Mindset Theory of Action Phases and If–Then Planning

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Abstract

In this chapter, we introduce mindset theory of action phases (MAP) and the self-regulation strategy of implementation intentions. MAP proposes four successive distinct phases through which one traverses during goal pursuit. During each phase, the goal-striving individual faces different challenges and the activation of specific cognitive procedures (i.e., mindsets) helps to overcome these challenges. These mindsets can further carry over to unrelated tasks and affect behavior. Implementation intentions are specific if-then plans (i.e., "If critical situation S occurs, then I will perform goal-directed response R!"). Across close to 100 independent studies with more than 8,000 participants, implementation intentions were shown to promote goal attainment beyond the mere formation of goals (Gollwitzer & Sheeran, 2006). We present applied contexts and recent developments of MAP and implementation intentions and close the chapter by discussing a study on the effects of implementation intentions in curtailing the escalation of commitment.

Key words: self-regulation, motivation, volition, goals, plans, implementation intentions, mindsets

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Introduction

When the then Roman general Julius Caesar made the decision to cross the Rubicon with his army, he knew that this marked a point of no return. He supposedly uttered that the die has been cast as he could foresee the dramatic consequences–treason and the beginning of a civil war. However, when Heckhausen and Gollwitzer (1987) described the transition from a motivational (why does an individual do X?) to a volitional state (how does an individual do X?) in goal pursuit, they chose to refer to it as crossing the Rubicon nonetheless. Why did they choose these drastic words and how does making a decision compare to the metaphorical point of no return?

In the research leading up to the formulation and the various extensions of mindset theory of action phases (MAP; Gollwitzer, 1990; 2012; Gollwitzer & Keller, 2016), researchers observed differences in thought content and focus before and after a decision. More specifically, one group of individuals deliberated about which of their many desires to turn into a binding goal or the pros and cons of one particular decision, for instance, whether or not they should choose psychology as their major. Another group of individuals already made the decision in favor of one goal and now planned the necessary steps to go forward (e.g., choosing the important and necessary courses, ordering expensive textbooks online). Whether the decision in favor of one goal had been made, subsequently determined whether individuals partook in a relatively open-minded deliberation of pros and cons of the goal in question or a relatively closed-minded listing of pros in favor of the chosen goal (e.g., Nenkov & Gollwitzer, 2012; Taylor & Gollwitzer, 1995).

From its early days, MAP has been a theory of successful goal pursuit. It marks important transitions, predicts cognitive shifts of goal striving individuals, and explains when individuals

commit to a goal. However, not all chosen goals are attained. In a meta-analysis of meta-analyses assessing this truism, Sheeran (2002) found a positive correlation between intentions and behavior that accounts for 28% of variance in future behavior. However, the remaining unexplained variance, the so-called intention–behavior gap, remains large. A self-regulation strategy to bridge this gap is the use of implementation intentions (Gollwitzer, 1993, 1999, 2014). Implementation intentions are specific if-then plans that specify a critical situation (e.g., a suitable opportunity to act in accordance with a goal) and link it to a goal-directed response. Such plans have been shown to increase goal-attainment rates (Gollwitzer & Sheeran, 2006) even among individuals that usually suffer from impaired self-regulation (e.g., children with ADHD; Gawrilow & Gollwitzer, 2008).

The present chapter will span both MAP and the self-regulation strategy of using implementation intentions. We will first outline the four action phases according to MAP, focus on two of the most-researched action phases with their accompanying mindsets, highlight some recent applications, and will then move on to implementation intentions. We will describe research on why they promote the rate of goal attainment, which features they have, and to which action control problems they were applied to more recently. We will close by summarizing an exemplary field study, demonstrating how the concept of implementation intentions opens up new research questions and perspectives.

Definition box

Going back to Ach (1935) and Lewin (1926), we propose the following distinction:

Motivation: The process of goal setting and evaluation. The focus lies on the desirability and feasibility of potential goals, influenced by the needs and motives of the goal-striving individual.

Research on motivation answers the question of *why* people act, in which direction and with which intensity.

Volition: The will-based process of goal striving. The focus lies on the actual goal-directed behavior but also on planning steps that are necessary to be able to show goal-directed responses in the first place. Research on volition answers the question of *how* people act to reach their goals, given the opportunities and the obstacles they are facing.

MAP

In the course of goal pursuit, people face various challenges but have limited capacities. Accordingly, they have to decide which of their desires are worthy to pursue and allocate resources like time or physical and mental effort to the chosen goal at hand. People then have to initiate and maintain goal striving without becoming distracted by temptations or frustrated by obstacles, and finally yet importantly, evaluate whether they have reached their goal or whether further action is necessary. MAP proposes that each of these challenges arises in a specific phase in goal pursuit (see Figure 1), and overcoming them is facilitated by the activation of a set of phase-typical cognitive procedures (i.e., the mindset). Whereas goal setting and evaluation are located in the motivational phases of the model, planning and action initiation are located in the volitional phases.

In the *predecisional phase*, people have to deliberate whether it is worthwhile to pursue a given goal. They weigh the desirability (i.e., how valuable it is to succeed) and the feasibility (i.e., how likely it is to succeed) of the competing options. Ultimately, individuals should choose a goal with high desirability and feasibility. To arrive at such choices, people have to remain open-minded, have to be realistic about their chance of success, and have to judge the potential goals in relation to each other.

When individuals make a decision, however, they cross the metaphorical Rubicon and cognitive styles change during the transition to the *preactional phase*. People now face the challenge to plan the implementation of their goal and exhibit an increased focus on feasibility-related information (Kille, 2015). For challenging goals, it is now best to lay out and plan against what obstacles have to be overcome or may arise during goal pursuit, energized by positively-biased judgments of control (Gollwitzer & Kinney, 1989) and expectations of goal fulfillment (Puca, 2001; see also mental contrasting; Oettingen, 2012). For easy goals, this phase may be comparatively short, as extensive planning would constitute a waste of time and other resources (Gollwitzer & Brandstätter, 1997).

Once plans have been laid out and suitable opportunities to act arise, individuals eventually enter the *actional phase* where the actual goal-directed behavior takes place. A focus on means and persistence as well as shielding one's goal from temptations or other, potentially conflicting, goals (e.g., a dieting goal may conflict with a goal to befriend another person if this person invites you over to a BBQ; Shah, Friedman, & Kruglanski, 2002) helps people to stay on track. If everything goes according to plan, the goal-directed action will bring the goal-striving individual closer to goal attainment. However, researchers have laid bare situations in which this is not the case. A lack of focus or early setbacks can, for instance, lead to the emergence of an action crisis (Brandstätter, Herrmann, & Schüler, 2013; see also recommended reading), a motivational phenomenon in a volitional phase: Once the going gets tough, individuals may experience their struggle as futile and will, over time, disengage from further goal-directed action. They reflect on the desirability of the set goal or its feasibility anew (Ghassemi, Bernecker, Hermann, & Brandstätter, 2017). For instance, Brandstätter and Schüler (2013) observed that an action crisis leads to less focus on implementation-related information but a

greater concern regarding the costs of continuing versus disengaging, as well as the benefits of disengaging.

Lastly, when the goal-directed behavior ends, individuals have to evaluate whether their desired end state has been reached (i.e., whether the goal has been attained). Further action may be necessary, or goal striving was futile and further action would simply be a waste of resources. In this *postactional phase*, a switch back to a focus on relatively open-minded desirability or value evaluations is expected to occur (Kille, 2015). For instance, a longitudinal study on exercising behavior (Kwan, Bryan, & Sheeran, 2018) demonstrated the importance of postactional evaluations as well as affective reactions to the exercising behavior predicting subsequent intentions and behavior.

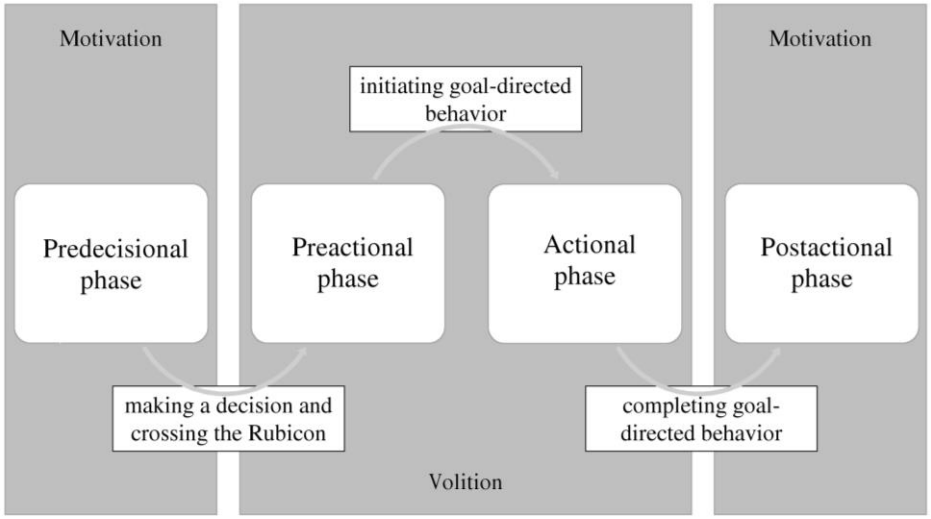

Figure 1. The succession of action phases as proposed by MAP.

Box 1.1 Question for elaboration

When you try to think about your past goals and goal strivings, which aspects may be missing in the model?

Mindsets

In each of the action phases, a set of certain cognitive procedures is activated. These so-called mindsets help to overcome the challenges at hand but in contrast to a mere task set, which is the intentional attuning in order to master a given task (Gollwitzer, 1990, 1991), these mindsets also evince a moment of inertia as they have been shown to carry over to subsequent tasks unrelated to the goal that originally evoked them. In this conceptualization, phenomena related to specific action phases can be studied by investigating the effects of their accompanying mindsets on other, unrelated tasks that offer insights in the cognitive functioning of individuals.

Successfully weighing the desirability and feasibility of different goal options necessitates open-minded and impartial information processing. Accordingly, participants in a deliberative mindset have been shown to evince a broader span of visual attention (Büttner et al., 2014), are more likely to process incidentally presented information (Fujita, Gollwitzer, & Oettingen, 2007), and tend to give pros and cons equal weight (Bayer & Gollwitzer, 2005). Moreover, persuasive messages that stress abstract, future outcomes seem to be more effective in this mindset (Nenkov, 2012). Participants in a deliberative mindset are furthermore less affected by the optimistic bias, that is the tendency to see oneself as being less exposed to future negative life events than the average other (Keller & Gollwitzer, 2017; Taylor & Gollwitzer, 1995), but seem more tuned to assessing expected utilities in decision-making (Rahn, Jaudas, & Achtziger, 2016a).

In contrast, planning the implementation of a set goal would suffer from an ongoing reevaluation of the desirability and the feasibility of the steps the individuals commit themselves to take. Participants in an implemental mindset thus evince optimistically biased judgments of their chance of success (Puca, 2001), exhibit stronger illusions of control (Gollwitzer & Kinney,

1989), and are more focused on details (i.e., evince a narrower span of visual attention; Büttner et al., 2014). Therefore, they are more persistent in the face of difficulty (Brandstätter & Frank, 2002), and complete a task sooner while simultaneously correctly predicting to do so (Brandstätter, Giesinger, Job, & Frank, 2015).

Applications and developments

The inertia of mindsets can also be used to alter individuals' reactions to domains entirely unrelated to the decision problems that originally evoked them. In recent research, psychologists have used mindsets successfully to shield participants with low socioeconomic backgrounds from performance decreases due to stereotype threat (Dennehy, Ben-Zeev, & Tanigawa, 2014), to alleviate overconfident judgments among male participants (Hügelschäfer & Achtziger, 2014), or to alter risk-taking behavior (Keller & Gollwitzer, 2017; Rahn, Jaudas, & Achtziger, 2016b).

Even outside of psychology, mindset theory has been used to explain various phenomena. For instance, in their survey of 232 IT employees of Fortune 500 companies, Korzaan and Harris (2017) find that the presence of an implemental mindset coincided with overly optimistic judgments about the success of the implementation of an information systems project. Moreover, Delanoë-Gueguen and Fayolle (2018) applied MAP to entrepreneurial decision making, more specifically to the early stages of start-up creation. They suggest that individuals in an early motivational stage, before crossing the Rubicon, have different support needs than participants in a later volitional stage. Similarly, Jansen (2014) hypothesizes that shifting from a deliberative to an implemental mindset may contribute to a problem faced by medical researchers, which they term the therapeutic error: the discrepancy between unrealistically high expectations of treatment success and actual treatment success. Many factors are at work to produce these high expectations, be it misconceptions about medical research or a pervasive general optimistic bias.

However, Jansen argues that in addition participants of medical research who exhibit a therapeutic error are asked to make their judgments after they already consented to taking part in research (i.e., after the decision had been made). She thus concludes that heightened expectations may be caused by the predominant mindset, and that it is important to include risk and benefit assessments of eligible persons in the predecisional phase as well to be able to assess misconceptions correctly.

Finally yet importantly, MAP has also been adapted by political scientists to describe and understand the path to armed conflicts (Johnson & Tierney, 2001). The authors observed that public confidence in winning typically increases right at the dawn of war although there is no new information available that would warrant such an increase. They account for this optimism by pointing to a switch in the mindsets of the political actors as well as the public; once the decision in favor of armed conflict has been made, the feasibility of this option is perceived to be higher than it (potentially) is.

Box 1.2 Zooming in: MAP and presidential decision-making

In the wake of limited missile strikes commanded by US president Donald J. Trump to punish the Syrian government for their use of chemical weapons in April of 2017, Dominic Tierney (2017) wrote the following in *The Atlantic*:

Wars have a habit of evolving in unexpected ways due to a combination of psychology, domestic political pressures, and strategic interactions. Psychologists have found that the act of committing to a decision—like launching air strikes against Syria—can make decision-makers overconfident that they made the right choice. [. . . .] After Trump crossed the Rubicon, any doubts he had may have been replaced by confidence—the kind of mindset that could easily broaden the war. [. . . .] For Trump, the dice are in the air.

Question for elaboration

At what point of MAP would Tierney have located the US president? What are institutional safeguards to prevent such overconfidence?

Implementation intentions

According to MAP, setting desirable and feasible goals is an important prerequisite for all of our actions. This assumption is hardly controversial and widely shared, as the yearly ritual of spelling out New Year's resolutions aptly demonstrates. Goals typically take the form of specifying wanted outcomes (e.g., *"I want to stay fit!"*) or behaviors (e.g., *"I want to do regular workouts!"*) and plenty of research attests to their important role for getting what one desires. Unfortunately, it is often not possible to immediately act upon and attain a goal – one might have to wait for good opportunities to act, deal with obstacles along the way, or act repeatedly over extended periods of time. The Rubicon model therefore comprises a planning phase in which people think about when, where, and how to perform goal-directed responses. As it turns out, however, planning does not come as naturally to people as setting goals, which might contribute to the notorious intention-behavior gap that frequently foils even firmest resolutions. Attesting to this interpretation, research demonstrates that goal attainment is substantially improved when people are explicitly instructed to furnish their goals with plans (Gollwitzer & Sheeran, 2006). This observation lies at the core of *implementation intention theory* (Gollwitzer, 1993, 1999, 2014), which revolves around planning as a self-regulation strategy for goal attainment.

Definition box

Goal intentions: Goal intentions specify a desired outcome or behavior (i.e., *"I want to reach outcome O!"* or *"I want to perform behavior B!"*). Their most important features are their

desirability (how important it is to attain them) and their feasibility (how likely it is to attain them), which jointly determine the degree of goal commitment.

Implementation intentions: Implementation intentions are if-then plans specifying when, where, and how to act toward a goal (i.e., *"If I encounter situation S, then I will perform goal-directed response R!"*). They are subordinate to goal intentions and are assumed to facilitate their attainment by automating two processes: (1) the detection of critical situations, and (2) the initiation of goal-directed responses.

Implementation intentions are if-then plans in which people link a critical situation to a goal-directed response: "*If* I encounter critical situation S, *then* I will perform goal-directed response R!" The situation in the if-part represents an opportunity to act or an obstacle to goal attainment, while the response in the then-part represents a (mode of) thought, feeling, or behavior that can be instigated to promote goal attainment. For instance, an implementation intention could facilitate the goal to stay fit by specifying when, where, and how to go for regular runs: "*When I come home from the office on Fridays, then I will put on my running shoes and go for a run in the park!"* Forming implementation intentions is a simple and yet highly effective self-regulation strategy. A meta-analysis involving 8,461 participants in 94 independent studies (Gollwitzer & Sheeran, 2006) revealed a medium-to-large effect size of implementation intentions on the rate of goal attainment (d = 0.65) beyond the effect of holding a goal intention (d = 0.36; Webb & Sheeran, 2006). This suggests that forming implementation intentions helps people better attain their goals – but how can these effects be explained?

Box 1.3 Zooming in: How to form implementation intentions

In the literature, several ways of forming implementation intentions can be distinguished. Research on the basic cognitive processes of goal striving usually provides ready-made plans tailored to the research hypothesis. For instance, an if-then plan like *"If I see an apple, then I will immediately press the left mouse button!"* could be used to test whether implementation intentions speed up behavior in a computerized categorization task. In more applied research settings, implementation intentions are often conveyed as a meta-cognitive strategy in which participants specify their own critical situations and goal-directed responses. This could involve the following four steps:

1. Commit yourself to a goal intention.
2. Specify a critical situation for attaining the goal.
3. Specify a goal-directed response that can be performed in this situation.
4. Link the critical situation and goal-directed response in an if-then format:

   If _____(critical situation)_____, then _____(goal-directed response)_____!

As an alternative, participants are sometimes instructed to specify when, where, and how to act toward their goal without providing an if-then format. Moreover, implementation intentions can be combined with the self-regulation strategy of mental contrasting, in which people elaborate on their goals and on potential obstacles for attaining their goals (Oettingen & Gollwitzer, 2018). This combined mental contrasting with implementation intentions (MCII) strategy is commonly conveyed as a meta-cognitive strategy and available online (www.woopmylife.org).

Box 1.4 Question for elaboration

Think about your past New Year's resolutions (or those of your friends). Were they specified as a goal intention? How could a corresponding implementation intention look like?

Cognitive Processes and Moderators

According to implementation intention theory, the beneficial effects of if-then planning on goal attainment can be attributed to two cognitive processes. First, specifying a critical situation in the if-part activates its mental representation and makes it cognitively more accessible. This makes the situation easier to remember, to detect, and to recognize in the environment. Second, linking the situation to a goal-directed response creates a strong mental association that allows people to initiate the specified response automatically as soon as the critical situation is encountered. Plenty of research shows that these two processes – accessibility of the critical situation and automatic response initiation – indeed mediate the effects of implementation intentions on goal attainment (Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2007). Consequently, implementation intentions are assumed to automate behavior, which makes it possible to shield one's goals even from hard-to-control antagonistic influences. For instance, a study by Gollwitzer, Sheeran, Trötschel, and Webb (2011) showed that implementation intentions alleviate automatic priming effects on behavior. Participants first read a fictitious scientific article about the genetic similarity between humans and a set of animals. Crucially, this set of animals consisted of fast animals (e.g., cheetah, hare; fast prime) for some participants but of slow animals (e.g., slug, tortoise; slow prime) for others. Subsequently, all participants performed a computerized word classification task in which they had to decide quickly whether a stimulus was a word or a non-word. They formed an

implementation intention to respond quickly to a certain stimulus: "And if the non-word 'avenda' appears, then I respond especially quickly!" The authors found a priming effect in unplanned situations, such that participants were slower after having read about slow animals rather than fast animals (left panel of Figure 2). In planned situations however, participants were not susceptible to nonconsciously primed concepts of being slow or of being fast and always responded quickly (right panel of Figure 2), as specified in the implementation intention.

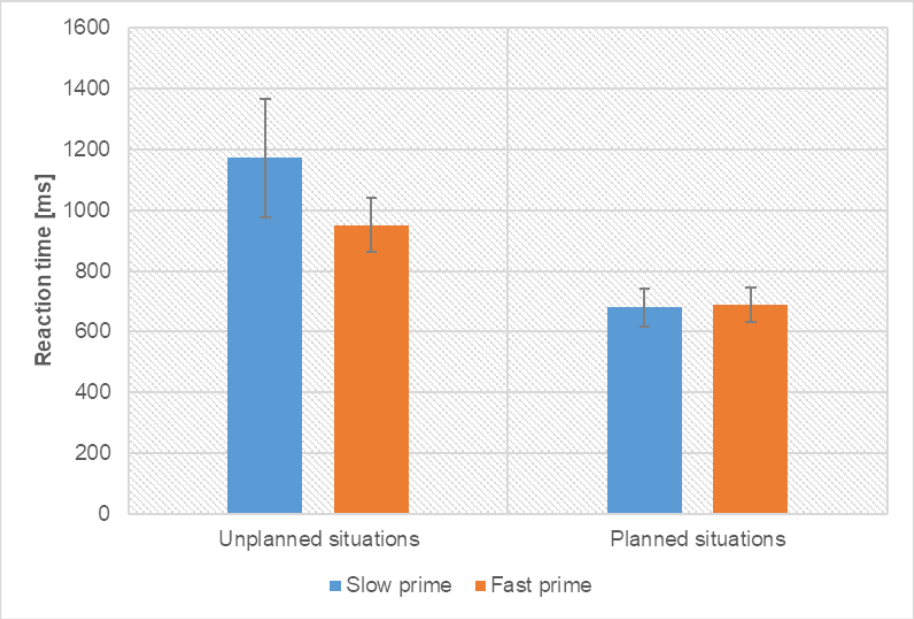

Figure 2. Data from Experiment 1 of Gollwitzer et al. (2011). Error bars represent 95%-CIs.

To demonstrate that implementation intentions heighten the accessibility of planned situations, research has used paradigms in which participants work on two allegedly unrelated tasks. In the first task, they form an if-then plan (e.g., "When I go to the cafeteria in the afternoon, then I will grab an apple!"). In a second task, it is then investigated whether situational cues just specified in the plan (e.g., cafeteria, afternoon) are now cognitively more accessible than neutral cues not specified in the plan. Indeed, it has been demonstrated that people with an implementation intention respond more quickly to planned than to neutral cues in lexical

decision tasks (Aarts, Dijksterhuis, & Midden, 1999; Webb & Sheeran, 2007), which suggests that the planned cues had heightened accessibility. Moreover, people find it difficult to *not* attend to planned cues, even when this conflicts with successful task performance (Wieber & Sassenberg, 2006). One example comes from a study using an auditory task (Achtziger, Bayer, & Gollwitzer, 2012), in which participants had to respond to acoustic information presented to one ear. The authors found that these responses were slower and more erroneous whenever information related to the planned situation was presented simultaneously to the other ear, as compared to neutral information. This failure to ignore plan-related information might be due to implementation intentions biasing even earliest perceptual processing towards this information (Janczyk, Dambacher, Bieleke, & Gollwitzer, 2015).

Regarding the goal-directed response, research has focused strongly on testing whether it can be initiated automatically after having formed an implementation intention (Bargh, 1994). Indeed, it has been shown that the goal-directed response is initiated immediately upon encountering the planned situation (Gollwitzer & Brandstätter, 1997; Orbell & Sheeran, 2000), even when cognitive resources are scarce (Brandstätter, Lengfelder, & Gollwitzer, 2001; Lengfelder & Gollwitzer, 2001), and in the absence of another conscious intent to act (Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009; Schweiger Gallo, Pfau, & Gollwitzer, 2012; Sheeran, Webb, & Gollwitzer, 2005). For example, participants in one study (Bayer et al., 2009, Exp. 3) saw a series of nonsense syllables and had to either associate freely to them (low strain) or to repeat aloud and memorize them (high strain). In a concurrent go/no-go task, they were presented with numbers and letters and had to press a button in case of number but to refrain from pressing in case of a letter. The authors found that participants with an implementation intention to respond quickly to a certain number in the go/no-go task indeed responded faster to

this number than to others irrespective of how straining the syllable task was. This suggests that implementation intentions made the goal-directed behavior efficient in the sense that it can be initiated even when cognitive resources are taxed.

Box 1.5 Question for elaboration

Making if-then plans is sometimes said to create "instant habits" (e.g., Gollwitzer, 1999). Think about how research on the cognitive processes instigated by forming implementation intentions might have given rise to this metaphor.

In a nutshell, forming implementation intentions facilitates the detection of the situations specified in the if-then plan and automates the initiation of the goal-directed behavior. However, this does not mean that implementation intentions, once formed, will always be effective. First, the effectiveness of implementation intentions remains dependent on the underlying goal intention. For instance, participants who planned how to respond in a color-matching task ("If I see a card with the same color as the card at the top of the screen, then I will press the corresponding key as quickly as possible!") refrained from performing the goal-directed behavior as soon as doing so caused monetary losses and thus undermined the goal to respond quickly (Legrand, Bieleke, Gollwitzer, & Mignon, 2017). This suggests that implementation intentions are not effective when they do not serve a valued goal (Orbell, Hodgkins, & Sheeran, 1997; Sheeran, Webb, & Gollwitzer, 2005). Research has investigated other determinants of the effectiveness of implementation intentions as well. As suggested by MAP, for example, implementation intentions are most effective when people are in an implemental mindset rather than a deliberative mindset (Wieber, Sezer, & Gollwitzer, 2014).

Box 1.6 Zooming in: FAQ about implementation intentions

Does forming implementation intentions always improve goal attainment?

Implementation intentions require an active goal that people perceive to be both desirable and feasible and can thus not compensate for the colloquial "lack of motivation". In addition, implementation intentions will not enhance the attainment of easy goals, as mere goals already suffice.

Can forming implementation intentions have drawbacks?

Forming implementation intentions involves a delegation of control to specific situational cues. This may alleviate goal attainment when other situations are better-suited (missing opportunities to act) or the situation requires a different response (failure to control the planned response).

Is making multiple plans better than making only one plan?

Implementation intentions rely on an associative link between a situation and a response. This link can be weakened by making multiple plans for the same goal (e.g., linking different responses to one situation). This is less of an issue when making plans for independent goals.

Does every if-then statement qualify as an implementation intention?

Implementation intentions condition a response on a situation in an if-then format. For instance, a statement like "If I do regular workouts, then I will stay fit!" is grammatically possible as well as logically valid but would not constitute an implementation intention because it conditions an outcome on a behavior.

Are forming implementation intentions and the implemental mindset the same thing?

Whereas MAP constitutes a theory that combines motivation and volition, implementation intention theory describes a self-regulation strategy that can be used to achieve goals. Although often confused, implementation intentions are not confined to the preactional phase during which an implemental mindset is usually activated. For instance, implementation intentions like "If I have to make a decision, then I will deliberate thoroughly" can trigger a more open-minded way of processing information during the predecisional phase.

Application

Implementation intentions are a self-regulation strategy that should help people to attain their goals across various domains. In line with this assertion, accumulating research shows that implementation intentions enhance goal attainment in domains like healthy eating (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011), engaging in physical activity (Bélanger-Gravel, Godin, & Amireault, 2013), and reducing alcohol consumption (Cooke & Lowe, 2016). Moreover, implementation intentions are effective among people suffering from psychological disorders like dementia or depression (Toli, Webb, & Hardy, 2015) and they have been shown to facilitate cognitive processes that are important across domains, such as remembering to perform certain actions at a future point in time (Chen et al., 2015). These examples all pertain to applications in which implementation intentions have been studied comprehensively already and meta-analytic evidence for their beneficial effects is available (Gollwitzer, 2014).

Yet, there are still many other fields of application for which implementation intention effects have to be established. One example is the ability to endure physical performance over extended periods of time, a characteristic feature of various work-related activities (e.g., in hospitals or factories) and prototypically required in many athletic activities (e.g., running, swimming, cycling). Given the beneficial effects of implementation intentions in many domains

and for diverse populations, it is plausible that people can use them to deal with the various self-regulation demands encountered during endurance tasks, like dealing with muscle pain, feelings of exertion, fatigue, and urges to quit. In partial support of this reasoning, initial studies have shown that implementation intentions can indeed modulate endurance-related sensations (Bieleke & Wolff, 2017; Wolff et al., 2018) and may even enhance performance (Thürmer, Wieber, & Gollwitzer, 2017). However, implementation intentions failed to enhance performance in some endurance tasks and even had undesired effects on perceptions of effort and pain in one study (Bieleke & Wolff, 2017). This suggests that implementation intentions must be carefully tailored to different areas of applications, and that their effectiveness in one domain cannot be simply deduced from their effectiveness in other domains (Wolff, Bieleke, & Schüler, 2019).

Example study: Bridging the intention–behavior gap: Inducing implementation intentions through persuasive appeals (Fennis, Adriaanse, Stroebe, & Pol, 2011)

Implementation intentions have been used in a number of field studies. Among others, there have been field studies on the effect of implementation intentions on attendance of cervical cancer screenings (Sheeran & Orbell, 2000), fruit and vegetable intake (Chapman, Armitage, & Norman, 2009), or recycling behavior of employees (Holland, Aarts, & Langendam, 2006). In the following, we want to describe a field study testing the effect of implementation intentions in the domain of consumer psychology. Fennis, Adriaanse, Stroebe, and Pol (2011) investigated whether the presentation of cue-response links on a webpage can stimulate consumers to spontaneously form implementation intentions and consequently opt for sustainable food products. They instructed 217 participants (mean age = 24.5 years, *SD* = 7.6 years) to visit a

webpage advocating sustainable consumption and assigned participants to one of four different versions of this webpage.

First, for one half of the participants (goal-intention condition), the webpage described a fair-trade pocket guide showing ways to increase the sustainability of one's consumption. For the other half of the participants (goal-intention + implementation intention condition), the webpage additionally listed critical situations in which one should exhibit the goal-directed behavior of checking the pocket guide. This was thought to prompt participants to construct if-then situation-response links. Second, the vividness of the information was manipulated within each condition. One half of participants (high-vividness condition) read the fictitious story of a female student who described how shocked she was upon learning about the unsustainable or unfair manufacturing process of some products (e.g., poor working conditions, damage to the environment). She decided to buy only sustainable products from now on and described how the use of the pocket guide will help her doing that. Furthermore, the critical situations to use the pocket guide were also described as stemming from her personal experience with using the guide. The other half of participants (low-vividness condition) received similar information, which was presented using bullet points and not a personal narration of a student they potentially identify with. The authors hypothesized that the more vivid the presentation of the information is, the more likely participants will be to adapt their behavior. Moreover, the more vivid and practical the cue-response links are, the more likely participants will form implementation intentions, which in turn will facilitate the attainment of the goal to consume sustainably.

One week after all participants received the pocket guide, the experimenters contacted the participants and asked them to register which food products they bought over the week. For this purpose, a list of 30 different categories and the leading brands per category was assembled and

distributed. Participants then indicated which brands they had bought per category. Results show that including the cue-response link in the description of the pocket guide increased purchases of sustainable products on average by one item. Vividness on its own was not a significant factor in predicting the amount of sustainable purchases. However, the interaction between both experimental conditions reached statistical significance. Follow-up analyses show that whereas information low in vividness was less likely to influence consumer behavior independent of whether it included implementation-intention-like cue-response links or not, the inclusion of cue-response links in highly vivid information more than doubled the number of sustainable product purchases. To rule out the alternative explanation that participants in the goal intention + implementation intention condition merely bought more products in total and thus had more sustainable products in their shopping carts, the authors calculated a ratio of sustainable to regular products. Mirroring the results on the mere amount of sustainable choices, the ratio of sustainable to regular products bought by participants receiving information low in vividness was around 0.30 for both goal conditions. Participants who were in the goal intention + implementation intention condition, however, had a ratio of 0.58 meaning that for every two regular items, they bought one sustainable item.

Taken together, this field study shows that the self-regulation strategy of forming implementation intentions can increase goal attainment among participants who only read about someone else doing it.

Summary

- Goal pursuit can be described by the succession of a predecisional, preactional, actional, and postactional phase. The decision in favor of one goal marks the metaphorical Rubicon, the switch from a motivational to a volitional focus.

- In the predecisional phase, individuals in a deliberative mindset partake in open-minded weighing of pros and cons for the goal in question. In the preactional phase, individuals in an implemental mindset are planning the steps needed for goal attainment.
- Implementation intentions (i.e., specific if-then plans) are often superior to mere goal intentions concerning goal attainment.
- The formulation of a critical situation (e.g., a suitable opportunity to act or an obstacle to overcome) in the if-part raises the chance of successful recognition and thus counteracts missing opportunities.
- Combining a critical situation with a suitable goal-directed response in the then-part creates an efficient link for initiating action, requiring no further act of conscious intent.
- Both mindset and implementation intention effects have been demonstrated in many domains, including health, sports, risk, or (social) cognition.

Recommended reading

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Guiding answers to questions in the chapter

1. Q (with Box 1.1): When you try to think about your past goals and goal strivings, which aspects may be missing in the model?

   A: As a vehicle for research, MAP has to weigh parsimony against explanatory power. Thus, to be able to generalize unto a wide array of goal pursuits, some other aspects may be missing. For instance, MAP is focused on the cognitive aspects of goal pursuit and is relatively mute on emotional aspects of goal pursuit. Furthermore, it is directional by nature, proposing a fixed order in which phases are surpassed which may not be the case for every goal pursuit in daily life.

2. Q (with Box 1.3): At what point of MAP would Tierney have located the US president? What are institutional safeguards to prevent such overconfidence?

   A: By saying that Trump has crossed the Rubicon, Tierney implicates that the US president switched from an open-minded predecisional action phase to later, more closed-minded action phases. A sincere renewed deliberation of arguments in favor and against further investment, for instance by actors who take a watchtower perspective may help to prevent such overconfidence. In addition, turnover in responsible decision-makers caused by term limits can lead to such redeliberating.

3. Q (with Box 1.4): Think about your past New Year's resolutions (or those of your friends). Were they specified as a goal intention? How could a corresponding implementation intention look like?

   A: A New Year's resolution that merely specifies a desired outcome or behavior is a goal intention. To create an implementation intention, one needs to specify when, where, and how to act towards this goal in an if-then plan.

4. Q (with Box 1.5): Making if-then plans is sometimes said to create "instant habits" (e.g., Gollwitzer, 1999). Think about how research on the cognitive processes instigated by forming implementation intentions might have given rise to this metaphor.

   A: The metaphor refers to the finding that if-then planning automates behavior, such that the planned behavior is initiated immediately and efficiently when the critical situation is encountered. This resembles habitual behavior with the exception that the situation-behavior link between is established with a single voluntary act rather than learned over time.

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