New Developments in Goal Setting and Task Performance

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32 Regulating Goal Pursuit Through Mental Contrasting with Implementation Intentions

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Research on goals has employed a variety of approaches (Bargh, Gollwitzer, & Oettingen, 2010). Some approaches focus on the determinants of goal content and goal structure (e.g., the determinants of setting specific, challenging goals), whereas others investigate the consequences that the adoption of goals with certain content or structure has for goal striving and goal attainment. Still other approaches investigate which contextual variables affect the selection of certain types of goals and their subsequent implementation (e.g., affective states, competing action tendencies, power positions). More recent research analyzes how people promote goal pursuit by engaging in self-regulation strategies. Here, goal pursuit is said to consist of two different subsequent tasks (Oettingen & Gollwitzer, 2001): first, firmly committing to certain goals, and second, effectively implementing them. For each of these tasks, different self-regulation strategies have been found to be effective. Mental contrasting of a desired future with obstacles of present reality (Oettingen, 2000, 2012; Oettingen, Pak, & Schnetter, 2001) was identified as an effective self-regulation strategy for wisely pursuing goals, that is, committing and actively striving for goals. We define wise goal pursuit as strong commitment to and striving for goals that are perceived as feasible (high expectations of success) and abstinence or disengagement from goals that are perceived as unfeasible (low expectations of success; Oettingen, 2012). Forming implementation intentions (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006) has turned out to be a self-regulation strategy of effective goal attainment as it helps planning out in advance the various challenges that arise during goal pursuit.

In the present chapter, we discuss research showing how the self-regulation strategies of mental contrasting and forming implementation intentions unfold their effects across various life domains, and we point to implications of the findings for facilitating goal pursuit in the context of organizations. We start with a review of research on the effects and processes of mental contrasting and implementation intentions in individuals. We then describe how the two strategies complement each other in facilitating wise goal pursuit, and point out how they may foster goal attainment in organizations beyond the effects of formulating challenging, specific goals. Finally, we exemplify the contributions

of the combined strategy of mental contrasting with implementation intentions (MCII) for managerial leadership in two domains: self-leadership and health management.

Regulating Goal Pursuit

According to classic approaches, effective self-regulation involves the basic subfunctions of self-monitoring, self-evaluation, and self-reaction (Bandura, 1991). While self-monitoring refers to accurately, consistently, and frequently collecting valid information about one's progress toward a goal (e.g., by using diary methods or by requesting regular peer feedback), self-evaluation refers to evaluating the information about one's progress using personal or social standards. Finally, intentional self-reactions in terms of self-rewards (e.g., a coffee break after completing a difficult problem) or unintentional self-reactions (e.g., emotions such as pride/embarrassment after success/failure) further promote goal attainment. While self-monitoring, self-evaluation, and self-reactions are trainable through mid-term to long-term interventions (e.g., Frayne & Latham, 1987), recent research demonstrates that goal pursuit can be improved almost instantly through the introduction of self-regulation strategies in terms of mental contrasting, implementation intentions, and a combination of both strategies.

The Self-Regulation Strategy of Mental Contrasting

The model of fantasy realization (Oettingen, 2000, 2012; Oettingen et al, 2001) proposes that mentally contrasting a desired future with the reality that impedes its realization will create selective, that is, expectancy-dependent goal commitments with subsequent goal striving and goal attainment. Specifically, in mental contrasting, people imagine the attainment of a desired future (e.g., becoming a clinical psychologist; giving a great talk) and then reflect on the present reality that stands in the way of attaining the desired future (e.g., the GRE exam yet to be taken; evaluation anxiety). When expectations (perceived chances) of success are high, people will actively commit to and strive toward reaching the desired future; when expectations of success are low, people will refrain from doing so.

The model of fantasy realization specifies two other ways of thinking about the future, both of which fail to produce expectancy-dependent goal pursuit (commitment and goal striving; for a review of the determinants and consequences of goal commitment, see Chapter 6). People may either solely envision the attainment of the wished-for future (i.e., indulging) or solely reflect on the impeding reality (i.e., dwelling). The level of goal commitment and subsequent goal striving is determined by the a priori commitment that the person has with respect to attaining the desired future. In other words, it is only mental contrasting, but not indulging and dwelling, that succeeds in strengthening goal pursuit when expectations of success are high, and in weakening it when expectations of success are low. Indulging and dwelling should thus protect a person's resources less than mental contrasting; the former strategies lead to a medium level of engagement even when no engagement (in the case of low expectations of success) or full engagement (in the case of high expectations of success) would be the resource-efficient way to act.

Empirical evidence. A multitude of studies have tested the effects of mental contrasting versus indulging and dwelling on goal commitment and goal striving (Oettingen, 2000; Oettingen, Hönig, & Gollwitzer, 2000; Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005; Oettingen et al., 2001; summary by Oettingen, 2012). For example, in one study, freshmen enrolled in a vocational school for computer programming (Oettingen et al., 2001, Study 4) first indicated their expectations of excelling in mathematics. Then they named aspects that they associated with excelling in mathematics (participants named, e.g., feelings of pride, increasing job prospects) and aspects of present reality that may hinder such excelling (participants named, e.g., being distracted by peers, feeling lazy). Subsequently, three experimental conditions were established: In the mental contrasting condition, participants had to elaborate in writing two aspects of the desired future and two aspects of present reality, in alternating order, beginning with an aspect of the desired future. Participants in the indulging condition were asked to mentally elaborate four aspects of the desired future; in the dwelling condition, they instead elaborated on four aspects of present reality. As a dependent variable, participants indicated how energized they felt with respect to excelling in mathematics (e.g., how active, eventful, energetic). Two weeks after the experiment, participants' teachers reported how much effort each student had invested for the last two weeks and provided each student with a grade for that time period. As predicted, only in the mental contrasting condition did the students feel energized, exert effort, and earn grades in line with their expectations of success: Participants in the mental contrasting condition with high expectations of success felt the most energized, invested the most effort, and received the highest grades. Conversely, participants in the mental contrasting condition with low expectations of success felt the least energized, invested the least effort, and received the lowest course grades. Participants in the indulging and dwelling conditions felt moderately energized, exerted moderate effort, and received moderate grades independent of their expectations of success.

A variety of studies covering different life domains replicated these results. For example, experiments pertained to studying abroad (Oettingen et al., 2001, Study 2), acquiring a second language (Oettingen et al., 2000, Study 1), getting to know an attractive stranger (Oettingen, 2000, Study 1), finding a balance between work and family life (Oettingen, 2000, Study 2), reducing cigarette consumption (Oettingen, Mayer, & Thorpe, 2010), and idiosyncratic interpersonal wishes of great importance (e.g., establishing a good relationship with one's mother; Oettingen et al., 2001, Studies 1 and 3). Further, strength of goal pursuit was assessed by cognitive (e.g., making plans), affective (e.g., feeling responsible for the wished-for ending), motivational (e.g., feelings of energization), and behavioral indicators (e.g., invested effort and achievements). Indicators were measured via self-report or observations and either directly after the experiment or weeks later. In all of these studies, the same pattern of results emerged: Given high expectations of success, participants in the mental contrasting group showed the strongest goal commitment and goal striving; given low expectations, people showed the least goal commitment and goal striving. Participants who indulged in a desired future or dwelled on present reality showed moderate goal pursuit independent of their expectations of success. In sum, it was only mental contrasting that regulated goal pursuit in a way that protects a person's

resources: high investment in goals where attainment is likely, and low or no investment where attainment is unlikely.

It is important to mention that the effects of mental contrasting depend on perceiving the present reality as standing in the way of the desired future. When engaging in mental contrasting, individuals first elaborate a desired future, establishing the positive future as their reference point, and only thereafter elaborate the present reality, thereby potentially perceiving the reality as an obstacle standing in the way of attaining the future. Reversing this order (i.e., reverse contrasting), by first elaborating the present reality followed by elaboration of the desired future, thwarts the expectancy-dependent construal of the present reality as standing in the way of the future and thus fails to elicit goal commitments congruent with high expectations of success (e.g., Oettingen et al., 2001, Study 3).

Mediators of mental contrasting effects. Locke and Latham (2002) identify *feelings of energization* as paramount to promoting goal-directed behavior. They contend that commitment to realizing a desired future is linked to an "energizing function" (i.e., activity incitement; Brunstein & Gollwitzer, 1996; subjective vitality; Ryan & Frederick, 1997). Thus, energization may qualify as a mediator of the effects of mental contrasting on expectation-dependent goal commitment and goal striving (Oettingen et al., 2009, Studies 1 and 2). This mediation hypothesis was tested in a study using an acute stress paradigm (i.e., videotaped public speaking), where goal pursuit was measured by the quantity and quality of performance in the laboratory. Economics students participating in this study were informed that they were to deliver a speech in front of a video camera to help with the development of a measure of professional skills for a human resource department. Participants were randomly assigned to either a mental contrasting or an indulging condition. As dependent variables, participants indicated their initial feelings of energization by a self-report measure (e.g., how energized do you feel when you think about giving your talk). To assess participants' subjective performance, we asked them to rate their actual performance; persistence was measured by the length of each participant's presentation, and objective performance by independent raters evaluating the quality of the videotaped presentations (Oettingen et al., 2009, Study 2).

Consistent with previous mental contrasting studies, individuals in the mental contrasting condition, but not those in the indulging condition, evidenced a strong link between expectations of success and successful performance as measured by subjective self-evaluations of task performance and objective ratings of the videotaped presentations. Moreover, feelings of energization showed the same pattern of results as these performance variables. Additionally, when considering the mental contrasting condition by itself, the relationship between expectations of success and performance was fully mediated by feelings of energization. Physiological data as measured by systolic blood pressure also showed the just-described pattern of results (Oettingen et al., 2009, Study 1). Cardiovascular responses, such as systolic blood pressure, are considered reliable indicators of effort mobilization (i.e., energization; Gendolla & Wright, 2005; Wright & Kirby, 2001).

As to potential cognitive mediators of mental contrasting effects, changes in perceived feasibility (expectation) and desirability (incentive value) were never found to be affected by mental contrasting (summary by Oettingen, 2012). Rather, mental contrasting was observed to produce changes in implicit cognition, which in turn strengthened goal pursuit. For instance, mental contrasting of a desired and feasible

future with an obstacle of present reality strengthened the mental association between the desired future (e.g., obtaining a good grade in an impending exam) and the respective obstacle (e.g., being invited to a close friend's party), and between the obstacle and the required instrumental behavior to overcome it (e.g., making an appointment with the friend after the exam; A. Kappes & Oettingen, 2012; A. Kappes, Singmann, & Oettingen, 2012).

Mental contrasting also produces changes in higher-level cognition. For instance, in adolescents, mental contrasting improved performance on tasks that require perspective taking and it facilitated the willingness to tolerate and integrate immigrants (Oettingen et al., 2005); it also helped with meeting the goal of getting to know an attractive stranger (Oettingen, 2000, Study 1). Recent research employing a dyadic negotiation paradigm in which pairs of participants take the role of a car seller and a car buyer (Kirk, Oettingen, & Gollwitzer, 2011) suggests an increase in perspective taking. Mentally contrasting the desired outcome of a high gain of the dyad with obstacles of reality (i.e., anticipated difficulties in the upcoming negotiation) led to more conjoint gains than mere indulging in an imagined high gain or dwelling on the obstacles to reaching such a positive outcome.

Moderators of mental contrasting. There exists an important moderator variable of mental contrasting effects on expectancy-dependent goal commitment and goal striving: incentive value. Early on, Oettingen (2000) has shown that mental contrasting effects can only be observed when people's future is at least minimally desired. For example, in an experiment on mental contrasting and its role in creating commitment to integrative goals, female doctoral students had to think about their future ten years ahead. Those who in their future thoughts had mentioned combining an academic career and having children were responsive to mental contrasting: two weeks after the experiment, they showed the anticipated expectancy-dependent goal commitment. In the indulging and dwelling conditions, no expectancy-related commitment was observed. On the contrary, female doctoral students who in their future thoughts failed to mention both an academic career and having children showed no relationship between expectations of success and commitment to integrate these two life-tasks, regardless of which of the three conditions they were in. This and more recent research points out that wise (expectancy-dependent) goal selection through mental contrasting can only be achieved if people are able to generate positive fantasies about realizing the thought of future.

Origins of mental contrasting. Another important question is, which variables determine the spontaneous use of mental contrasting. Next to assignments of elaborations of future and reality (see the reported experiments), context variables should influence whether people spontaneously use mental contrasting—rather than indulging, dwelling, and reverse contrasting. H. B. Kappes, Oettingen, Mayer, and Maglio (2011) reasoned that mental contrasting, because it is a problem-solving procedure, should be triggered by sad mood. Sad mood has been found to facilitate problem solving and signals a need for changing the status quo. Indeed, sad mood fostered mental contrasting more than happy or neutral mood: In six studies, H. B. Kappes et al. (2011) showed that across various mood inductions, sad mood facilitated self-initiated mental contrasting more than neutral mood or happy mood. Importantly, mood did not affect the relation between mental contrasting and selective formation of goal commitment. These studies

imply that sad mood supports the generation of self-regulation strategies that lead to wise commitment to potential goals.

Recent research points to other contextual variables influencing the spontaneous generation and use of mental contrasting. Sevincer and Oettingen (2012), applying content analysis of spontaneous thoughts, observed that people were more likely to mentally contrast when goal-relevant action was imminent. Next to context variables (such as mood or imminent action), person variables can also work as determinants of the spontaneous use of mental contrasting: People who were high (versus low) in self-control skills (Tangney, Baumeister, & Boone, 2004) and need for cognition (Cacioppo, Petty, & Kao, 1984) were more likely to spontaneously use mental contrasting. The results illuminate how context and person characteristics shape the self-regulation of goal commitments and goal striving during everyday life.

Mental contrasting and behavior change. As noted above, mental contrasting promotes pursuits of feasible goals, whereas it helps people to refrain from pursuing infeasible goals. A recent study involving health care professionals directly speaks to such wise goal selection as a product of mental contrasting (Oettingen, Mayer, & Brinkmann, 2010). Participants in one condition were taught to use mental contrasting regarding their everyday concerns, while participants in the other condition were taught to indulge. Two weeks later, participants in the mental contrasting condition reported to have fared better in managing their time and decision making during everyday life than those in the indulging condition. More specifically, mental contrasting participants reported a better use of their time, completing promising and relinquishing unpromising projects, and finding it easy to decide between projects. Recent studies targeted the choice of suitable means in terms of seeking and giving help (Oettingen, Stephens, Mayer, & Brinkmann, 2010). In the first study, mental contrasting students with the goal to seek academic help managed to discriminate between people who might or might not help them, and behaved accordingly. In the second study, pediatric nurses with the goal of improving communication with patients' relatives successfully discriminated between opportunities where they were confident that the families will respond well and opportunities where the families might be less responsive.

The negotiation study described above also speaks to the issue of successfully selecting adaptive means (Kirk et al., 2011). The negotiation task implied a multi-issue negotiation where logrolling (i.e., finding trade-offs) improves joint profits. In logrolling, the best means to the desired goal (i.e., maximizing profit) is expressing demands that benefit oneself, but do not hurt the other person as well as making concessions that benefit the other person but do not hurt oneself. Mental contrasting, as it promotes discrimination among possible means to goal attainment, should help negotiators to make such reasonable demands and concessions. In line with this reasoning, mental contrasting did not only enhance the amount of joint profits achieved, it also produced heightened equity of achieved profits.

But mental contrasting may not only be used as a powerful self-regulation tool when it comes to choosing between appropriate goals and means; rather, it can also be applied for the purpose of enhancing one's commitment to a focal goal with subsequent goal striving and goal attainment. In this instance, one needs to keep in mind that mental contrasting creates goal pursuit in line with a person's expectations of success. Accordingly, it is important that high expectations of success are in place before people

are asked to engage in mental contrasting. To ensure this prerequisite, one recent study simply induced high expectations of success by giving positive feedback in the critical performance domain (i.e., solving creative insight problems; Oettingen, Marquardt, & Gollwitzer, 2012). A further line of research targeting the learning of foreign language vocabulary words in schoolchildren (A. Gollwitzer, Oettingen, Kirby, Duckworth, & Mayer, 2011) took a more indirect approach. First, learning tasks were chosen that were new to the children (i.e., learning foreign language vocabulary where no prior efficacy expectations existed), and second, these tasks were then introduced in ways that ensured that the students were confident of mastering them. In the two studies (one with elementary schoolchildren and the other with middle schoolchildren), teaching students to mentally contrast the desired future of being successful in the task of learning foreign language vocabulary with obstacles of present reality (e.g., being easily distracted) resulted in better vocabulary task performance than teaching students to only think about the desired future of successfully solving the vocabulary tasks.

Whereas in the study described above participants were asked to practice their mental contrasting with regard to those outcomes they later were tested on, other studies investigated whether mental contrasting can also be taught and practiced as a meta-cognitive strategy that people then apply to all kinds of their desired outcomes. In the study reported above (Oettingen, Mayer, & Brinkmann, 2010), where mental contrasting was used to promote adaptive goal choices, this meta-cognitive approach was taken. Participants practiced mental contrasting with respect to a variety of their current daily problems; they were then told to use the learned self-regulation strategy to deal with the same or other of their daily problems in the upcoming two weeks. A recent study in the health domain suggests that the meta-cognitive intervention approach can be used not only to help people make more adaptive goal and means choices in one domain, hut also to help people to more effectively commit to and strive for goals in other domains (Johannessen, Oettingen, & Mayer, 2012). In this study, participants were taught to use mental contrasting on their dieting wishes. Two weeks later, it was found that mental contrasting participants succeeded in reducing their calorie intake; importantly, they also succeeded in engaging in more physical activity. In other words, mental contrasting improved health behavior not only in the original domain that was targeted by the mental contrasting technique, but also in another related domain. Assuming that participants had applied the mental contrasting technique (they had acquired with respect to their dieting wishes) to their exercise concerns implies that teaching people the self-regulation technique of mental contrasting in one domain facilitates successful goal pursuit in general or at least with different goals of the same domain (e.g., the health domain).

The Self-Regulation Strategy of Forming Implementation Intentions

So far we have dealt with the issue of how people arrive at wise goal commitments with subsequent goal striving. And although mental contrasting instigates goal commitment that is strong enough to imply strong effort and successful performance, to guarantee successful goal attainment, strategies of effective planning are often needed (Gollwitzer & Moskowitz, 1996; Lewin, Dembo, Festinger, & Sears, 1944; Oettingen & Gollwitzer, 2001). In other words, strongly committing to and striving for a goal is a necessary but often not sufficient step toward goal attainment as the way to the goal may be lined with

hindrances, temptations, and setbacks (Bargh et al., 2010). The four challenges of goal implementation that people are confronted with most frequently are the following: people may fail to get started with goal striving, fail to stay on track, overextend with one goal thus losing sight of other equally important goals, and, finally, they may fail to disengage from an unattainable goal or futile means (Gollwitzer & Sheeran, 2006). In fact, meta-analytic findings suggest that goals (also referred to as goal intentions because goals can be understood as self-instructions to perform a certain behavior or to achieve a certain outcome; Triandis, 1980) account for no more than 28% of the variance in goal-directed behavior (Sheeran, 2002). Next to selecting only feasible goals which is promoted by mental contrasting, one remedy to such impaired goal striving is planning out in advance how one wants to deal with the four challenges described above. Planning out in advance is promoted by adding implementation intentions to one's goal intentions.

Strategic automaticity in goal striving. Gollwitzer (1993, 1999) highlighted the importance of furnishing goal intentions with implementation intentions. While goal intentions (goals) have the structure of "I intend to reach Z!" with Z relating to a desired future behavior or outcome, implementation intentions have the structure of "If situation X is encountered, then I will perform the goal-directed response Y!" Thus, implementation intentions define as to 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 an obstacle to goal attainment or a good opportunity to act) and link it to an instrumental goal-directed response. Whereas goal intentions merely specify a desired future behavior or outcome, 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, an employee with the goal of making more constructive contributions in the weekly team meetings (goal intention) might form the following implementation intention to support the attainment of her goal: "And whenever a colleague is desperately trying to answer an awkward question, then I'll immediately jump to her rescue!" Research supports the assumption that implementation intentions help close the gap between holding goal intentions and attaining them, and this is true for all of the four challenges of effective goal attainment listed above. A meta-analysis based on close to a hundred studies shows a medium to large effect on increased rate of goal attainment (d =.61; Gollwitzer & Sheeran, 2006).

Mediators of implementation intention effects. Research on the underlying mechanisms of implementation intention effects has discovered that implementation intentions facilitate goal attainment on the basis of psychological mechanisms that relate to the anticipated situation (specified in the if-part of the plan), and the associative link forged between the if-part and the then-part of the plan. 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 (Gollwitzer, 1999). This heightened accessibility of the if-part of the plan has been observed in several studies using different experimental paradigms. For instance, Webb and Sheeran (2004, Studies 2 and 3), using a cue detection task, observed that implementation intentions improve cue detection (fewer misses and more hits), without stimulating erroneous responses to similar cues (false alarms and correct rejections). Using a

dichotic listening task paradigm, Achtziger, Bayer, and Gollwitzer (2012) found that words describing the anticipated critical situation were highly disruptive to focused attention in implementation-intention participants compared to mere goal-intention participants (i.e., participants in the implementation intention condition were less able than control participants to repeat aloud words that were read to them). Moreover, in a cued recall experiment, they observed that participants more effectively recalled the available situational opportunities to attain a set goal given that these opportunities had been specified in if–then links (i.e., in implementation intentions). Furthermore, in a study by Parks-Stamm, Gollwitzer, and Oettingen (2007) using a lexical decision task paradigm, it was observed that implementation intentions did not only increase the activation level of the specified critical cues but also diminished the activation level of nonspecified competing situational cues. And finally, Wieber and Sassenberg (2006), using a flanker task paradigm (i.e., distracting stimuli are presented as flankers next to the stimuli relevant to performing a focal task), observed that those flanker stimuli that had been specified in implementation intentions attracted more attention; this observation is in line with the findings of the dichotic listening study reported above (Achtziger et al., 2012).

There are even studies that explicitly tested whether the heightened accessibility of the mental representation of critical cues that are specified in an implementation intention mediates the attainment of the respective goal intention. For instance, Aarts, Dijksterhuis, and Midden (1999), using a lexical decision task, found that the formation of implementation intentions led to faster lexical decision times for those words that described the specified critical situation. Furthermore, the heightened accessibility of the critical situation (as measured by faster lexical decision responses) mediated the beneficial effects of implementation intentions on goal attainment.

Recent studies indicate that forming implementation intentions not only heightens the activation (and thus the accessibility) of the mental representation of the situational cues specified in the if-component but it also forges a strong associative link between the mental representation of the specified opportunity and the mental representation of the specified response (Webb & Sheeran, 2007, 2008). These associative links seem to be quite stable over time (Papies, Aarts, & de Vries, 2009), and they allow for the activation of the mental representation of the specified response (the plan's then-component) by subliminal presentation of the specified critical situational cue (if-component) (Webb & Sheeran, 2007). Moreover, mediation analyses suggest that cue accessibility and the strength of the cue–response link together mediate the impact of implementation intention formation on goal attainment (Webb & Sheeran, 2007, 2008).

Gollwitzer (1999) suggested that the upshot of the strong associative (critical situation with goal-directed response) links created by forming implementation intentions is that—once the critical cue is encountered—the initiation of the goal-directed response specified in the then-component of the implementation intention exhibits features of automaticity, including immediacy, efficiency, and redundancy of conscious intent. Having formed an implementation intention, individuals can act in situ without having to deliberate on whether to act or not. There is vast empirical evidence that if–then planners act more quickly (e.g., Gollwitzer & Brandstätter, 1997, Experiment 3), deal more effectively with cognitive demands (e.g., such speed-up effects are still evidenced under high cognitive load; Brandstätter, Lengfelder, & Gollwitzer, 2001), and

do not need to consciously intend to act at the critical moment. Consistent with this last assumption, implementation intention effects are observed even when the critical cue is presented subliminally (e.g., Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009) or when the respective goal is activated outside of awareness (Sheeran, Webb, & Gollwitzer, 2005, Study 2).

The processes underlying implementation intention effects (enhanced cue accessibility, strong cue–response associative links, automation of responding) mean that if–then planning allows people to see and to seize good opportunities to move toward their goal intentions. Fashioning an if–then plan thus *strategically automates* goal striving; people intentionally make if–then plans that delegate control of goal-directed behavior to preselected situational cues, with the explicit purpose of reaching their goals. This delegation hypothesis has recently been tested by studies that collected brain data using electroencephalography (EEG) and functional magnetic resonance imaging (fMRI). A study by Schweiger Gallo, Keil, McCulloch, Rockstroh, and Gollwitzer (2009, Study 3) using dense-array EEG, behavioral data indicated that implementation intentions specifying an ignore-response in the then-component of an implementation intention helped control fear in response to pictures of spiders in participants with spider phobia. Importantly, the obtained electro-cortical correlates revealed that those participants who bolstered their goal intention to stay calm with an ignore-implementation intention showed significantly reduced early activity in the visual cortex in response to spider pictures, as reflected in a smaller P1 (assessed at 120 ms after a spider picture had been presented). This EEG finding suggests that implementation intentions indeed lead to strategic automation of the specified goal-directed response (an ignore response) when the critical cue (a spider picture) is encountered, as conscious effortful action initiation is known to last longer than 120 ms (at least 300 ms; see Bargh & Chartrand, 2000).

Further support for the delegation hypothesis was obtained in an fMRI study reported by Gilbert, Gollwitzer, Cohen, Oettingen, and Burgess (2009), in which participants had to perform a prospective memory task on the basis of either goal or implementation intention instructions. Acting on the basis of goal intentions was associated with brain activity in the lateral rostral prefrontal cortex, whereas acting on the basis of implementation intentions was associated with brain activity in the medial rostral prefrontal cortex. Brain activity in the latter area is known to be associated with bottom-up (stimulus) control of action, whereas brain activity in the former area is known to be related to top-down (goal) control of action (Burgess, Dumontheil, & Gilbert, 2007).

In sum, heightened cue accessibility and increased strength of the cue–response association together mediate implementation intention effects on goal attainment (Gollwitzer & Oettingen, 2011; Webb & Sheeran, 2007, 2008). The search for further mediating variables was quite unsuccessful (meta-analysis by Webb & Sheeran, 2008). Numerous studies showed that neither an increase in goal commitment nor an increase in self-efficacy qualify as potential alternative mediators of implementation intention effects (e.g., Brandstätter et al., 2001; Oettingen et al., 2000, Study 2).

Implementation intentions as a means to overcome typical problems of goal striving. The effects of implementation intentions have been demonstrated with respect to the four challenges of goal attainment listed above: getting started, staying on track, avoiding resource depletion, and disengaging from futile goal intentions. Implementation intentions were found to help individuals to get started with goal striving in terms of

remembering to act (e.g., with respect to taking vitamin pills; Sheeran & Orbell, 1999), not missing opportunities to act (e.g., with respect to obtaining a mammography; Rutter, Steadman, & Quine, 2006), and overcoming an initial reluctance to act (e.g., with respect to undertaking a testicular self-examination; Sheeran, Milne, Webb, & Gollwitzer, 2005). Moreover, goals to perform regular breast examinations (Orbell, Hodgkins, & Sheeran, 1997) or cervical cancer screening (Sheeran & Orbell, 2000), to resume activity after joint replacement surgery (Orbell & Sheeran, 2000), to eat a low-fat diet (Armitage, 2004), to recycle (Holland, Aarts, & Langendam, 2006), and to engage in physical exercise (Milne, Orbell, & Sheeran, 2002) were all found to be more readily acted upon by individuals who previously had formed implementation intentions (Gollwitzer & Oettingen, 2011).

However, many goals 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 anxious, tired, overburdened) or external stimuli (e.g., temptations, distractions) interfere with the ongoing goal pursuit. Implementation intentions can be used to protect an ongoing goal striving from the negative influence of interferences from both inside (e.g., Achtziger, Gollwitzer, & Sheeran, 2008) and outside the person (e.g., Gollwitzer & Schaal, 1998). Such implementation intentions may use very different formats. For instance, if a person wants to stay friendly to a colleague who is known to makes outrageous requests, she can form suppression-oriented implementation intentions, such as "And if my colleague approaches me with an outrageous request, then I will not get upset!" The then-component of such suppression-oriented implementation intentions does not have to be worded in terms of not showing (i.e., negating) the critical behavior (in the present example getting upset); it may alternatively specify a replacement behavior ("..., then I will respond in a friendly manner!"), or focus on ignoring the critical cue ("..., then I'll ignore her request!"). Recent research (Adriaanse, Van Oosten, De Ridder, De Wit, & Evers, 2011) suggests that mere negation implementation intentions are less effective than the latter two types of implementation intentions (i.e., replacement and ignore implementation intentions).

An important alternative way of using implementation intentions to protect ongoing goal striving from derailment is to form implementation intentions geared toward stabilizing the ongoing goal pursuit (Bayer, Gollwitzer, & Achtziger, 2010). Using, again, the example of a person who has to cope with an outrageous request of a colleague, let us assume that the recipient of the request has stipulated in advance in an implementation intention about what she will converse about with her colleague when she runs into her. The interaction with the colleague may then come off as planned even if the colleague expresses her outrageous request. Bayer et al. (2010) demonstrated the effectiveness of this strategy in a series of studies analyzing whether making if-then plans that stabilize an ongoing goal pursuit effectively blocked the disruptive effects of self-definitional incompleteness, inappropriate mood, and ego-depletion.

Forming implementation intentions can also help prevent resource depletion as it enables individuals to engage in automated goal striving and behavior control that does not require high levels of deliberate effort. As a consequence, the self should not become depleted (Muraven & Baumeister, 2000) 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 in one task did not show reduced self-regulatory capacity in a subsequent task (e.g., Webb & Sheeran, 2003).

Finally, goals that are no longer feasible and/or desirable in their current form may require individuals to adjust goal striving and to disengage from a goal or a chosen means. Such disengagement from unattainable goals or dysfunctional means can free up resources and minimize negative affect and health issues resulting from repeated negative feedback (Carver & Scheier, 1998; Locke & Latham, 1990, 2006). However, individuals often stick to a chosen goal or means too long, thus hurting themselves (i.e., escalation of commitment; Brockner, 1992). Implementation intentions can be used to promote functional disengagement by (1) specifying negative feedback as a critical cue, and (2) linking this cue to switching to a functional 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, functional 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 (Henderson, Gollwitzer, & Oettingen, 2007).

How much willpower is 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. Such conditions are manifold, but the following three situations stick out: (1) situations in which a person's knowledge and skills constrain performance, such as taking academic tests; (2) situations in which an opponent's behavior limits one's performance, such as is true for negotiation settings; and (3) situations in which the desired behavior (e.g., no littering) conflicts with habits favoring an antagonistic response. For all three of these situations, implementation intentions, however, stood their test.

As to situations where knowledge and skills constrain performance, very simply, implementation intentions were found to enhance participants' performance on a standardized intelligence test (Bayer & Gollwitzer, 2007). Participants only had to form the following simple implementation intention: "Whenever I start a new problem on this test, then I will tell myself: I can solve this problem!" As to situations where an opponent limits one's performance, studies in which pairs of negotiators had to distribute a common resource were conducted (Trötschel & Gollwitzer, 2007). In these studies, negotiators played the roles of representatives of two neighboring countries and negotiate the distribution of the regions, villages, and towns of a disputed island. When the participants formed implementation intentions to make cooperative counterproposals whenever a proposal from the counterpart was received, the pairs of negotiators managed to be more cooperative even when the negotiation had to take place under a loss frame (i.e., participants are told how many points they lose rather than win during each round of negotiation and are thus reluctant to make concessions; e.g., Bottom & Studt, 1993). Apparently, implementation intentions managed to break the competiveness-enhancing effect of loss framing. Recent research using the ultimatum game (Kirk, Gollwitzer, & Carnevale, 2011) also shows that implementation intentions can help performance in the face of opponents. Angry impulsive responses

to ultimatums, which are known to cause the rejection of unfair offers at a cost to oneself, were successfully curbed by making if-then plans geared toward downregulating anger.

Finally, as to situations where a desired behavior is in conflict with an antagonistic habitual response, a host of research has been conducted as well. The self-regulation of goal striving becomes difficult when habitual responses are in conflict with initiating and executing the needed goal-directed responses that are instrumental to goal attainment (e.g., Wood & Neal, 2007). 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 (i.e., the stronger action tendency will win out over the weaker one; Adriaanse, Gollwitzer, De Ridder, De Wit, & Kroese, 2011), people might be in a position to break habitual responses by forming strong implementation intentions (e.g., if–then plans that spell out a response contrary to the habitual response to the critical situation; Holland et al., 2006). Cohen, Bayer, Jaudas, and Gollwitzer (2008, Study 2; see also Miles & Proctor, 2008) demonstrated that implementation intentions helped suppressing habitual behavioral responses in a Simon task. In this task paradigm, participants are asked to respond to a nonspatial aspect of a stimulus (i.e., whether a presented tone is high or low) by pressing a left or right key, and to ignore the location of the stimulus (i.e., whether it is presented on one's left or right side). The difficulty of responding is high when the location of the tone (e.g., right) and the required key press (e.g., left) are incongruent, as people habitually respond to stimuli presented at the right or left side with the corresponding hand. Automatic cognitive biases, such as stereotyping, represent another type of habitual response that can be in opposition to one's goals. Extending earlier work (Gollwitzer & Schaal, 1998), Stewart and Payne (2008) found that implementation intentions designed to counter automatic stereotypes (e.g., "When I see a black face, I will then think 'safe'") could indeed reduce automatic stereotyping. Recent research by Mendoza, Gollwitzer, and Amodio (2010) has added to these findings that implementation intentions can also be used to suppress the behavioral expression of implicit stereotypes.

Still, forming implementation intentions may not always block habitual responses. Whether the habitual response or the if–then guided response will "win the race" depends on the relative strength of the two behavioral orientations. If the habitual response is based on strong habits (Webb, Sheeran, & Luszczynska, 2009), and the if-then guided response is based on weak implementation intentions, the habitual response should win over the if-then planned response; and the reverse should be true when weak habits are in conflict with strong implementation intentions. This implies that controlling behavior based on strong habits requires the formation of strong implementation intentions. Such enhancement of if-then plans can be achieved by various measures. One pertains to creating particularly strong mental links between situational cues (if component) and goal-directed responses (then component), for instance, by asking participants to use mental imagery (Knäuper, Roseman, Johnson, & Krantz, 2009; see also Papies et al., 2009). Alternatively, Adriaanse, De Ridder, and De Wit (2009) suggested tailoring 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. Also, certain formats of

implementation intentions (i.e., replacement and ignore implementation intentions) seem to be more effective in fighting habits than others (i.e., negation implementation intentions). Pertaining to the discussion of whether strong habits can be broken by implementation intentions, one should however always keep in mind that behavior change is possible without changing old habits; one can focus as well on the building of new habits in new situational contexts. The "delegation of control to situational cues principle," on which implementation intention effects are based, can unfold its facilitative effects in the new situational context undisturbed by the old habits.

Moderators of implementation intention effects. Recent research has identified a number of moderators of implementation intention effects on goal striving and goal attainment. First, implementation intentions only benefit goal attainment when goal commitment is high (Sheeran et al., 2005); the same is true with respect to people's commitment to executing the formed implementation intention (Achtziger et al., 2012, Study 2). In addition, self-efficacy was also 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, 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 control conditions and a mere implementation-intention condition (Koestner, Horberg, Gaudreau, Powers, Di Dio, Bryan, 2006). In a recent study (Wieber, Odenthal, & Gollwitzer, 2010), 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.

Finally, person attributes have been found to moderate implementation intention effects as well. For instance, Powers, Koestner, and Topciu (2005) report that socially prescribed perfectionists who try to conform to standards and expectations by others show weaker implementation intention effects. Possibly social perfectionists may fail to commit to implementation intentions because they feel social expectations and standards to change quickly and unpredictably which may be impeded by strong commitments to the preplanned course of action as defined in implementation intentions. Moreover, in an experimental study using undergraduate students (Webb, Christian, & Armitage, 2007), attendance in class was studied as a function of conscientiousness, openness to experience, goal intentions, and implementation intentions. Implementation intention effects were found to be moderated by conscientiousness, such that increased class attendance due to planning occurred only for low/moderately conscientious students as high conscientious students showed a perfect class attendance to begin with. This observation is in line with the finding (Gollwitzer & Sheeran, 2006) that implementation intention effects are generally stronger for difficult than for easy goals.

Combining Mental Contrasting with Implementation Intentions: MCII

Knowledge about strategies of both effectively committing to and striving for goals allows for interventions that teach people how to effectively pursue goals on their own. One such intervention (Adriaanse, Oettingen, Gollwitzer, Hennes, De Ridder, & De Wit, 2010;

Christiansen, Oettingen, Dahme, & Klinger, 2010; Stadler, Oettingen, & Gollwitzer, 2009, 2010; review by Oettingen, 2012; Oettingen & Gollwitzer, 2010) combines mental contrasting with forming implementation intentions (i.e., MCII). To unfold their beneficial effects, implementation intentions require that strong goal commitments are in place (Sheeran et al., 2005, Study 1), and mental contrasting creates such strong commitments (Oettingen et al., 2001, review by Oettingen, 2012). Implementation intentions are also found to show enhanced benefits when the specification of the if-component is personalized (Adriaanse et al., 2009). Mental contrasting guarantees the identification of personally relevant obstacles that can 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 anticipated obstacles of reality to instrumental behaviors (A. Kappes, Singmann, & Oettingen, 2012; Oettingen et al., 2001). And although these plans instigated by mental contrasting have been shown to be strong enough to lead to respective effort and successful performance, complementing them by explicit instructions of forming implementation intentions has yielded additional benefits for promoting successful goal attainment (Adriaanse et al., 2010; Kirk, Oettingen, & Gollwitzer, in press).

For example, in a recent intervention study with middle-aged women (Stadler et al., 2009), participants were taught the cognitive principles and individual steps of the MCII technique. This intervention allowed participants to apply MCII by themselves to their idiosyncratic everyday wishes and concerns; hence, MCII qualifies as a *metacognitive* self-regulation strategy. Specifically, in the Stadler et al. (2009) study participants were taught how to use MCII for their idiosyncratic wishes of exercising more. Participants were free to choose whatever form of exercising they wished to mentally contrast on, and they were encouraged to anticipate exactly those obstacles that were personally most relevant and to link them to exactly those goal-directed responses that personally appeared to be most instrumental. As dependent measures, participants maintained daily behavioral diaries to keep track of the amount of time they exercised every day. Overall, 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 as before the intervention and an average of 1 hour 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 the extensive time period of 2 years (Stadler et al., 2010). In another study, Adriaanse et al. (2010) targeted the negative eating habit of unhealthy snacking in college students. 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. Moreover, MCII was observed to benefit chronic back pain patients in increasing their mobility (Christiansen et al., 2010). Over a period of both 3 weeks and then 3 months patients learning MCII for altogether just one hour, increased their exercise more as compared to a standard treatment control group. Physical mobility was measured by objective (i.e., bicycle ergometer test and number of

weight lifts achieved in 2 minutes) and subjective indicators (reported physical functioning).

Finally, MCII has shown beneficial effects outside of the health area as well. For example, it benefited study efforts in adolescents preparing for standardized tests (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011). Moreover, MCII was found to promote integrative bargaining (Kirk et al., in press). Before negotiating in dyads over the sale of a car, participants in the MCII condition were to mentally contrast achieving success in this bargaining task with obstacles standing in the way of this success (e.g., being too competitive) and to subsequently form respective if-then plans on how to overcome these obstacles. Participants in the mental contrasting only condition did not form if-then plans, whereas participants in the if-then plan only condition did not engage in mental contrasting. Results showed that MCII led to higher joint gains than either mental contrasting or if-then plans alone. Importantly, MCII participants arrived at significantly more cooperative implementation intentions than participants who formed their if-then plans without mental contrasting. The number of cooperative implementation intentions also mediated the effects of MCII on joint gains. These findings suggest that MCII helps people form cooperative plans and thus reach high-quality agreements in negotiations.

In sum, the reported MCII research suggests that MCII qualifies as a self-regulation strategy that people can apply to their own idiosyncratic wishes and concerns and that can be taught in a cost- and time-effective way. When it comes to the effective self-regulation of goal pursuit, starting with committing to and striving for goals and ending with their successful attainment, MCII seems to facilitate solving all of these tasks of successful goal pursuit. Not surprisingly, then, combining mental contrasting with implementation intentions offers additional advantages compared to each strategy alone.

MCII and the Goal Setting Framework

Theoretical Aspects

While research based on goal setting theory focuses on outcome-specific, challenging goals in work settings, MCII-related research focuses on how to promote goal commitment and goal striving in various settings. Subsequently, we discuss the potential contributions of MCII for task performance and behavioral change beyond the effects of specific, challenging goals (for a review of using goal setting theory to promote health behavior change, see Chapter 26). In short, MCII should promote goal pursuit beyond goal setting effects especially when (a) self-regulatory demands are high and (b) current self-regulatory effectiveness is low.

First, when it comes to meeting heightened self-regulatory demands, people can turn to MCII when the desired outcomes themselves and/or the ways to achieve these outcomes are unclear, when conflicting goals or habits have to be dealt with, and when the current workload is high. Though sometimes challenging tasks are assigned or predetermined and thus allow for a clear definition of the goal (e.g., in terms of specific outcomes), at other times a clear definition of the goal is not provided. In MCII then, by naming a particular wish, people can specify the desired future. Finding clarity about the

desired future is further facilitated by MCII's instructions to name and imagine the best outcome of the desired future, and to then immediately turn to name and imagine the reality that stands in the way of reaching the desired outcome (i.e., obstacle). This naming and imagining of the obstacle juxtaposed to the desired future facilitates ideas of how to reach these goals (i.e., when and how to initiate goal-directed action, how to keep up goal striving over time). For personal goals related to behavioral change, defining the obstacles as specific cues to goal-directed actions will render subsequent goal striving an automatic process thus promoting goal attainment.

Heightened self-regulatory demand also results from conflicts between goals and habits. In fact, many personal, academic, or job-related goals involve breaking counter-productive habits, such as procrastination (Wieber & Gollwitzer, 2010). Forming implementation intentions provides a strategy for breaking interfering habits (e.g., Adriaanse et al., 2009; Owens, Bowman, & Dill, 2008; Webb et al., 2009), as they lead to automatic initiation of wanted responses to the critical situational cues inhibiting the dominant habitual response (Adriaanse, Gollwitzer et al., 2011; Gollwitzer & Sheeran, 2006). Breaking habits by implementation intentions has been observed to be particularly effective when the latter are backed up by mental contrasting (Adriaanse et al., 2010). As a consequence, even though conflicting habits do handicap the effects of goal striving on outcome variables, MCII provides a reliable means for tackling such conflicts.

Finally, in industrial/organizational settings, high overall workload may create challenging self-regulatory demands. When workload is high, goal conflicts due to limited resources such as time, energy, or budget are more likely, and this even when job goals are not directly in conflict with other goals or with existing habits. In addition, high job demands increase the necessity to negotiate job engagement with other goals, such as health goals and family-related goals. As work-life balance requires a sufficient amount of off-job time and detachment from job demands, highly demanding jobs are particularly likely to increase self-regulatory demands. To live up to such heightened self-regulation demands, people may turn to mental contrasting as it has been found to promote both the prioritizing of conflicting goal pursuits (Oettingen, Mayer, & Brinkmann, 2010; Oettingen, Mayer, & Thorpe, 2010), and the finding of integrative solutions to conflicting goal pursuits in the short-term (e.g., in negotiations; Kirk et al., 2011; in press) and in the long-term (e.g., combining career and child rearing, Oettingen, 2000; Study 2); adding implementation intentions as is done in MCII, guarantees that people will stick to striving for the chosen goal, as striving for it becomes automated.

Second, when it comes to facilitating goal striving in organizations, people can again turn to MCII. Even when a goal has been clearly defined, low and moderate goal commitment may lead individuals to not exert maximum effort to achieve that goal. Mental contrasting helps individuals to identify personally desirable and feasible goals and to strongly commit to them. Moreover, mental contrasting has been found to promote self-regulation by helping individuals to effectively cope with critical performance feedback. While adequately processing negative feedback is a core element of reaching one's goals, staying on track requires individuals to maintain their competence beliefs. In fact, individuals using mental contrasting were found to not only process negative feedback accurately, they also attributed negative feedback to low effort rather

than low competence (A. Kappes, Oettingen, & Pak, 2012). In addition, research suggests that implementation intentions can be used to directly increase self-efficacy beliefs (Bayer & Gollwitzer, 2007; Yanar, Budworth, & Latham, 2009) by specifying self-assuring inner speech in the then-component (e.g., "..., then I will tell myself that I can do this!") and linking it to a respective critical situation specified in the if-component (e.g., "And if I should start feeling self-doubts, then ...!").

Practical Managerial Implications: Remote Work Settings and Employee Health Management

While remote work settings provide various strategic advantages, physical and psychological distance makes it harder for individuals to evaluate fellow team members' reliability and to build and maintain interpersonal trust (Kirkman, Rosen, Tesluk, & Gibson, 2004; Latham & Saari, 1979; O'Hara-Devereaux & Johansen, 1994; Ronan, Latham, & Kinne, 1973). Accordingly, new forms of leadership have evolved that demand an increasing degree of self-regulation by employees (Barry, 1991; Carte, Chidambaram, & Becker, 2006; Manz, 1986; Tyran, Tyran, & Sheperd, 2003). In self-managing teams an official supervisor does not exist, or is hardly involved in the team's daily decisions and work processes; electronic tools are used for communicating, coordinating, and executing team processes (Kirkman & Mathieu, 2005) as team members are often located in different geographic locations and/or time zones (Foster & Coovert, 2006). In such "virtual" teams (Kirkman et al., 2004), team members are responsible for team performance and team process quality (O'Connell, Doverspike, & Cober, 2002).

While goal setting has proved to be highly effective especially in virtual teams, these teams also benefit from self-regulation strategies. Empowerment was found to increase team members' engagement and affective commitment, which mediates the effects of leadership on team members' innovative and teamwork behaviors and turnover intentions (Chen, Sharma, Edinger, Shapiro, & Farh, 2011). As part of team development interventions, MCII could contribute to selecting a group's goals, recognizing the main obstacles to the group's success, identifying the actions that are required for overcoming the obstacles to attaining the goals, and to explicitly forming "if-then" plans to overcome, circumvent, or prevent the specified obstacles (Oettingen & Gollwitzer, 2010). On the individual level, MCII could also help aligning individual goals both within and outside the team, thereby avoiding or minimizing goal conflict. Initial findings demonstrate that asking trainees reflective questions to stimulate self-regulatory engagement reduces attrition and promotes learning (Sitzmann & Ely, 2010).

In addition, MCII might aid people to deal effectively with team diversity regarding goal orientation (e.g., learning versus performance goals). Team diversity regarding learning versus performance goal orientation was found to harm team performance (Nederveen Pieterese, van Knippenberg, & van Ginkel, 2011), provided team reflexivity was low (i.e., the extent to which team members engage in meta-communication about the team's objectives and strategies; De Dreu, 2002; van Knippenberg & Schippers, 2007). When team reflexivity was high, work group diversity was even found to increase team performance (Bantel & Jackson, 1989). As virtual teams may be particularly vulnerable to diversity effects because of reduced opportunities for interaction and discussion, MCII may be used to increase reflexivity in these teams. Formal interventions

that are known to foster team member interactions in terms of information sharing, questioning others, and managing time (Okhuysen & Eisenhardt, 2002) might be supplemented by MCII to promote reflexivity in virtual teams.

Employee health management (EHM) is another managerial problem that could benefit from MCII interventions. Accidents and chronic illnesses such as cardiovascular diseases, cancer, and chronic obstructive pulmonary diseases have become the most important causes of premature death in Western countries (Maes & Gebhardt, 2000). As these factors are largely caused or exacerbated by behavior such as smoking, alcohol abuse, lack of physical activity, lack of sleep, or unhealthy diet, many of them may be prevented or attenuated by interventions aiming at improving health behavior. Fortunately, a number of organizations have been making systematic efforts to improve employee health. Aside from employers' obligation to observe and care for employee well-being (De Simone & Harris, 1998), EHM also has implications for organizational effectiveness regarding outcomes such as job satisfaction, fluctuation, and absenteeism. Meta-analytical findings suggest that determined participation in EHM programs is the key to the success of these programs, as their effects disappear when individuals' participation is not voluntary (de Groot & Kiker, 2003). Moreover, while assigned and self-set goals lead to similar levels of goal commitment and task performance (provided goal difficulty is held constant; Strecher, Seijts, Kok, Latham, Glasgow, DeVellis, Meertens, & Bulger, 1995), assigned health goals may trigger reactance (Brehm, 1966; Wicklund, Slattum, & Solomon, 1970) and lead to poor goal commitment if they are presented in a work context but not directly linked to individual job role demands.

Individuals may thus be unwilling to respond to EHM programs unless measures are taken to develop health goals people feel they can commit to. Moreover, health-relevant behaviors may not be easily changed due to conflicts with existing habits. Taking healthy eating as an example, effective behavior change requires a number of behavioral sub-changes for which various specific goals and plans need to be developed in order to effectively overcome habitual responses (Adriaanse et al., 2009, 2010, 2011; Stadler et al., 2009, 2010). Committing to and attaining health goals should therefore benefit from using self-regulation strategies. MCII could help people to identify and commit to personally meaningful and relevant health goals without triggering reactance, and to promote goal striving by specifying respective action plans. MCII could also help employees to effectively shield off-job time from job demands, which is known to predict exhaustion, disengagement, and psychosomatic problems especially in case of high job demands (Sonnentag, Binnewies, & Mojza, 2010). In summary, MCII might improve health management by increasing commitment to health goals, by preventing reactance toward EHM interventions, by providing an effective tool to block habits from impeding health goal attainment, and by resolving role conflicts.

Conclusion

Locke and Latham (2006) assert that goal setting theory allows for the integration of other theories. Therefore, the present contribution aimed at integrating research on self-regulation into goal setting theory and exemplified this integration in the area of managerial leadership. First, we introduced two corroborative self-regulation strategies of goal pursuit, mental contrasting fostering goal commitment and goal striving, and

implementation intentions fostering effective goal implementation, and discussed research attesting to their processes, moderators, and effects on behavioral change. Second, complementing each other in creating a powerful self-regulatory strategy of goal pursuit, mental contrasting with implementation intentions (MCII), has been shown to be especially beneficial when self-regulatory problems are unclear and/or demands are high. For example, these benefits should particularly unfold when the tasks are complex, the workload is high, goals or habits are in conflict, or critical feedback is impending. Regarding applied implications, two areas were highlighted. MCII may benefit teams burdened by diverse goal orientations or lack of team reflexivity. As part of employee health management programs, MCII can promote commitment to health goals, prevent reactance toward health management interventions, and help overcome conflicts between and among habits and goals.

References

Aarts, H., Dijksterhuis, A., & Midden, C. (1999). To plan or not to plan? Goal achievement or interrupting the performance of mundane behaviors. *European Journal of Social Psychology, 29,* 971–979.

Achtziger, A., Bayer, U. C., & Gollwitzer, P. M. (2012). Committing to implementation intentions: Attention and memory effects for selected situational cues. *Motivation and Emotion, 36,* 287–300.

Achtziger, A., Gollwitzer, P. M., & Sheeran, P. (2008). Implementation intentions and shielding goal striving from unwanted thoughts and feelings. *Personality and Social Psychology Bulletin, 34,* 381–393.

Adriaanse, M. A., De Ridder, D. T. D., & De Wit, J. B. F. (2009). Finding the critical cue: Implementation intentions to change one's diet work best when tailored to personally relevant reasons for unhealthy eating. *Personality and Social Psychology Bulletin, 35,* 60–71.

Adriaanse, M. A., Gollwitzer, P. M., De Ridder, D. T. D., De Wit, J. B. F., & Kroese, F. M. (2011). Breaking habits with implementation intentions: A test of underlying processes. *Personality and Social Psychology Bulletin, 37,* 502–513.

Adriaanse, M. A., Oettingen, G., Gollwitzer, P. M., Hennes, E. P., De Ridder, D. T. D., & De Wit, J. B. F. (2010). When planning is not enough: Fighting unhealthy snacking habits by mental contrasting with implementation intentions (MCII). *European Journal of Social Psychology, 40,* 1277–1293.

Adriaanse, M. A., Van Oosten, J. M. F., De Ridder, D. T. D., De Wit, J. B. F., & Evers, C. (2011). Planning what not to eat: Ironic effects of implementation intentions negating unhealthy habits. *Personality and Social Psychology Bulletin, 37,* 69–81.

Armitage, C. J. (2004). Evidence that implementation intentions reduce dietary fat intake: A randomized trial. *Health Psychology, 23,* 319–323.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50,* 248–287.

Bantel, K., & Jackson, S. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? *Strategic Management Journal, 10,* 107–124.

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). New York: Cambridge University Press.

Bargh, J. A., Gollwitzer, P. M., & Oettingen, G. (2010). Motivation. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of Social Psychology* (5th ed.). New York: Wiley.

Barry, D. (1991). Managing the bossless team: Lessons in distributed leadership. *Organizational Dynamics, 21,* 31–47.

Bayer, U. C., Achtziger, A., Gollwitzer, P. M., & Moskowitz, G. (2009). Responding to subliminal cues: Do if-then plans cause action preparation and initiation without conscious intent? *Social Cognition, 27,* 183–201.

Bayer, U. C., & Gollwitzer, P. M. (2007). Boosting scholastic test scores by willpower: The role of implementation intentions. *Self and Identity, 6,* 1–19.

Bayer, U. C., Gollwitzer, P. M., & Achtziger, A. (2010). Staying on track: Planned goal striving is protected from disruptive internal states. *Journal of Experimental Social Psychology, 146,* 505–514.

Bottom, W. P., & Studt, A. (1993). Framing effects and the distributive aspect of integrative bargaining. *Organizational Behavior and Human Decision Processes, 56,* 459–474.

Brandstätter, V., Lengfelder, A., & Gollwitzer, P. M. (2001). Implementation intentions and efficient action initiation. *Journal of Personality and Social Psychology, 81,* 946–960.

Brehm, J. W. (1966). *A theory of psychological reactance.* New York: Academic Press.

Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *Academy of Management Review, 17,* 39–61.

Brunstein, J. C., & Gollwitzer, P. M. (1996). Effects of failure on subsequent performance: The importance of self-defining goals. *Journal of Personality and Social Psychology, 70,* 395–407.

Burgess, P. W., Dumontheil, I., & Gilbert, S. J. (2007). The gateway hypothesis of rostral PFC (Area 10) function. *Trends in Cognitive Sciences, 11,* 290–298.

Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment, 48,* 306–307.

Carte, T., Chidambaram, L., & Becker, A. (2006). Emergent leadership in self-managed virtual teams: A longitudinal study of concentrated and shared leadership behaviors. *Group Decision and Negotiation, 15,* 323–343.

Carver, C., & Scheier, M. (1998). *On the self-regulation of behavior.* New York: Cambridge University Press.

Chen, G., Sharma, P. N., Edinger, S. K., Shapiro, D. L., & Farh, J.-L. (2011). Motivating and demotivating forces in teams: Cross-level influences of empowering leadership and relationship conflict. *Journal of Applied Psychology, 96,* 541–557.

Christiansen, S., Oettingen, G., Dahme, B., & Klinger, R. (2010). A short goal-pursuit intervention to improve physical capacity: A randomized clinical trial in chronic back pain patients. *Pain, 149,* 444–452.

Cohen, A-L., Bayer, U. C., Jaudas, A., & Gollwitzer, P. M. (2008). Self-regulatory strategy and executive control: Implementation intentions modulate task switching and Simon task performance. *Psychological Research, 72,* 12–26.

De Dreu, C. K. W. (2002). Team innovation and team effectiveness: The importance of minority dissent and reflexivity. *European Journal of Work and Occupational and Organizational Psychology, 70,* 285–298.

De Groot, T., & Kiker, D. S. (2003). A meta-analysis of the non-monetary effects of employee health management programs. *Human Resource Management, 42,* 53–69.

De Simone, R. L., & Harris, D. M. (1998). *Human resource development* (2nd ed.). Orlando, FL: Dryden Press.

Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2011). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology, 31*, 17–26.

Foster, L. F., & Coovert, M. D. (2006). Understanding and developing virtual computer-supported cooperative work teams. In C. Bowers, E. Salas, and F. Jentsch (Eds.), *Creating high-tech teams: Practical guidance on work performance and technology* (pp. 213–241). Washington: APA.

Frayne, C. A., & Latham, G. P. (1987). Application of social learning theory to employee self-management of attendance. *Journal of Applied Psychology, 72*, 387–392.

Gilbert, S. J., Gollwitzer, P. M., Cohen, A.-L., Oettingen, G., & Burgess, P. W. (2009). Separable brain systems supporting cued versus self-initiated realization of delayed intentions. *Journal of Experimental Psychology: Learning Memory and Cognition, 35*, 905–915.

Gendolla, G. H. E., & Wright, R. A. (2005). Motivation in social settings studies of effort-related cardiovascular arousal. In J. P. Forgas, K. D. Williams, & S. M. Laham (Eds.), *Social motivation: Conscious and unconscious processes* (pp. 71–90). New York: Cambridge University Press.

Gollwitzer, A., Oettingen, G., Kirby, T., Duckworth, A., & Mayer, D. (2011). Mental contrasting facilitates academic performance in school children. *Motivation and Emotion, 35*, 403–412.

Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review of Social Psychology, 4*, 141–185.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*, 493–503.

Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal striving. *Journal of Personality and Social Psychology, 73*, 186–199.

Gollwitzer, P. M., & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins and A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 361–399). New York: Guilford.

Gollwitzer, P. M., & Oettingen, G. (2011). Planning promotes goal striving. In K. D. Vohs and R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed., pp. 162–185). New York: Guilford.

Gollwitzer, P. M., & Schaal, B. (1998). Metacognition in action: The importance of implementation intentions. *Personality and Social Psychology Review, 2*, 124–136.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology, 38*, 69–119.

Henderson, M. D., Gollwitzer, P. M., & Oettingen, G. (2007). Implementation intentions and disengagement from a failing course of action. *Journal of Behavioral Decision Making, 20*, 81–102.

Holland, R. W., Aarts, H., & Langendam, D. (2006). Breaking and creating habits on the working floor: A field-experiment on the power of implementation intentions. *Journal of Experimental Social Psychology, 42*, 776–783.

Johannessen, K. B., Oettingen, G., & Mayer, D. (2012). Mental contrasting of a dieting wish improves self-reported health behavior. *Psychology and Health, 27*, 43–58.

Kappes, A., Oettingen, G., & Pak, H. (2012). Mental contrasting and the self-regulation of responding to negative feedback. *Personality and Social Psychology Bulletin, 38*, 845–856.

Kappes, A., & Oettingen, G. (2012). *The emergence of goal commitment: Mental contrasting connects future and reality.* Manuscript submitted for publication.

Kappes, A., Singmann, H., & Oettingen, G. (2012). Mental contrasting instigates behavior by linking reality with instrumental behavior. *Journal of Experimental Social Psychology, 48,* 811–818.

Kappes, H. B., Oettingen, G., Mayer, D., & Maglio, S. (2011). Sad mood promotes self-initiated mental contrasting of future and reality. *Emotion, 11,* 1206–1222.

Kirk, D., Gollwitzer, P. M., & Carnevale, P. J. (2011). Self-regulation in ultimatum bargaining: Goals and plans help accepting unfair but profitable offers. *Social Cognition, 29,* 528–546.

Kirk, D., Oettingen, G., & Gollwitzer, P. M. (2011). Mental contrasting promotes integrative bargaining. *International Journal of Conflict Management, 22,* 324–341.

Kirk, D., Oettingen, G., & Gollwitzer, P. M. (in press). Promoting integrative bargaining: Mental contrasting with implementation intentions. *International Journal of Conflict Management.*

Kirkman, B. L., & Mathieu, J. E. (2005). The dimensions and antecedents of team virtuality. *Journal of Management, 31,* 700–718.

Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction. *Academy of Management Journal, 47,* 175–192.

Knäuper, B., Roseman, M., Johnson, P., & Krantz, L. (2009). Using mental imagery to enhance the effectiveness of implementation intentions. *Current Psychology, 28,* 181–186.

Koestner, R., Horberg, E. J., Gaudreau, P., Powers, T. A., Di Dio, P., Bryan, C. et al. (2006). Bolstering implementation plans for the long haul: The benefits of simultaneously boosting self-concordance or self-efficacy. *Personality and Social Psychology Bulletin, 32,* 1547–1558.

Latham, G. P., & Saari, L. M. (1979). The effects of holding goal difficulty constant on assigned and participatively set goals. *Academy of Management Journal, 22,* 63–168.

Lewin, K., Dembo, T., Festinger, L., & Sears, P. S. (1944). Level of aspiration. In J. McHunt (Ed.), *Personality and the behaviour disorders* (Vol. 1, pp. 333–378). New York: Ronald.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance.* Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57,* 705–717.

Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Direction in Psychological Science, 15,* 265–268.

Maes, S., & Gebhardt, W. A. (2000). Self-regulation and health behavior: The Health Behavior Goal model. In: M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 343–368). San Diego, CA: Academic Press.

Manz, C. C. (1986). Self-leadership: Toward an expanded theory of self-influence processes in organizations. *Academy of Management Review, 11,* 585–600.

Mendoza, S. A., Gollwitzer, P. M., & Amodio, D. M. (2010). Reducing the expression of implicit stereotypes: Reflexive control through implementation intentions. *Personality and Social Psychology Bulletin, 36,* 512–523.

Miles, J. D., & Proctor, R. W. (2008). Improving performance through implementation intentions: Are preexisting response biases replaced? *Psychonomic Bulletin and Review, 15,* 1105–1110.

Milne, S., Orbell, S., & Sheeran, P. (2002). Combining motivational and volitional interventions to promote exercise participation: Protection motivation theory and implementation intentions. *British Journal of Health Psychology, 7,* 163–184.

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin, 126,* 247–259.

Nederveen Pieterese, A., van Knippenberg, D., & van Ginkel, W. P. (2011). Diversity in goal orientation, team reflexivity, and team performance. *Organizational Behavior and Human Decision Processes, 114*, 153–164.

O'Connell, M. S., Doverspike, D., & Cober, A. B. (2002). Leadership and semiautonomous work team performance: A field study. *Group and Organization Management, 27*, 50–65.

Oettingen, G. (2000). Expectancy effects on behavior depend on self-regulatory thought. *Social Cognition, 18*, 101–129.

Oettingen, G. (2012). Future thought and behavior change. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology, 23*, 1–63.

Oettingen, G., & Gollwitzer, P. M. (2001). Goal setting and goal striving. In A. Tesser and N. Schwarz (Eds.), *The Blackwell handbook of social psychology* (pp. 329–347). Oxford, England: Blackwell.

Oettingen, G., & Gollwitzer, P. M. (2010). Strategies of setting and implementing goals: Mental contrasting and implementation intentions. In J. E. Maddux & J. P. Tangney (Eds.), *Social psychological foundations of clinical psychology* (pp. 114–135). New York: Guilford.

Oettingen, G., Hönig, G., & Gollwitzer, P. M. (2000). Effective self-regulation of goal attainment. *International Journal of Educational Research, 33*, 705–732.

Oettingen, G., Marquardt, M. K., & Gollwitzer, P. M. (2012). Mental contrasting turns positive feedback on creative potential into successful performance. *Journal of Experimental Social Psychology, 48*, 990–996.

Oettingen, G., Mayer, D., & Brinkmann, B. (2010). Mental contrasting of future and reality: Managing the demands of everyday life in health care professionals. *Journal of Personnel Psychology, 9*, 138–144.

Oettingen, G., Mayer, D., Sevincer, T. A., Stephens, E. J., Pak, H., & Hagenah, M. (2009). Mental contrasting and goal commitment: The mediating role of energization. *Personality and Social Psychology Bulletin, 35*, 498–512.

Oettingen, G., Mayer, D., & Thorpe, J. S. (2010). Self-regulation of commitment to reduce cigarette consumption: Mental contrasting of future with reality. *Psychology and Health, 25*, 961–977.

Oettingen, G., Mayer, D., Thorpe, J. S., Janetzke, H., & Lorenz, S. (2005). Turning fantasies about positive and negative futures into self-improvement goals. *Motivation and Emotion, 29*, 237–267.

Oettingen, G., Pak, H., & Schnetter, K. (2001). Self-regulation of goal-setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology, 80*, 736–753.

Oettingen, G., Stephens, E. J., Mayer, D., & Brinkmann, B. (2010). Mental contrasting and the self-regulation of helping relations. *Social Cognition, 28*, 490–508.

O'Hara-Devereaux, M., & Johansen, R. (1994). *Global work: bridging distance, culture, and time.* San Francisco, CA: Jossey-Bass.

Okhuysen, G. A., & Eisenhardt, K. M. (2002). Integrating knowledge in groups: How simple formal interventions help. *Organization Science, 13*, 370–386.

Orbell, S., Hodgkins, S., & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin, 23*, 953–962.

Orbell, S., & Sheeran, P. (2000). Motivational and volitional processes in action initiation: A field study of the role of implementation intentions. *Journal of Applied Social Psychology, 30*, 780–797.

Owens, S. G., Bowman, C. G., & Dill, C. A. (2008). Overcoming procrastination: The effect of implementation intentions. *Journal of Applied Social Psychology, 38,* 366–384.

Papies, E., Aarts, H., & de Vries, N. K. (2009). Grounding your plans: Implementation intentions go beyond the mere creation of goal-directed associations. *Journal of Experimental Social Psychology, 45,* 1148–1151.

Parks-Stamm, E. J., Gollwitzer, P. M., & Oettingen, G. (2007). Action control by implementation intentions: Effective cue detection and efficient response initiation. *Social Cognition, 25,* 248–266.

Powers, T. A., Koestner, R., & Topciu, R. A. (2005). Implementation intentions, perfectionism, and goal progress: Perhaps the road to hell is paved with good intentions. *Personality and Social Psychology Bulletin, 31,* 902–912.

Ronan, W. W., Latham, G. P., & Kinne, S. B. (1973). Effects of goal setting and supervision of worker behavior in an industrial setting. *Journal of Applied Psychology, 58,* 302–307.

Rutter, D. R., Steadman, L., & Quine, L. (2006). An implementation intentions intervention to increase uptake of mammography. *Annals of Behavioral Medicine, 32,* 127–134.

Ryan, R. M., and Frederick, C. M. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality,* 65, 529–565.

Schweiger Gallo, I., Keil, A., McCulloch, K. C., Rockstroh, B., & Gollwitzer, P. M. (2009). Strategic automation of emotion regulation. *Journal of Personality and Social Psychology, 96,* 11–31.

Sevincer, A. T., & Oettingen, G. (2012). *Mental contrasting of future and reality: Prevalence, predictive validity, and determinants.* Under revision.

Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (Vol. 12, pp. 1–30). Chichester: Wiley.

Sheeran, P., & Orbell, S. (1999). Implementation intentions and repeated behavior: Augmenting the predictive validity of the theory of planned behavior. *European Journal of Social Psychology, 29,* 349–369.

Sheeran, P., & Orbell, S. (2000). Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychology, 19,* 283–289.

Sheeran, P., Webb, T. L., & Gollwitzer, P. M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin, 31,* 87–98.

Sheeran, P., Milne, S. E., Webb, T. L., & Gollwitzer, P. M. (2005). Implementation intentions. In M. Conner & P. Norman (Eds.), *Predicting health behavior* (2nd ed., pp. 276–323). Buckingham: Open University Press.

Sitzmann, T., & Ely, K. (2010). Sometimes you need a reminder: The effects of prompting self-regulation on regulatory processes, learning, and attrition. *Journal of Applied Psychology, 95,* 132–144.

Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology, 95,* 965–997.

Stadler, G., Oettingen, G., & Gollwitzer, P. M. (2009). Physical activity in women. Effects of a self-regulation intervention. *American Journal of Preventive Medicine, 36,* 29–34.

Stadler, G., Oettingen, G., & Gollwitzer, P. M. (2010). Intervention effects of information and self-regulation on eating fruits and vegetables over two years. *Health Psychology, 29,* 274–283.

Stewart, B. D., & Payne, B. K. (2008). Bringing automatic stereotyping under control: Implementation intentions as efficient means of thought control. *Personality and Social Psychology Bulletin, 34,* 1332–1345.

Strecher, V. J., Seijts, G. H., Kok, G. J., Latham, G. P., Glasgow, R. DeVellis, B., Meertens R. M., & Bulger, D. W. (1995). Goal setting as a strategy for health behavior change. *Health Education Quarterly, 22,* 190–200.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72,* 271–322.

Triandis, H. C. (1980). Values, attitudes, and interpersonal behavior. In H. Howe & M. Page (Eds.), *Nebraska symposium on motivation* (Vol. 27, pp. 195–259). Lincoln, NB: University of Nebraska Press.

Trötschel, R., & Gollwitzer, P. M. (2007). Implementation intentions and the willful pursuit of prosocial goals in negotiations. *Journal of Experimental Social Psychology, 43,* 579–589.

Tyran, K. L., Tyran, C. K., & Sheperd, M. (2003). Exploring emerging leadership in virtual teams. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for virtual team effectiveness* (pp. 187 ff.). San Francisco, CA: Jossey-Bass.

van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annual Review of Psychology, 58,* 515–541.

Webb, T. L., Christian, J., & Armitage, C. J. (2007). Helping students turn up for class: Does personality moderate the effectiveness of an implementation intention intervention? *Learning and Individual Differences, 17,* 316–327.

Webb, T. L., & Sheeran, P. (2003). Can implementation intentions help to overcome ego-depletion. *Journal of Experimental Social Psychology 39,* 279–286.

Webb, T. L., & Sheeran, P. (2004). Identifying good opportunities to act: Implementation intentions and cue discrimination. *European Journal of Social Psychology, 34,* 407–419.

Webb, T. L., & Sheeran, P. (2007). How do implementation intentions promote goal attainment? A test of component processes. *Journal of Experimental Social Psychology, 43,* 295–302.

Webb, T. L., & Sheeran, P. (2008). Mechanisms of implementation intention effects: The role of goal intentions, self-efficacy, and accessibility of plan components. *British Journal of Social Psychology, 47,* 373–395.

Webb, T. L., Sheeran, P., & Luszczynska, A. (2009). Planning to break unwanted habits: Habit strength moderates implementation intention effects on behaviour change. *British Journal of Social Psychology, 48,* 507–523.

Wicklund, R. A., Slattum, V., & Solomon, E. (1970). Effects of implied pressure toward commitment on ratings of choice alternatives. *Journal of Experimental Social Psychology, 6,* 449–457.

Wieber, F., & Gollwitzer, P. M. (2010). Overcoming procrastination through planning. In C. Andreou & M. D. White (Eds.), *The thief of time: Philosophical essays on procrastination* (pp. 185–205). New York: Oxford University Press.

Wieber, F., Odenthal, G., & Gollwitzer, P. M. (2010). Self-efficacy feelings moderate implementation intention effects. *Self and Identity, 9,* 177–194.

Wieber, F., & Sassenberg, K. (2006). I can't take my eyes off of it—attention attraction of implementation intentions. *Social Cognition, 24,* 723–752.

Wright, R. A., & Kirby, L. D. (2001). Effort determination of cardiovascular response: An integrative analysis with applications in social psychology. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 33, pp. 255–307). San Diego, CA: Academic Press.

Wood, W., & Neal, D. T. (2007). A new look at habits and the babit–goal interface. *Psychological Review, 114,* 842–862.

Yanar, B., Budworth, M., & Latham, G. P. (2009). The effect of training in verbal self guidance on self-efficacy and reemployment of Turkish women. *Applied Psychology: An International Review, 58,* 586–601.