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Implementation Intentions

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Definition

Implementation intentions are if-then plans that spell out in advance how one wants to strive for a set goal. For the if-component, a critical cue is selected (e.g., a good opportunity, an anticipated obstacle) that is linked to a goal-directed response in the then-component. Implementation intentions are known to enhance the rate of goal attainment. They do so by delegating action control to situational cues thus endowing action control with features of automaticity.

Description

Successful goal pursuit requires solving both of two subsequent tasks: first strongly committing to goals and then effectively implementing them. Accordingly, strongly committing to a goal is a necessary but not sufficient step toward goal attainment. Indeed, effective goal pursuit may be hampered by various problems such as failing to get started and to stay on track as well as overextending oneself. Finally, people may fail to disengage from futile means and unattainable goals. Meta-analytic findings suggest that goals (also referred to as goal intentions) account for no more than 28% of variance in goal-directed behavior (Sheeran 2002). One remedy to impaired goal pursuit is – after one has strongly committed to a goal – to plan out in advance how one wants to deal with potential critical situations (i.e., by adding implementation intentions to one's goal intentions).

Gollwitzer (1999) highlighted the importance of furnishing goal intentions with implementation intentions. While goal intentions (goals) have the structure "I intend to reach Z!" with Z relating to a desired future behavior or outcome, implementation intentions have the structure "If situation X is encountered, then I will perform the goal-directed response Y!"; thus, implementation intentions define when, where, and how one wants to act on one's goal intentions. In order to form an implementation intention, individuals need to identify a goal-relevant situational cue (such as a good opportunity to act or an obstacle to goal striving) and link it to an instrumental goal-directed response. Goal intentions merely specify a desired future behavior or outcome. On the contrary, the if-component of an implementation intention specifies when and where one wants to act on this goal, and the then-component of the implementation intention specifies how this will be done. For instance, a person with the goal to reduce alcohol consumption might form the following implementation intention: "And whenever a waiter suggests ordering a second drink, then I'll

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ask for mineral water!" Empirical data supports the assumption that implementation intentions help close the gap between holding goals and attaining them. A meta-analysis based on close to a hundred studies shows a medium to large effect on increased rate of goal attainment ($d = 0.61$; Gollwitzer and Sheeran 2006).

Implementation intentions facilitate goal attainment on the basis of *psychological mechanisms* that pertain to the specified situation in the if-part and to the mental link forged between the if-part and the specified goal-directed response in the then-part of the plan (Gollwitzer and Oettingen 2016). Because forming an implementation intention implies the selection of a critical future situation, the mental representation of this situation becomes highly activated and hence more accessible. This heightened accessibility of the if-part of the plan has been observed in several studies using different experimental tasks (e.g., cue detection, dichotic listening, cued recall, lexical decision, flanker). However, forming implementation intentions not only heightens the activation (and thus the accessibility) of the mental presentation of the situational cue specified in the if-component, but it also forges a strong associative link between the mental representation of this cue and the mental representation of the specified response. These associative links seem to be quite stable over time, and they allow for activation of the mental representation of the specified response (the then-component) by subliminal presentation of the specified critical situational cue (if-component). Moreover, mediation analyses suggest that both cue accessibility and the strength of the cue-response link together mediate the impact of implementation intentions on goal attainment.

Gollwitzer (1999) suggested that the upshot of the strong associative links between the if-part (situational cue) and the then-part (goal-directed response) created by forming implementation intentions is that – once the critical cue is encountered – the initiation of the goal-directed response exhibits features of automaticity. These features include immediacy, efficiency, and redundancy of conscious intent. As a consequence, having formed an implementation intention allows individuals to act in situ without having to deliberate on whether to act or not. Indeed, there is vast empirical evidence that if-then planners act more quickly, deal more effectively with cognitive demands (i.e., speedup effects still evidence under high cognitive load), and do not need to consciously intend to act in the critical moment. Consistent with this last assumption, implementation intention effects are observed even when the critical cue is presented subliminally or when the respective goal is activated outside of awareness.

The processes underlying implementation intention effects (enhanced cue accessibility, strong cue-response links, automation of responding) help if-then planners to readily see and to seize good opportunities to move toward their goals. Forming an if-then plan thus strategically automates goal striving. People can intentionally make if-then plans thus delegating control of goal-directed responses to preselected situational cues. This strategic automation hypothesis has recently been supported by studies that collected brain data using either electroencephalography (EEG) or functional magnetic resonance imaging (fMRI), suggesting that by forming implementation intentions people can switch from top-down control of their actions via goals to bottom-up control via specified situational stimuli. Research on mediating processes has also supported the strategic automation hypothesis, albeit in an indirect way. Numerous studies indicated that neither an increase in goal commitment nor an increase in self-efficacy qualified as potential alternative mediators of implementation intention effects.

But what about *potential moderators* of implementation intention effects on goal striving and goal attainment? Implementation intentions only benefit goal attainment when goal commitment is high; the same is true with respect to people's commitment to executing the formed implementation intention. Moreover, implementation intention effects are commonly observed to be stronger when the goal at hand is difficult rather than easy. Finally, self-efficacy was found to moderate implementation intention effects. Prompting participants to form an implementation intention as to when,

where, and how to pursue their most important New Year's resolution (e.g., to engage in regular physical exercise) and in addition reflect on past mastery experiences (i.e., situations in which they achieved a similar goal) led to significantly higher levels of self-reported goal progress compared to a mere implementation-intention condition. In a recent study where high versus low self-efficacy was manipulated (by asking participants to solve low- or high-difficulty goal-relevant tasks), it was observed that high-self-efficacy participants showed stronger implementation intention effects than low-self efficacy participants, especially when the tasks to be solved were difficult rather than easy.

Which aspects of goal striving have been found to benefit from forming implementation intentions? The effects of implementation intentions have been demonstrated with respect to getting started, staying on track, disengaging from faulty goals and means, as well as avoiding resource depletion. Implementation intentions were found to help individuals to get started with goal striving in terms of remembering to act (e.g., regarding taking vitamin pills, contraceptive pills, influenza vaccination), not missing opportunities to act (e.g., regarding obtaining a mammography), and overcoming an initial reluctance to act (e.g., regarding undertaking a testicular self-examination). Moreover, goals to perform regular breast examinations or cervical cancer screening and to resume activity after joint replacement surgery were all found to be more readily acted upon by individuals who previously had formed implementation intentions.

However, many health goals (e.g., eating a healthy diet, regular physical exercise, reducing alcohol consumption or smoking, downregulating anxiety) cannot be accomplished by a simple, discrete, one-shot action because they require that people keep striving over an extended period of time. Staying on track may then become very difficult when certain internal stimuli (e.g., being tired, stressed out) or external stimuli (e.g., temptations, distractions) interfere with the desired goal pursuit. Implementation intentions can be used to protect started goal strivings from interferences stemming from both inside and outside the person. Such implementation intentions may use very different formats. For instance, if a person with the goal to eat healthy foods wants to stay firm with respect to seductive offers of unhealthy snacks, she can form suppression-oriented implementation intentions, such as "And if my colleague approaches me offering a snack, then I will not take the snack!" The then-component of such suppression-oriented implementation intentions does not have to be worded, however, as not showing the critical behavior (in the present example "not taking the snack"); it may alternatively specify a replacement behavior (". . . , then I will ask for an apple!") or focus on ignoring the critical cue (" . . . , then I'll ignore her offer!"). Recent research suggests that mere negation implementation intentions are less effective than the latter two types of implementation intentions (i.e., replacement and ignore implementation intentions).

Two further types of implementation intentions have been proven effective to master temptations and disruptions. The first one specifies the temptation as a situational cue and links it to thinking of the goal as the response in the then-component. The second one specifies an ongoing activity – that is independent of the temptation – as a situational cue and links it to continuing this activity as the response in the then-component. Using, again, the example of a person who has to cope with a seductive offer from a colleague, let us assume that the person already anticipated receiving the tempting offer during an upcoming encounter with a colleague; she therefore formed an implementation intention stipulating in advance what she will converse about when she runs into her. The interaction with the colleague can then come off as planned as the seductive offer won't have a chance to disrupt the course of action (i.e., the conversation).

Goal striving that is no longer promising may require individuals to disengage from a chosen means or the goal altogether. Such disengagement can free up resources and minimize negative affect. However, individuals often stick to a chosen goal or means too long thus hurting themselves (e.g., setting a too demanding exercise goal, choosing improper means to reach the

goal). Implementation intentions can be used to promote adaptive disengagement by (1) specifying negative feedback as a critical cue and (2) linking this cue to switching to a more promising alternative goal or means. Indeed, when research participants were asked to form implementation intentions that linked negative feedback on the ongoing goal striving to immediately switching to a different goal or means or to reflecting on the quality of the received failure feedback on the ongoing goal striving, adaptive disengagement from goals and means was found to occur more frequently than for participants who had only formed respective goal intentions or had formed no intentions at all.

Finally, forming implementation intentions can help prevent resource depletion as it enables individuals to engage in automated goal striving and behavior control that does not require effortful deliberation (e.g., forming implementation intentions to ask for available vegetarian dishes when a waiter takes one's order). As a consequence, the self should not become depleted when goal striving is regulated by implementation intentions. Indeed, in studies using different ego-depletion paradigms, research participants who used implementation intentions to self-regulate performance on a difficult first task did not show reduced self-regulatory capacity in a subsequent task.

But how much willpower is actually afforded by forming implementation intentions? Any self-regulation strategy that claims to facilitate goal striving has to prove itself under conditions in which people commonly fail to demonstrate willpower (Gollwitzer 2014). Such conditions are manifold (e.g., when one's competencies are challenged, opponents interfere with one's goal striving), but self-regulation of goal striving becomes particularly difficult when habitual responses are in conflict with initiating and executing the needed goal-directed responses that are instrumental to goal attainment. Can the self-regulation strategy of forming if-then plans help people to let their goals win out over their habitual responses? By assuming that action control by implementation intentions is immediate and efficient and adopting a simple horserace model of action control, people might be able to break habitual responses by forming implementation intentions (e.g., if-then plans that spell out a response contrary to the habitual response to the critical situation). Still, if the habitual response is based on strong habits (e.g., smoking), and the if-then guided response is based on weak implementation intentions, the habitual response should win over the if-then planned response. However, when weak habits are in conflict with strong implementation intentions, the reverse should be true. This implies that controlling behavior based on strong habits by forming implementation intentions requires that these if-then plans are very strong as well.

The strengthening of if-then plans can be achieved in various ways: one pertains to creating particularly strong links between situational cues (if-component) and goal-directed responses (then-component), for instance, by asking participants to use mental imagery. Alternatively, one may tailor the critical cue specified in the if-part of an implementation intention to personally relevant reasons for the habitual behavior one wants to overcome and then link this cue to an antagonistic response (e.g., if I feel lonely, then I will put on the music in the living room rather than snack in the kitchen). Also, certain formats of implementation intentions (i.e., replacement and ignore implementation intentions) seem to be more effective in fighting strong habits than other if-then plans (e.g., negation implementation intentions). And finally, stronger implementation intention effects are observed when the respective goals are framed as approach rather than avoidance goals and when goals and plans match in their self-regulatory orientation (i.e., either promotion or prevention). Pertaining to the discussion of whether strong habits can be broken by implementation intentions, one should keep in mind that behavior change is possible without changing bad habits; one may also focus on building new habits in new situational contexts. With respect to this latter approach, implementation intentions can guide goal striving without having to outrun habitual responses. The delegation of control to situational cues principle, on which implementation intention effects are based, can then unfold its facilitative effects on goal striving in an undisturbed manner.

Trying to achieve behavior change by solely forming implementation intentions however forgets that effective behavior change demands a change in terms of both setting new goals and preparing the respective goal striving by forming implementation intentions. But how can people best select and commit to new goals? Oettingen (2012) has developed a self-regulation strategy of goal setting, called mental contrasting of future and reality that allows people to strongly commit to achieving desired and feasible future outcomes. Specifically, in mental contrasting, people imagine the attainment of a desired future (e.g., regular exercise) and then reflect on obstacles of present reality that stand in the way of attaining the desired future (e.g., not setting aside enough time). Given that the perceived chances of success (expectations of success) are high, people will actively commit to and strive toward reaching the desired future.

The behavior change intervention called MCII (Oettingen and Gollwitzer 2010) combines mental contrasting (MC) with forming implementation intentions (II). To unfold their beneficial effects, implementation intentions require that strong goal commitments are in place, and mental contrasting creates such strong commitments. Implementation intentions are also found to show enhanced benefits when the specification of the if-component is personalized, and mental contrasting guarantees the identification of personally relevant obstacles that can then be specified as the critical cue in the if-component of an implementation intention. Finally, mental contrasting has been found to create a readiness for making plans that link obstacles of present reality to instrumental goal-directed behaviors.

In recent intervention studies with middle-aged women, participants were taught the cognitive principles and individual steps of the MCII self-regulation strategy. Specifically, in one study, participants were asked to apply MCII by themselves to the wish of exercising more. Participants were free to choose whatever form of exercising they wished to engage in, and they were encouraged to anticipate exactly those obstacles that were personally most relevant. Finally, they had to link these obstacles to exactly those goal-directed responses that personally appeared to be most instrumental. Teaching the MCII technique enhanced exercise more than only providing relevant health-related information (i.e., information-only control intervention). Participants in the MCII group exercised nearly twice as much: an average of 1 h more per week than participants in the information-only control group. This effect showed up immediately after the intervention, and it stayed stable throughout the entire period of the study (16 weeks after the intervention). Conducting the same MCII intervention was also effective for promoting healthy eating in middle-aged women (i.e., eating more fruits and vegetables). The achieved behavior change persisted even over a period of 2 years. Follow-up research targeting the eating habit of unhealthy snacking was conducted with college students. It was observed that MCII worked for both students with weak and strong such habits, and it was more effective than either mental contrasting or forming implementation intentions alone.

Importantly, MCII geared toward engaging in physical exercise, and eating healthy turned out to be effective with clinical groups as well. For instance, a study with inpatients diagnosed with schizophrenia observed that MCII helped the patients translate their exercising intentions into action, and this was found to be especially the case when MCII was applied in an autonomy-focused hospital setting as compared to a highly structured setting. Moreover, a MCII intervention improved stroke patients' physical activity and weight loss over 1 year compared to control groups that were informed on how to eat better and engage in more physical exercise. Finally, MCII was observed to benefit chronic back pain patients in increasing their mobility over a period of 3 months, whereby physical mobility was assessed by objective measures (e.g., bicycle ergometer test) as well as self-reported physical functioning, and MCII helped hazardous drinkers who wanted to drink less alcohol to attain their goal.

In sum, MCII qualifies as a cost- and time-effective self-regulation intervention to enhance healthy and to prevent unhealthy behaviors. It helps to solve the two central tasks of goal pursuit: forming strong goal commitments on the one

hand and following up on these commitments by effective goal implementation, on the other. Not surprisingly, then, combining mental contrasting with implementation intentions offers additional advantages compared to each strategy alone. Research on MCII has stimulated the development of an MCII app (see woopmylife.org) that is described in Oettingen (2014).

Cross-References

- ▶ Behavior Change
- ▶ Habit Strength
- ▶ Intention

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