see a homeless person, then I will tell myself: No prejudice!" or "And if I see a homeless person, then I will ignore that he is homeless!"), the automatic negative evaluation of the homeless (assessed in an affect priming paradigm) vanished.

Work by Achtziger (2002) on prejudicial feelings toward soccer fans indicates that implementation intentions ("And if I see a soccer fan, then I won't

evaluate him negatively!") can control such negative feelings in a very flexible manner. In this study, a sequential priming paradigm was used where pictures of soccer fans served as primes and relevant negative versus positive person attributes as targets (e.g., rowdy, comradely) that had to be read as fast as possible. Half of the depicted soccer fans (primes) were cued with a signal tone, and the participants were told that the formed implementation intention would only apply to those presentations of soccer fans cued with the signal tone. Implementation intention effects (i.e., positive attributes are read faster than negative attributes) were only observed when the depiction of soccer fans was accompanied with a signal tone.

In sum, it seems that stereotypical beliefs and prejudicial feelings can be controlled via implementation intentions in a very effective manner, no matter whether the then-part specifies a don't response or an ignore response. Whether a response of "then I will be particularly fair" also produces strong effects remains to be explored in future research. Nevertheless, our research on resistance to distractions suggests that, at least with individuals who are highly motivated to be fair to others, an overmotivation effect might occur that undermines the effectiveness of this type of implementation intention. Finally, the research reported here suggests that people may strategically form implementation intentions to protect themselves from stereotyping and prejudice. People may form these plans on the spot whenever they are needed to promote goal attainment, and they still can rely on the automatic initiation of the specified responses. In other words, no extensive consistent and repeated practice is needed, as is the case with automaticity stemming from habit formation. Moreover, people can strategically limit the applicability of their implementation intentions to select certain situational contexts, but not others. No extensive discriminative learning is needed that separates critical situational contexts from noncritical ones.

Blocking Detrimental Self-States

In the research presented above, implementation intentions specified a critical situation or problem in the if-part, which was linked to a then-part that described an attempt at suppressing the unwanted response. This type of self-regulation by implementation intentions implies that the person must not only be aware of what makes the desired goal difficult to attain, but also needs to anticipate the occurrence of potential hindrances and what kind of unwanted responses these hindrances commonly elicit.

Implementation intentions can also be used to protect the self from the "unwanted" by taking a completely different approach. Instead of gearing implementation intentions toward anticipated potential hindrances and the unwanted responses triggered thereby, the person may form implementation

intentions geared at stabilizing the goal pursuit at hand. For instance, if a person is tired and a friend approaches her with an outrageous request, chances are high that she will respond in an unfriendly manner. However, if she has stipulated in advance in an implementation intention how she will respond to outrageous requests by her friend, being tired should not play a role. The critical interaction should simply proceed as planned, and the self-state of being tired should fail to affect the person's responding to outrageous requests in a negative, unwanted direction. As is evident from this example, the present self-regulatory strategy should be of special value whenever the influence of detrimental self-states (e.g., being upset) on one's goal-directed behavior has to be controlled. This should be true no matter whether such self-states and/or their influence on behavior reside in the person's consciousness or not.

We tested these assumptions in a series of experiments (Gollwitzer & Bayer, 2000) by asking participants to make plans regarding their performance on an assigned task (via implementation intentions) or not. Prior to beginning the task, participants' self-states were manipulated in such a way that performing the task became more difficult. We predicted that these manipulations of the critical self-state should affect task performance only for those participants who had not planned out working on the task via implementation intentions. In order to construct a critical test of our hypothesis, we asked participants in the no-implementation-intention control condition to perform well on the task (i.e., assigned the goal intention to do well).

The Incomplete Self and Social Insensitivity

The first study was a self-completion experiment (patterned after Gollwitzer & Wicklund, 1985) that tested whether the negative effects of self-definitional incompleteness on social sensitivity in a subsequent getting-to-know-another-person situation can be attenuated by forming implementation intentions. Participants were law students highly committed to becoming successful lawyers. Participants were told that the study was designed to analyze the effects of goals on how people get to know each other. For this purpose, participants would be given a chance to get to know another person, and all participants were assigned the goal to take the perspective of this other person during the conversation. Half of the participants were, in addition, asked to furnish this goal with the following implementation intention: "And if my partner expresses a preference for a specific conversation topic, then I will turn the conversation around to it!" Then, participants had to fill out either a questionnaire on how they studied law or the same questionnaire with three additional questions pointing to shortcomings with respect to being a successful lawyer (e.g., Do you have courtroom experience as a judge or district attorney?), thus creating a sense of self-definitional incompleteness.

Finally, all participants were informed that the conversation partner with the name of Nadja had already indicated her preferences with respect to potential conversation topics. When participants were handed a sheet of paper describing her preferences, it became absolutely clear that Nadja did not want to talk about law but rather about her last vacation and popular movies. To assess whether self-definitional concerns would increase participants' readiness to still push law as the conversation topic, and whether implementation intentions could eliminate this effect, we asked all participants to indicate their own conversation topic preferences to Nadja.

In the control condition in which no implementation intentions were formed, participants' preferences for law as a potential conversation topic clearly demonstrated a self-completion effect (i.e., participants with an incomplete self-definition preferred law more as a conversation topic than participants with a complete self-definition, even though Nadja had expressed her disinterest). Interestingly, implementation intention participants were protected against this effect (i.e., participants with complete and incomplete self-definition showed the same low preference for law as a potential conversation topic). Therefore, we posit that implementation intentions disconnect the absorbing self-state of self-definitional incompleteness from its negative effects on interacting sensitively with others.

Being in a Good Mood and Stereotyping

In a third study, we explored a further self-state, this time an affective state of the self. More specifically, we wanted to know whether the good-mood effect on increased stereotyping (Bless, 1997; Bless & Fiedler, 1995) can be eliminated by forming implementation intentions. In this experiment, participants were first either put in a positive mood by watching a humorous movie presenting stand-up comedians, or put in a less positive, neutral mood by watching a documentary film on the training of apprentices in German vocational schools. In a presumed second study, participants were told that the German language allows describing people at different levels of abstraction and that we would show them illustrations of people and then ask them to describe the depicted people by the use of prepared statements worded at different levels of abstraction. The alleged purpose of the study was to explore whether the individual goals of the perceiver would lead to distinct preferences for different types of descriptions. Participants in the positive mood condition were then split up into three further groups. One group was assigned the goal of forming a nonstereotypical impression of the depicted characters (goal intention group). The implementation intention group was not only assigned the goal to form a nonstereotypical impression, but also asked to make the respective plan: "If I start to evaluate a character, then I will ignore

the character's gender!" The third group neither set a fairness goal nor made respective plans.

Finally, two scenarios were presented, one depicting a character called Sabine who looked at herself in a mirror, and another depicting a character called Gerda who shouted at a child attempting to walk on a tightrope. Each scenario was accompanied with four descriptions of the events, and participants were asked to mark the one that they thought matched best. These descriptions varied in terms of their stereotypicality (Semin & Fielder, 1988, 1991; Maass, Salvi, Arcuri, & Semin, 1989). When participants' description choices were analyzed, results showed that positive mood indeed facilitated gender-stereotypical descriptions (e.g., "Sabine is vain" vs. "Sabine combs her hair" and "Gerda is caring" vs. "Gerda hollers at a child") as compared to neutral-mood participants, thus replicating the standard effect. Importantly, the mere goal of forming nonstereotypical impressions failed to attenuate this effect. However, if this goal was furnished with respective implementation intentions, the positive mood effect on increased stereotyping was eliminated.

Ego-Depletion and Self-Control Failure

According to ego-depletion theory as suggested by Baumeister (2000; Muraven, Tice, & Baumeister, 1998), performing an initial task that demands much self-regulation makes performance on a second task that also demands self-regulation less optimal. We therefore wondered if ego-depletion's influence on self-regulatory performance can be blocked by implementation intentions.

We tested this hypothesis by using a classic ego-depletion paradigm. Participants first had to watch a humorous movie with the instruction to either express their emotions or show no emotions at all. For the subsequent task of solving difficult anagrams, all participants formed the goal intention to solve as many anagrams as possible. Half of the ego-depleted participants also formed an implementation intention on how to meet this goal intention: "And if I have solved one anagram, then I will immediately start to work on the next!"

When we compared anagram performance in the three groups, we first observed the classic ego-depletion effect (i.e., controlling one's emotion on the first task hampered performance on the subsequent anagram task). However, this ego-depletion effect was completely eliminated when participants had furnished the goal to perform well on the subsequent task with a respective implementation intention.

Further support for the hypothesis that implementation intentions block ego-depletion effects comes from an experiment by Webb and Sheeran (2003, Study 2). First, half of the participants were given an ego-depletion manipulation (i.e., standing on one's weaker leg and counting down in 7s from 1,000),

while the other half were given a control task (i.e., stand normally and count to 1,000 in 5s). Then, all participants were given the goal intention to read as quickly as possible the ink color of words presented in one of four different colors. In addition, a subset of the participants were also asked to make the following plan: "As soon as I see the word, then I will ignore its meaning [e.g., by concentrating on the second letter only] and name the ink color it is printed in!" Among participants who had been ego depleted in the initial task, forming implementation intentions improved subsequent performance in the Stroop task to a level exhibited by nondepleted controls.

In summary, by forming implementation intentions, people can protect themselves from the negative effects of ego depletion on performing tasks that put some strain on a person's self-regulatory resources. People only need to furnish their goals to perform well with relevant plans that spell out in an if-then manner how the task at hand is to be performed.

Summary: Becoming a Better Person Without Changing the Self

The presented research provides a new perspective on the psychology of self-regulation. Commonly, effective self-regulation is understood in terms of strengthening the self, so that the self can meet the challenge of being a powerful executive agent (Baumeister, Heatherton, & Tice, 1994). It is emphasized that the self may fail to fulfill its executive function of setting goals and monitoring their attainment. Therefore, most research on goal-directed self-regulation focuses on strengthening the self in such a way that threats and irritations become less likely, or on restoring an already threatened or irritated self. For example, personal self-esteem threats may be dealt with by becoming more competent or reducing one's aspirations, and social self-esteem threats may be attenuated by relating to different social groups. Finally, irritations can be reduced by reinterpreting the stressing stimuli or calming the physiological and experiential aspects of irritations and strong emotions.

It is important to recognize that all of these maneuvers focus on changing the self so that the self becomes a better executive. In this line of research, we introduce a perspective on goal-directed self-regulation that focuses on facilitating action control without changing the self. We start with the assumption that action control becomes easy if a person's behavior is directly controlled by situational cues, and that forming implementation intentions achieves such direct action control. As this mode of action control circumvents the self, it does not matter if the self is threatened or secure, agitated or calm, because the self is effectively disconnected from its influence on behavior. Our findings support this line of reasoning by demonstrating that task performance (e.g., getting to know another person, judging women in a non-

stereotypical manner, solving difficult anagrams, or performing the Stroop task) does not suffer any impairment from various detrimental self-states (e.g., self-definitional incompleteness, mood, and ego-depletion) if performing these tasks has been planned out via implementation intentions.

Blocking Adverse Contextual Influences

People's goal pursuits are threatened not only by detrimental self-states, but also by adverse situational contexts. Many situations have negative effects on goal attainment unbeknownst to the person who is striving for the goal. A prime example is the social loafing phenomenon, in which people show reduced effort in the face of work settings that produce a reduction of accountability (i.e., performance outcomes can no longer be checked at an individual level). As people are commonly not aware of this phenomenon, they cannot form implementation intentions that specify a social loafing situation as a critical situation, thereby rendering an implementation intention that focuses on suppressing the social loafing response as an unviable self-regulatory strategy. As an alternative, people may resort to forming implementation intentions that stipulate how the intended task is to be performed and thus effectively block any negative situational influences.

Deindividuated Work Settings and Social Loafing

When people are asked to work in groups, where individual performances cannot be checked, they are known to show reduced effort and performance (Karau & Williams, 1993; Latané, Williams, & Harkins, 1979). This social loafing effect is particularly strong when very simple tasks are to be performed. To explore the effect of plans on the phenomenon of social loafing, we ran the following experiment. We asked participants to think of a common knife and generate as many uses as possible. This task had to be performed under either of the two following assumptions. The first is that the uses generated will be pooled with those of seven other participants so that no individual contribution can be determined by the experimenter. The second is that the task had to be performed under the assumption that individual solutions will not be pooled, but linked to each individual participant so that the experimenter can measure each participant's performance.

Before participants started the task of generating different uses for a common knife, all participants were given the goal to generate as many uses as possible (goal condition). Half of the participants furnished this goal with an implementation intention stating, "And if I have generated a certain use, then I will immediately turn to generating a further possible use!" When we counted how many uses participants had generated in 12 minutes, we ob-

served that goal-intention participants reported 21 uses if participants' performances were individually identified, but only 17 uses if participants' performances were pooled. This finding replicates the classic social loafing effect. However, the decrement in the performances of participants in the pooled condition completely disappeared when participants had formed implementation intentions, demonstrating that the negative effect of a work setting with pooled performance outcomes can be eliminated by forming implementation intentions.

Loss-Framed Negotiation Settings and Suboptimal Negotiation Outcomes

People may frame desired outcomes in terms of gains or losses (Kahneman & Tversky, 1979). Research on dispute resolution suggests that cognitive processes resulting from the loss or gain framing of the negotiation situation at hand have a strong impact on negotiation processes and outcomes (De Dreu, Carnevale, Emans, & van de Vliert, 1995; Neale & Bazerman, 1985). Cognitive loss frames lead to comparatively unfair agreements and hinder integrative solutions. Thus, one might question whether the cognitive barriers arising from loss framing of the negotiation situation can be successfully overcome if prosocial goals, such as being fair and integrative, are furnished with respective implementation intentions.

We tested these possibilities in two experiments (Trötschel & Gollwitzer, 2002). In the first experiment, pairs of participants were each assigned the role of two neighboring countries and asked to negotiate the distribution of a disputed island. The island consisted of 25 regions, each representing one of four different types of landscapes: mountains, cornfields, pastures, and forests. Within each pair of negotiators, one participant was subjected to a loss frame by showing him or her an issue chart that listed the four different kinds of regions with a corresponding negative number indicating the losses for giving it away. Gain-framed participants were shown an issue chart with positive numbers indicating the gains for receiving it. Both negotiators were told that they had to agree on the ownership of the 25 regions during a 15-minute session.

To instill a fairness goal, participants of each pair were handed a sheet of paper informing them that fair negotiation outcomes are often hard to achieve. Therefore, right before participants entered the negotiation, they were told that they should set themselves the following goal: "I want to find a fair solution!" Half of the participants were in addition asked to make a plan on how to implement the goal: "And if I receive a proposal on how to share the island, then I will offer a fair counterproposal!" Finally, participants in the control condition received neither the fairness goal nor the implementation intention instructions.

Negotiation behavior was assessed in terms of individual profits within each pair of negotiators. We tested for each group whether the difference in profits between loss- and gain-framed participants was significantly different from zero. For the goal intention group and the control group, we observed significant differences indicating that loss-framed participants showed significantly higher profits than gain-framed participants. This unfair outcome in favor of loss-framed participants was no longer observed in the implementation intention group, in that profits were equally distributed.

In a subsequent second experiment, pairs of negotiators were both either loss or gain framed. In this experiment, the payoff charts were constructed in such a way that integrative solutions were also possible (i.e., cornfields and pastures were equally valuable for both negotiation partners, whereas forests were valuable for one negotiation partner but not for the other, and the reverse was true for mountains). Outcome frames were again manipulated by expressing each region's value with either positive value points (gain-frame group) or negative value points (loss-frame group). The loss-framed participants were then separated into three groups, one in which a mere goal intention instruction was assigned ("I want to cooperate with my counterpart!"), another in which participants were asked in addition to form an implementation intention ("And if I receive a proposal on how to share the island, then I will offer a cooperative counterproposal!"), and a final group that was asked neither to set a goal nor to make a plan.

When the 10-minute period allowed for island-sharing negotiations was over, negotiation behavior was assessed in terms of profits and the number of integrative solutions. Gain-framed pairs of negotiators achieved significantly more integrative solutions than loss-framed pairs, no matter whether the loss-framed pairs had formed a prosocial goal or not. However, the highest number of integrated solutions was found among the loss-framed pairs of negotiators who furnished the prosocial goal with a respective implementation intention. The profits that the pairs of negotiators made in the four different groups closely paralleled the pattern of results found for the number of integrative solutions. Interestingly, mediation analyses revealed that the effects of implementation intentions on alleviating the negative effect of loss framing on making profits was completely mediated by finding integrative solutions.

Situational Contexts That Prime Chronic Goal Orientations

Auto-motive theories hold that if a goal is activated and acted on repeatedly and consistently in a given situation, this situation acquires the potential to trigger the critical goal pursuit without conscious intent (Bargh, 1990). If, for instance, a person has repeatedly and consistently chosen to discuss work problems at social gatherings (e.g., parties), the contextual cues associated

with parties should directly (i.e., outside of awareness) trigger behavior serving this goal. Given that the person enters a party with the assigned or newly set goal to simply socialize, such direct and nonconscious activation of the chronic goal to discuss work problems is a hindrance. Overcoming this hindrance by forming an implementation intention that specifies this hindrance in its if-part requires that the individual is aware of the possibility that a work goal becomes activated when entering the party, but this cannot be assumed with chronic goals (or auto-motives) that are triggered outside of awareness by a respective situational context. Can forming implementation intentions, which lay down in advance how the new goal is to be attained, protect a person's goal pursuit from auto-motive effects?

To test whether forming implementation intentions can protect ongoing goal pursuit from becoming derailed by a directly (situationally) activated competing goal pursuit, two experiments were conducted (Gollwitzer, 1998). In the first study, a driving simulator was used in which participants had to drive a race car through a racecourse. In two baseline rounds, participants' driving speed and driving mistakes were assessed. Then all participants were given instructions on how to drive the final two test rounds. In the goal intention condition, participants were asked to set the goal to reach the finishing post as fast as possible without making a mistake (i.e., running off the road). The implementation intention group was also asked to plan how to achieve this goal (i.e., "And if I enter a straight section of the race course, then I will drive as fast as possible!" and "And if I enter a curve, then I will reduce my speed!").

Before participants were allowed to drive the final two test rounds, the following auto-motive manipulations were used. For half of the participants, the auto-motive "moving fast" was activated by asking participants to draw in 5 minutes as many figures (e.g., flowers, animals, objects) as possible by simply connecting numbered dots on different sheets of paper. For the other half, the auto-motive "moving slowly" was activated by asking participants to draw these figures as carefully and neatly as possible, taking as much time for each figure as needed.

When we looked at the participants' driving speed and driving mistakes in the final two rounds, the auto-motive priming had strong assimilative effects for the participants who had been assigned only the goal intention to be fast without making mistakes (i.e., priming to move fast led to higher speed and significantly more mistakes than priming to move slowly). For participants who also had formed implementation intentions on how to reach this goal, no such priming effect was observed (i.e., participants in both priming conditions showed moderate speed and made hardly any mistakes). These findings suggest that goal pursuits carefully planned by implementation intentions are no longer affected by auto-motives (chronic goals) directly activated by situational cues.

In a follow-up study, goal intention participants were assigned the goal of solving two sets of arithmetic problems as correctly as possible. Implementation intention participants were also asked to plan for potential distractions: "If my mind gets sidetracked, then I will respond by concentrating on the task at hand!" Between the first and the second set of arithmetic problems, participants were subjected to a priming procedure that activated either the chronic goal of achievement or the chronic goal of helping others (i.e., participants had to find typographical errors in a biographical essay on Margaret Thatcher or Mother Theresa, respectively). In the middle of working on the second set of arithmetic problems, participants were disrupted by a confederate of the experimenter, who was asking for help by following a predesigned script (e.g., "Do you know where the experimenter is?" "Do you know when she is coming back?").

Our critical measure was the length of time it took participants to terminate their conversation with the confederate. In the implementation intention condition, participants managed to end the conversation in a very short amount of time (i.e., 12 seconds), no matter whether an achievement or a prosocial goal had been primed by editing the biographical essays. Participants who formed only a goal intention, with respect to working on the arithmetic task, took significantly longer to terminate the disruption. Goal intention participants with the primed prosocial goal took significantly longer than goal intention participants with the primed achievement goal. We concluded from these results that the goal of solving arithmetic problems as correctly as possible was not affected by the activation of chronic goals that facilitate or hinder task performance (i.e., an achievement goal vs. a prosocial goal) if attaining this task goal had been planned out via implementation intentions.

Taken together, the findings of the two auto-motive studies reported demonstrate again that goal pursuits planned out via implementation intentions are protected from adverse situational influences (in the present case, situationally activated chronic goals or auto-motives). The implications for effective self-regulation of unwanted auto-motives are obvious. Returning to a previous example, a person who habitually submits to the goal of using parties to discuss work problems can fight this bad habit by furnishing the ad hoc goal to socialize with respective implementation intentions. As a consequence, the critical situational cue of being at a party should fail to trigger the habitual goal of talking about work.

Summary: Becoming a Better Person Without Changing the World

In the previous section, we described experiments demonstrating that goal pursuits planned by forming implementation intentions become invulnerable to adverse situational influences. This is true for situations that negatively

affect a person's achievement (e.g., deindividuated work settings and their negative effects on intellectual performances; loss-framed negotiation settings and their negative effects on fair and cooperative negotiation outcomes) and also for situations that activate competing chronic goal pursuits. It appears then that the self-regulatory strategy of planning goal pursuit places a person in a position to reap positive outcomes without having to change the environment from an adverse to a facilitative one. Such change is often very cumbersome (e.g., it takes the costly interventions of mediators to change the loss frames of conflicting parties into gain frames) and hard to achieve. The main problem seems to be that often people are not aware of the adverse influences of the current environment (e.g., a deindividuated work setting or a loss-framed negotiation setting), or they do not know what alternative kind of setting is actually facilitative (e.g., an individualized work setting or a gain-framed negotiation setting). Finally, with respect to the activation of unwanted auto-motives, people are not aware that the given situation is triggering chronic goals, and of the operation of these goals once they have been activated (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001). Accordingly, the self-regulatory strategy of specifying critical situations in the if-part of an implementation intention and linking them to a coping response in the then-part does not qualify as a viable alternative self-regulatory strategy. Rather, people need to resort to the strategy of planning goal pursuit via implementation intentions, thereby protecting it from adverse situational influences.

Costs of Using Implementation Intentions

Given the benefits of forming implementation intentions, one wonders about the possible costs, if any. Three issues come to mind when considering this possibility. First, action control by implementation intentions may be characterized by rigidity and thus may hurt performance that requires flexibility. Second, forming implementation intentions may be a very costly self-regulatory strategy in terms of producing a high degree of ego depletion and consequently handicap needed self-regulatory resources. Third, even though implementation intentions successfully suppress unwanted thoughts, feelings, and actions in a given context, these very thoughts, feelings, and actions may rebound in a subsequent different context.

Using Implementation Intentions Does Not Produce Rigidity

The social loafing study reported above addressed the issue of rigidity. One could argue that implementation intention participants might have shown

rigidity in the sense of creating very repetitive solutions for the knife-use task, in that the higher quantity of solutions generated in the implementation intention group should have had costs in terms of a lack of variety or creativity. However, when we grouped the listed uses into different conceptual categories, implementation intention participants gathered their solutions from a higher number of different categories than mere goal intention participants. These findings suggest that the higher quantity of uses generated in the implementation intention group did not compromise their quality.

Using Implementation Intentions Does Not Produce Ego Depletion

According to ego-depletion theory (Muraven et al., 1998), any self-regulatory strategy is assumed to have costs with respect to depleting a person's general resources for self-regulation. As forming implementation intentions produces impressive self-regulatory outcomes, how much ego depletion is associated with using this strategy? According to our assumption that implementation intentions delegate the control of behavior to situational cues, the self is not implicated when behavior is controlled via implementation intentions. As a consequence, the self should not become depleted when task performance is regulated by implementation intentions.

We tested this hypothesis by using the aforementioned classic ego-depletion paradigm (Gollwitzer & Bayer, 2000). Participants were asked to watch a humorous movie while heeding one of three directions: One group was asked to yield to their emotions; another group was asked to control their emotions; and a third group was asked to try to control their emotions and to furnish this goal with the implementation intention "If an amusing scene is presented, then I will tell myself: These are just stupid, silly jokes!"

After participants had watched the movie for 12 minutes, they were asked to solve as many of a series of difficult anagrams as possible in 10 minutes. Participants had worked on similar anagrams prior to the start of the experiment; and this performance was taken as a baseline. Baseline corrected final anagram performance indicated that control participants (expression of emotions) performed better than self-regulation participants (control of emotions); however, this difference vanished when self-regulation participants used implementation intentions to control their emotions while watching the humorous video.

Further support for the hypothesis that self-regulation based on implementation intentions does not lead to ego depletion, comes from an experiment by Webb and Sheeran (2003, Study 1). Participants who had formed implementation intentions to perform well on an initial task (i.e., a Stroop task; implementation intention instructions as described above), showed signifi-

cantly greater persistence on a subsequent unsolvable puzzle task compared to participants who performed the task without implementation intentions. These results, in conjunction with our own, suggest that self-regulation that is based on implementation intentions is not costly in terms of using self-regulatory resources.

Using Implementation Intentions Does Not Produce Rebound Effects

A third cost issue relates to the well-known rebound effects in mental control. Wegner (1994; Wenzlaff & Wegner, 2000) postulated and observed that conscious attempts to control one's thoughts lead to rebound in the sense that the thoughts to be controlled become more readily accessible and thus surface in subsequent thoughts and behavior. To see whether the control of stereotyping via implementation intentions leads to a rebound in stereotyping, we devised the following experiments.

We (Gollwitzer, Trötschel, & Sumner, 2002) ran two rebound experiments following research paradigms developed by Macrae, Bodenhausen, Milne, and Jetten (1994). In the first study, participants had to read a story about a homeless person. One group of participants was assigned the goal of forming a nonstereotypical impression of this person ("I want to suppress my stereotypical thoughts about homeless people!"). A second group was asked to furnish this goal with the additional implementation intention "And if I describe a given homeless person, then I will avoid stereotypical statements!" A third group was asked to study the story without further instructions. All participants were then asked to provide a written statement capturing their impression of this homeless person. After a 5-minute filler task, all participants were asked to evaluate homeless people in general (i.e., a group of homeless people). For this purpose, they were handed a semantic differential-type questionnaire that presented numerous bipolar adjectives in five pairs related to stereotypes, such as drunk/sober, well groomed/sloppy, busy/lazy.

First, regarding the written statement, goal intention as well as implementation intention participants described the person in a less stereotypical manner than control participants. But who showed the stronger rebound? In the final task, the participants who had performed the prior task of providing a written statement about the homeless person with the mere goal to form a nonstereotypical impression were more stereotypical in their judgments than control participants. Participants who had in addition furnished this lofty goal with simple implementation intentions, however, were protected against such rebound.

In a second experiment, rebound was assessed differently. Again, the study started with reading a story about a homeless person and then forming an

impression of that person under different instructions (see above). After the subsequent filler task, however, participants had to perform a lexical decision task in which nonwords, critical words (stereotypes), and neutral words (matched for length and valence) were presented. The results showed that participants who had been assigned the goal of controlling stereotypical thoughts while forming an impression of the described person in the first part of the experiment were faster in identifying stereotypes as words as compared to irrelevant words, indicating that stereotype concepts were more activated. No such effect was observed with participants who had been asked to furnish this goal with a relevant if-then plan.

Therefore, it appears that implementation intentions may serve to insulate an individual's goals from these ironic processes by subverting the systems that allow rebound effects. Specifically, Wegner proposed that two systems contribute to people's control of their mental states, one being conscious and one being nonconscious. While the conscious operating system actively "looks" for mental contents consistent with the given goal or task, the non-conscious monitoring system keeps the former system in check by identifying the contents incompatible with the goal. These incompatible elements, in turn, pop into awareness when cognitive resources are taxed. We suggest that implementation intentions shield one's conscious mental state from rebound effects in the following manner. As the link between the critical situation and the response serves to isolate the plan from present internal states or external conditions, the plan runs off in an effortless, efficient manner, and does not tax cognitive resources (of the conscious operating system).

Summary: Is Forming Implementation Intentions a Foolproof Self-Regulatory Strategy?

Even though the implementation intentions used in the presented experimental research were always highly effective, without costs in terms of rigidity, rebound, or ego depletion, this does not mean that all implementation intentions are highly effective in terms of meeting one's goals. In everyday life, people may not succeed in forming effective implementation intentions for various reasons. For instance, a person may link a critical situation to a behavior or outcome that turns out to be outside of the person's control (e.g., if a person who has the goal to eat healthy food plans to ask for a vegetarian meal, but the restaurant she frequents does not offer such meals). The same is true for implementation intentions that specify opportunities that hardly ever arise (e.g., if a person who plans to ask for a vegetarian meal when the waiter in a restaurant takes her order mostly cooks for herself at home) or implementation intentions that specify behaviors that have zero instrumentality with respect to reaching the goal (e.g., if a person with the goal of

eating healthy food plans to ask for a vegetarian meal not knowing that most restaurants add fatty cheese to make it tasty).

Finally, there is the question of how concretely people should specify the if-parts and then-parts of their implementation intentions. If the goal is to eat healthy food, one can form an implementation intention that holds either this behavior in the then-part or a more concrete operationalization of it. The latter seems appropriate whenever a whole array of specific operationalizations is possible, as planning in advance which type of goal-directed behavior is to be executed, once the critical situation is encountered, prevents disruptive deliberation in situ (with respect to choosing one behavior over another). An analogous argument applies to the specification of situations in the if-part of an implementation intention. People should specify the situation in the if-part to such a degree that a given situation will no longer raise the question of whether it qualifies as the critical situation or not.

Conclusion

People can use implementation intentions not only to promote the initiation of goal pursuits, but also to protect their goal pursuits (i.e., to be fair to others) from being thwarted. The latter can be achieved in two ways. As long as we are in a position to anticipate what could potentially make us stray off course (the relevant hindrances, barriers, distractions, and temptations), we can specify these critical situations in the if-part of an implementation intention and link it to a response that facilitates goal attainment. The response specified in the then-part of an implementation intention can then be geared toward either ignoring disruptive stimuli, suppressing the impeding responses to them, or blocking obstructions to goal pursuit by engaging in it all the more.

This way of using implementation intentions to protect goal pursuit from straying off course necessitates that we know what kind of obstacles and distractions need to be watched for. Moreover, we need to know what kind of unwanted responses are potentially triggered (so that we can attempt to suppress them), or what kind of goal-directed responses are particularly effective in blocking these unwanted responses (so that we can engage in these goal-directed activities). Consequently, much social, clinical, and cognitive psychological knowledge is required to be in a position to come up with effective if- and then-components of such implementation intentions.

However, an easier solution is available. Instead of concentrating on potential obstacles and various ways of effectively dealing with them, people may concern themselves exclusively with the intricacies of implementing the goal pursuit at hand. People can plan how to pursue a goal by forming implementation intentions that determine how the various steps toward goal at-

tainment are to be executed. Such careful planning encapsulates goal pursuit, protecting it from the adverse influence of potential obstacles and distractions, whether internal or external. This self-regulatory strategy of goal pursuit permits attaining goals without having to change a noncooperative self or an unfavorable environment. Crucially, one does not need to possess any psychological knowledge of how to effectively deal with adverse self-states or situational contexts. It completely suffices if the person is simply aware of the demands of the current goal being pursued.

Once these demands have been incorporated into a plan, however, one no longer needs to be aware of them to bring goals to fruition. Further, while these plans can be formed instantly by an act of will, no such conscious effort is needed to carry out the planned goal-directed action. As goals are mentally represented as knowledge structures, these encapsulated plans too have a specific structure. Implementation intentions create cognitive links between select situational cues and intended goal-directed behaviors. The effectiveness of implementation intentions lies in the fact that after generation, the mental representation of the specified situational cue becomes highly activated. Once this cue is actually encountered, the planned behavior runs off automatically, overriding and defying any habits or divisive spontaneous attentional responses. Given our limited resources for conscious self-regulation, delegating control to situational cues by one express act of fiat is an effective way to bridge the gap that exists between our best intentions and the successful attainment of our goals.

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