

# 26 Mental Contrasting of the Future and Reality to Master Negative Feedback

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## INTRODUCTION

Negative feedback is an inevitable part of successful goal attainment. For example, one sets out to jog 3 miles but has to stop after 1.5 miles, gasping for breath. This feedback may be acknowledged as important information suggesting that one needs to get into better shape. However, one may also interpret it as an indicator of low athleticism, leading one to give up on the desire to establish a regular exercise routine. Kurt Lewin (1948) described how such dilemmas capture the paradoxical nature of the pursuit of wish fulfillment. For successful wish fulfillment, people need to acknowledge negative feedback without letting it harm their positive beliefs in themselves or their beliefs about what the future holds for them.

Our chapter, in three parts, addresses mental contrasting of the future and reality as a means of effectively responding to negative feedback. First, we provide an overview of research on mental contrasting as a strategy of realizing one's wishes by facilitating goal commitment and goal striving. Second, we show that mental contrasting enables people to extract meaningful information from negative feedback without losing their positive self-view or their optimistic future orientation. Finally, we describe research speaking to the transfer of mental contrasting effects across tasks and life domains and discuss the implications of these findings for using mental contrasting as a self-regulatory tool that yields benefits for performance and achievement beyond attaining the specified goal.

## EFFECTS ON GOAL COMMITMENT

A long tradition of research suggests that people commit to and strive for goals that are desirable and feasible (e.g., Atkinson, 1957; Bandura, 1997; Faude, Wuerz, & Gollwitzer, Chapter 5, this volume; Gollwitzer, 1990; Klingler, 1975, Chapter 15, this volume; Locke & Latham, 1990). *Desirability* comprises the summarized expectations of the pleasantness of short-term and long-term consequences of goal attainment (Heckhausen, 1977). *Feasibility* is defined as expectations that future events and actions will occur (Gollwitzer, 1990). Prominent examples include expectations of whether one can execute a behavior necessary for realizing a specific outcome (i.e., self-efficacy expectations; Bandura, 1977), expectations that a behavior will lead to a specified outcome (i.e., outcome expectations, Bandura, 1977; instrumentality beliefs, Vroom, 1964), and judgments about the general probability of a certain outcome (i.e., general expectations; Heckhausen, 1991; Oettingen & Mayer, 2002).

Self-regulatory approaches to goal attainment spell out the processes by which perceived desirability and feasibility are translated into goal commitment and goal striving (e.g., Oettingen, Pak, & Schnetter, 2001) and how goal striving can be made more effective to increase the rate of goal attainment (e.g., Gollwitzer & Sheeran, 2006). Most self-regulation research focuses on how to

increase the rate of goal attainment rather than on the question of how desirability and feasibility are translated into goal commitment and goal striving. However, the model of fantasy realization (Oettingen, 1999; Oettingen et al., 2001), addressing the question of how goal commitment emerges as a function of self-regulatory processes, identifies a mode of thinking about the future that translates feasibility into goal commitment with subsequent goal striving: mental contrasting of a desired future (e.g., becoming a medical doctor) with the reality that impedes its realization (e.g., having not taken the necessary exams yet).

In mental contrasting, people first imagine the attainment of a desired future (e.g., becoming a lawyer, writing an article) and thereafter reflect on the present reality that stands in the way of attaining the desired future (e.g., excessive partying, having little time). Thus, contrasting fantasies about the future with reflections on reality is a problem-solving strategy: The person wants to achieve a desired future and needs to engage in actions to realize it. In their theory of problem solving, Newell and Simon (1972) distinguished between an objective and a subjective problem space. The objective problem space is defined by the demands of the task. In the case of realizing a desired future, the objective problem space is composed of the desired future and the impediments to getting there. The subjective problem space is defined by the internal representations of the problem. Mental contrasting matches the subjective problem space with the objective problem space and thereby enables people to recognize that they need to take action to achieve the desired future. Therefore, expectations of attaining the desired future become activated and determine the person's commitment and striving to attain the desired future.

Specifically, conjointly envisioning the future and reality makes both simultaneously accessible and links them in a manner suggesting that reality impedes the realization of the desired future. This linkage thus elicits a necessity to act that in turn activates expectations of success. Subsequently, these expectations set the course for a person's goal commitment and goal striving: When expectations 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 modes of thinking about the future, both of which fail to lead to goal commitment and goal striving guided by the perceived likelihood of attaining the desired future. People may either solely envision the attainment of the wished-for future (i.e., indulging) or solely reflect on the negative reality (i.e., dwelling). Considered again from a problem-solving perspective (Newell & Simon, 1972), both modes of thinking create a subjective problem space that does not correspond to the objective problem space. Because the objective problem space is not subjectively accessible, a discrepancy or tension between future and reality is not perceived, and thus there is no signal indicating that actions would be necessary or instrumental to achieve the desired future. Therefore, expectations of success do not become activated, and goal commitment and goal striving do not reflect the perceived likelihood of reaching the desired future. The level of goal striving is determined by the a priori commitment that the person holds with respect to attaining the desired future. Thus, it is mental contrasting, and not indulging and dwelling, that succeeds in strengthening goal commitment with subsequent goal striving when expectations of success are high and in weakening it when expectations of success are low.

## EMPIRICAL EVIDENCE

A multitude of studies have tested the effects of mental contrasting, 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). 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. Thereafter, they named aspects that they associated with excelling in mathematics (e.g., feelings of pride, increasing job prospects) and aspects of reality that might impede its fulfillment (e.g., being distracted by peers, feeling lazy). Subsequently, three experimental conditions were established to correspond with the three modes

of thought specified by the model. In the mental contrasting condition, participants elaborated two positive aspects of the future and two aspects of reality, in alternating order, beginning with a positive aspect of the future; in the indulging condition, participants elaborated four positive aspects of the future; and in the dwelling condition, participants elaborated four negative aspects of reality. As a dependent variable, participants indicated how energized they felt with respect to excelling in mathematics (e.g., how active, eventful, energetic). Furthermore, 2 weeks after the experiment, participants' teachers reported how much effort each student had invested for the last 2 weeks and provided each student with a grade for that time period. As predicted, only in the mental contrasting group did the students feel energized, exert effort, and earn grades based on their expectations. Participants in the mental contrasting group with high expectations of success felt the most energized, invested the most effort, and received the highest grades. Conversely, participants in the mental contrasting group 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 did not differ in their moderate and expectancy-independent feelings of energization. This was also true for teacher-rated effort and grades.

This pattern of results was replicated in a variety of studies, including ones pertaining 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), improving one's self (Oettingen et al., 2005, Study 1), and idiosyncratic interpersonal wishes of great importance (Oettingen et al., 2001, Study 1 and 3). Furthermore, goal striving 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). Such indicators were measured via self-report or observations either immediately after or weeks after the experiment. 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, whereas given low expectations, people showed the least goal commitment and goal striving. Participants who indulged in positive images about the future or dwelled on negative images of reality moderately committed to and strived toward realizing their wishes without considering their expectations of success.

## **MECHANISMS**

Two mechanisms mediate the translation of expectations into goal attainment: planning and energization (Oettingen & Mayer, 2007; Oettingen, Mayer, Sevincer, Stephens, & Hagenah, 2008). Research on the cognitive mechanism of planning assumes that planning out the route to goal attainment facilitates actual goal attainment (e.g., Armor & Taylor, 2003; Faude et al., Chapter 5, this volume; Gollwitzer, 1999; Gollwitzer, Fujita, & Oettingen, 2004). Research on the motivational mechanism of energization is based on the idea that energization helps to initiate and maintain goal striving, a resource-demanding endeavor (e.g., Locke & Latham, 2002; Muraven, Tice, & Baumeister, 1998).

### **Cognitive Mechanism of Planning**

Planning is vital to successful goal attainment because it helps people to overcome volitional problems such as failing to get started, getting derailed during the course of goal-directed actions, or overextending oneself in ongoing goal striving (Gollwitzer & Sheeran, 2006). Planning—that is, preparing oneself for future actions—also fosters positive self-perceptions needed for successful goal attainment. Specifically, planning in the form of furnishing one's goal striving with implementation intentions (Gollwitzer, 1999) alleviates the volitional problems that occur during goal striving (meta-analysis by Gollwitzer & Sheeran, 2006). Framed in an if-then format, implementation intentions link a critical situation (e.g., an obstacle) to an instrumental goal-directed response (e.g.,

aimed at overcoming said obstacle). Control of the response is thereby delegated to anticipated cues that in turn elicit the response automatically. As a consequence, planning out one's route to goal attainment in the form of implementation intentions fosters successful goal attainment. Further, when compared to deliberating a personal problem, planning fosters positive self-evaluations (e.g., Armor & Taylor, 2003; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995). Such positive self-evaluations, even if illusory, enhance the likelihood of goal attainment (Taylor & Brown, 1988).

When the present reality is recognized as an obstacle to attaining the desired future and people expect to attain the desired future, they commit themselves to overcoming the obstacle and are thereby inclined to make plans that spell out what needs to be done to overcome the obstacle (Oettingen, 2000; Oettingen et al., 2001). Indeed, when obstacles and threats are salient, people will include them in their preparatory activities (Armor & Taylor, 1998). The procedure of mental contrasting makes obstacles salient, such that when obstacles are recognized as surmountable people commit themselves to overcoming them. As a result, individuals who have used the strategy of mental contrasting should generate efficient plans. By using if-then plans (implementation intentions), perceived obstacles can be linked to an instrumental goal-directed action to overcome them. For example, a person who has the goal of doing well on an exam might form the following plan: "If the phone rings and a friend asks me to go out, then I will make an appointment with him after the exam." Consequently, mental contrasting should lead to expectancy-dependent planning that in turn fosters goal attainment.

To test the hypothesis that mental contrasting leads to expectancy-dependent planning, which subsequently guides goal attainment, participants first named an important interpersonal wish (e.g., solving a conflict with a friend, being friendlier to parents) and thereafter engaged in mental contrasting, indulging, dwelling, or reverse mental contrasting (Oettingen & Mayer, 2007), a fourth condition in which participants started first with the elaboration of the reality followed by the elaboration of the desired future. By reversing the sequence of mental contrasting, the reality should not be perceived as standing in the way of fantasy realization; therefore, we expected no expectancy-dependent planning or goal attainment (for supportive findings, see Oettingen et al., 2001). Participants then rated the extent to which they successfully achieved their goals. To measure the mediating variable (i.e., planning), two independent raters content analyzed participants' elaborations of the negative aspects of the reality in the mental contrasting, dwelling, and reverse-contrasting conditions to assess the number of elicited implementation intentions. A significant benefit of this method is its ability to capture participants' on-line plan formation during the process of mental contrasting versus noncontrasting modes of thought. Because negative aspects of the present reality did not emerge in the indulging condition, plan formation in response to negative aspects of reality could not be assessed in this group.

As predicted, self-rated success in goal achievement showed expectancy dependence in the mental contrasting condition but not in the nonmental contrasting conditions. Importantly, expectancy-congruent plan formation also emerged in the mental contrasting condition but not in the dwelling and reverse mental contrasting conditions. Specifically, the formation of if-then plans (i.e., implementation intentions; Gollwitzer, 1999) showed the same pattern of results as perceived goal achievement and predicted participants' perceived goal achievement over and above the interaction of expectations and experimental condition. In addition, in the mental contrasting condition, forming implementation intentions fully explained the relation between expectations of success and perceived goal achievement. Apparently, mental contrasting allows people with high expectations of success to become not only committed to realizing their wishes, but also triggers plans directed toward overcoming the anticipated obstacles and thereby helps people to perceive themselves as successfully attaining their goals (Oettingen & Mayer, 2007). Assuming that individuals have reasonably accurate expectancies of success (i.e., perceived probabilities of success), expectancy-independent self-evaluations in noncontrasting participants may pose a problem not only for inadequate exertion of effort but also for expectancy appraisal in the future. Performance evaluations failing to

respect expectations of success should pave the way to inaccurate appraisals of further probabilities of success.

### Motivational Mechanism of Energization

As a motivational mechanism, mental contrasting should instigate expectancy-dependent energization, which then guides goal commitment and goal striving. Motivational research traditionally emphasized the importance of energization for instigating goal-directed action. In line with this research tradition, recent work underlines the importance of energization for the activation and strength of behavior (Brehm & Self, 1989; Locke & Latham, 2002; Wright, 1996). *Energization* is also referred to as activity incitement (Brunstein & Gollwitzer, 1996). In addition, in his theory of motivation, Brehm specified the conditions of energy mobilization (e.g., Brehm & Self, 1989). The theory assumes that energization as an expression of effort furthers goal-directed action in line with a person's needs, expectations, and perceived importance of success. People will mobilize energy in line with the demands of the task as long as they perceive successful goal striving as possible and worthwhile.

Mentally contrasting a desired future induces a necessity to act and thereby activates expectations of success. People with high expectations of success should mobilize effort toward reaching their goal, while people with low expectations and weak commitment should mobilize only little effort. Indeed, energization as an indicator of effort mobilization has been observed as a mediator of mental contrasting effects in two studies (Oettingen et al., 2008). One study assessed feelings of energization via self-report, and another study measured energization via systolic blood pressure (SBP), a reliable indicator of motivational arousal (Gendolla & Wright, 2005; Wright, 1996). In the first study, using an acute stress paradigm (i.e., videotaped public speaking; al' Absi et al., 1997), persistence and quality of performance were observed 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 researchers develop a measure of professional skills for a human resource department. Participants were randomly assigned to either a mental contrasting or an indulging condition. Initial feelings of energization were measured via self-report measure (e.g., how energized they felt when thinking about giving their talk), and participants' evaluations of their own presentations were gauged by asking them to rate their actual performance. Persistence was indicated by the duration of each participant's presentation in minutes, and quality of performance was measured via independent raters' evaluations of the quality of the videotaped content (Oettingen et al., 2008, Study 2).

Again, and consistent with findings of previous mental contrasting studies, individuals in the mental contrasting group, contrary to those in the indulging condition, evidenced a strong link between perceived expectations of success and goal commitment as measured by subjective self-evaluations of performance and objective ratings of the videotaped presentations. Moreover, feelings of energization not only showed the same pattern of results as the goal-commitment variables but also predicted objective and subjective presentation quality over and above the interactive effect of experimental condition (i.e., mental contrasting or indulging) and expectations. Finally, in the mental contrasting condition, feelings of energization fully explained the relationship between expectations of success and both subjective and objective performance quality.

Physiological data substantiate these findings of energization as a mediating mechanism. Building on findings that cardiovascular responses are a valid indicator of effort expenditure and reliably relate to applying instrumental behavior (Obrist, 1981; Wright, 1996), mental contrasting versus indulging effects on SBP were investigated (Oettingen et al., 2008, Study 1). Systolic blood pressure responds to the degree of task demands (Gendolla, 1999; Wright, 1996), while diastolic blood pressure and heart rate do less so, showing that it is particularly a strong sympathetic influence on the heart that relates to energization and effort expenditure. Therefore, Oettingen et al., (2008, Study 1) investigated SBP as a mediator of the effect of mental contrasting versus indulging on goal com-

mitment. In this study, SBP was collected at baseline and during the thought processes of mental contrasting versus indulging. Changes in SBP from baseline showed the familiar pattern of results. Specifically, changes in energization and effort expenditure as measured by SBP from before to during the mental contrasting versus indulging procedures emerged as a motivational mediator of the expectation–goal–commitment effects.

These results also relate to the biopsychosocial model of challenge versus threat by Blascovich and Tomaka (1996). The authors postulated and found that making challenge versus threat salient in the laboratory (situational demands meet vs. exceed resources) produces distinct sets of physiological responses (Tomaka, Blascovich, Kibler, & Ernst, 1997), which in turn predict successful performance (e.g., in the athletic domain; Blascovich, Seery, Mugridge, Norris, & Weisbuch, 2004). Future research may investigate whether inducing challenge versus threat by activating expectations through mental contrasting would also lead to the predicted physiological responses and subsequent performance effects.

### SUMMARY

The model of fantasy realization identifies mental contrasting as an effective way of translating one's expectations of success into goal commitment and goal striving, and numerous empirical studies supported this assumption. In addition, the differential effects of mental contrasting versus other strategies on expectation-dependent goal attainment were mediated by planning and energization. In the next section, we explore whether mental contrasting enables people to effectively respond to negative feedback.

### EFFECTS ON RESPONDING TO NEGATIVE FEEDBACK

According to Lewin (1948), mastering negative feedback is a paradoxical task. On the one hand, persistent and effective goal striving after negative feedback demands keeping an optimistic future outlook and maintaining confidence in oneself. On the other hand, successful goal striving also demands realistic appraisal of the present situation to ensure progress toward the goal. "One might say that this paradox—to be realistic, and at the same time be guided by high goals—lies at the heart of the problem" (1948, p. 119). Following these considerations, we assume that when people are confronted with negative feedback, they need to acknowledge it to extract important information for subsequent goal striving, but they also need to protect their positive self-view and optimistic future outlook to stay motivated on their way to goal achievement. Consequently, the forthcoming research focuses on the role of mental contrasting with regard to the three critical features of upholding goal striving in the face of negative feedback: (a) processing goal-relevant information embedded in negative feedback; (b) protecting one's positive self-view in the face of negative feedback; and (c) maintaining an optimistic future outlook in one's attributions for negative feedback. We hypothesize that mentally contrasting feasible wishes with potential obstacles of reality will enable people to achieve all three: to effectively process negative feedback on the one hand but also to maintain one's positive self-view as well as optimistic outlook. We argue that mental contrasting may achieve these benefits by fostering commitment, facilitating if-then plans, and increasing energization.

First, research on goal commitment strengthens the hypothesis that mental contrasting feasible wishes will support the mastery of negative feedback. An important feature of mental contrasting is that it translates high expectations about achieving a desired future into strong goal commitments (Oettingen, 2000; Oettingen et al., 2001). When people are strongly committed to a certain goal, they react with increased effort when facing negative feedback on their way to goal achievement (Gollwitzer, 1990; Wright, 1996). For example, Wicklund and Gollwitzer (1982; Brunstein & Gollwitzer, 1996), in their model of symbolic self-completion, postulated and observed that negative feedback on a task relevant to participants' self-defining goals (i.e., goals people are committed to) led to enhanced performance on a subsequent task relevant to the same self-defining goals. Con-

versely, participants who were confronted with negative feedback on a task not relevant to their self-definitions did not enhance their effort. These findings suggest that negative feedback only leads to enhanced performance if it is relevant to goals to which people have firmly committed. Similarly, Klinger (1975; Chapter 15, this volume) maintained that when people have committed to a certain goal (i.e., when they have a current concern), they increase their effort in the face of negative feedback. Finally, Locke and Latham (1990) included in their definition of commitment the degree to which the individual maintains a certain goal when negative feedback occurs (see also Latham & Locke, 1991).

Second, mental contrasting of feasible wishes facilitates planning one's goal striving in the form of if-then plans (Oettingen & Mayer, 2007). If-then plans or implementation intentions, in turn, equip people to link anticipated obstacles to goal-directed behavior, thus facilitating goal attainment (Gollwitzer, 1999). Therefore, mental contrasting should ready people to process negative feedback as useful cues for specifying when, where, and how they may act in a goal-directed way.

Finally, mentally contrasting feasible wishes facilitates energization as measured by self-report and physiological indicators (Oettingen et al., 2008). Energization, in turn, equips people to perceive negative feedback not as failure, but rather as a challenge (Dweck & Leggett, 1988; Wright, 1996). Therefore, mental contrasting should ready people to confront challenge and to process the information entailed in negative feedback rather than avoiding it as unwelcome news of failing one's goal striving.

However, mental contrasting of feasible wishes, inducing commitment, planning, and energization should not solely lead to the effective processing of negative feedback. As commitment, planning and energization foster a positive self-view and optimistic future outlook (Armor & Taylor, 2003; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995; Wright, 1996), mental contrasting of feasible wishes should help to effectively uphold people's positive self-view and future outlook in the face of negative feedback.

### PROCESSING INFORMATION ENTAILED IN NEGATIVE FEEDBACK

Successfully handling negative feedback requires extracting meaningful knowledge from it. For example, being short of breath may motivate one to exercise more often and eventually improve one's physical fitness and shape. Such information may help one to detect errors and adjust behavior effectively (Audia & Locke, 2003), to reduce uncertainty about the behavior and the outcome (Ashford, 1986), and to help individuals to identify ineffective behaviors (Ilgen, Fisher, & Taylor, 1979). Moreover, negative feedback helps people to decide which skills need to be improved and how these skills can be improved (Dweck & Leggett, 1988).

However, negative feedback may not be readily processed because the information entailed in the negative feedback may diminish one's self-view. Indeed, negative stimuli are less likely to be processed than positive stimuli (Taylor, 1991). For example, in one study (Sedikides & Green, 2000, Experiment 1), participants completed a personality inventory, received negative and positive feedback about their personality, and were then confronted with a surprise cued recall task. The recall of negative feedback was limited compared to the recall of positive feedback, even when it was innocuous (Sedikides & Green, 2000, Experiment 2), and this information neglect seems to have been caused by the expenditure of minimal processing resources to negative feedback (Sedikides & Green, 2000, Experiment 3). In addition, it has been found that people tend to neglect negative information regardless of whether their self-view is positive or negative (Sedikides & Green, 2004, Experiment 2).

Effective processing of negative feedback is crucial for successful goal attainment. We hypothesize that mentally contrasting a feasible wish energizes individuals and helps them to plan out their goal striving, fostering the effective processing of negative feedback. Mentally contrasting an unfeasible wish, on the other hand, should not elicit these beneficial consequences. Finally, indulging and dwelling should elicit negative feedback processing that is not moderated by perceived

chances of success. These hypotheses were tested in a simple cued recall experiment (Pak, Kappes, & Oettingen, 2008, Study 1).

Students were invited to participate in two supposedly independent studies. In the first part, they named an important interpersonal concern (e.g., improving relationships with one's parents, getting to know somebody) and reported their expectations of successfully dealing with it. In the second part, students completed an ostensible test of social competence. Specifically, students studied a variety of ambiguous pictures and then filled out semantic differential-type questions about their impressions of the people depicted in the pictures. After completing the test, participants received false feedback statements about their social competence that focused on situations in which participants supposedly show interpersonal weaknesses and failings. For example, some false feedback suggested that participants tend to react impulsively in stressful situations or that they tend to be tense in socially challenging situations. As such, the negative feedback was related to the domain of participants' interpersonal concerns. Finally, the three self-regulatory thought modes were induced by asking students to elaborate their previously named interpersonal concern by either alternating between aspects of future and reality (starting with a positive aspect of the future; mental contrasting), focusing only on aspects of the positive future (indulging) or focusing only on aspects of the negative reality (dwelling). At the end of the experiment, all participants were confronted with a surprise cued recall test for the feedback received, with the number of recalled adjectives describing participants' social weaknesses serving as the dependent variable.

Results showed that participants in the mental contrasting condition with high expectations for reaching the desired future were most successful in extracting meaningful information from the negative feedback: They recalled the highest number of adjectives describing their weaknesses and shortcomings. Participants in the mental contrasting condition with low expectations of success were least successful in extracting meaningful information: They recalled the lowest number of adjectives describing their weaknesses and shortcomings. Finally, participants in the indulging and dwelling groups recalled a moderate number of negative adjectives, and recall was independent of expectation level.

These results support the hypotheses that mental contrasting—by energizing people to realize their wishes, form plans, and committing them in line with their subjective probabilities of success—will lead people to process negative feedback in an expectancy-dependent way. Indulging and dwelling, on the other hand, induce people to process negative feedback irrespective of whether they judge their probabilities of success as high or low.

### **PROTECTING ONE'S SELF-VIEW AFTER NEGATIVE FEEDBACK**

Pak et al. (2008, Experiment 1) found that mental contrasting in light of high expectations led to better processing of negative goal-relevant information. Accessibility of negative goal-relevant information is important for successful goal attainment because it provides useful clues for how to pursue one's goal attainment. Another determinant of successful goal striving is a person's positive self-view, that is, evaluating oneself as being able and as possessing desired attributes. Taylor and Brown (1988) reviewed a large amount of research suggesting that people holding a positive self-view work harder and longer on task goals, perform more effectively, and reach their goals more successfully than do people holding a more negative self-view (see also Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000).

Although mental contrasting feasible wishes benefits goal attainment by promoting effective processing of negative feedback, it may incur the cost of damaging the individual's self-view. Indeed, trainees at the master's level experienced reduced positivity of their domain-specific self-views after they received false negative feedback about their abilities (Daniels & Larson, 2001). Dweck and Leggett (1988) also observed that negative feedback may lead to comparatively negative views about one's abilities. They found this to be particularly true for those who hold entity theories of intelligence (believing that ability is stable over time) as these individuals tend to set performance

goals for themselves (wanting to prove their abilities) and consequently interpret negative feedback as an indicator of failure or lack of ability. As a result, entity theorists tend to prematurely abandon their goal striving. On the other hand, when people hold incremental theories (believing that ability is malleable), and thus set learning goals for themselves (wanting to increase their abilities), they interpret negative feedback as a mere setback that provides useful information for increasing ability. As a result, incremental theorists tend to maintain their goal striving. These findings show not only that negative feedback may hurt one's positive self-view and subsequent goal striving, but also that mindsets may influence the way negative feedback has an impact on individuals' self-views (Dweck, 2006; see also Gollwitzer, 1990).

If the processing of negative feedback can damage one's positive self-view (Daniels & Larson, 2001; Dweck & Elliot, 1988), one might argue that mental contrasting of a feasible wish, although beneficial in terms of providing clues for successful goal striving, might nevertheless hurt goal striving. However, because mental contrasting of feasible wishes strengthens goal commitment, leads people to form plans, and energizes them, we hypothesize that mental contrasting of a feasible wish will lead to the maintenance of a person's self-view even when faced with strong negative feedback. This hypothesis was tested in the experiment described next (Pak et al., 2008, Experiment 2).

Again, students were invited to participate in two supposedly independent studies. In the first study, participants named an important interpersonal concern and rated their expectations of success. In the second study, they completed the same aforementioned social competence test. This time, however, normative rather than noncomparative negative feedback was provided. Negative feedback that includes a comparison to a norm has been shown to exert a more detrimental influence on self-views than noncomparative feedback, including task-oriented information (Butler, 1987; Kluger & DeNisi, 1997). Specifically, participants were told that they had achieved only a low number of points on the test, and that their performance, compared to other people in their peer group, was rather poor. After receiving the feedback, the three self-regulatory modes of thought were induced (i.e., mental contrasting, indulging, and dwelling). Participants then rated their social ability and interpersonal intelligence. As there was a baseline rating of these variables, the change in pre- to postmanipulation self-views served as the dependent variable.

Participants in the mental contrasting condition showed expectancy dependence in their self-view change scores: Those with high expectations of success sustained their view of their social abilities (they even showed a small increase), while those with low expectations showed a comparatively diminished self-view. In the other two conditions (i.e., indulging and dwelling), no expectancy-dependent change was observed.

Apparently, mentally contrasting future and reality enables people with high expectations of success to protect their positive self-view when facing negative feedback. Further, the findings suggest that mental contrasting effects extend beyond the particular wish about which people mentally contrasted. For example, participants named as an important interpersonal concern "to get along with my mother" or "to get to know someone I like." Mentally contrasting these specific concerns brought the general view of the self—a more global appraisal of one's abilities—in line with the perceived probabilities that the specific concern would have a happy ending. This finding implies that mentally contrasting concerns of high subjective probability of success may be used to bolster individuals' more general view of ability.

### OPTIMISTIC ATTRIBUTIONS AFTER NEGATIVE FEEDBACK

Another facilitator of successful goal striving is an optimistic attribution pattern in response to negative feedback because such attributions influence a person's outlook for future goal striving (Seligman, 1991). Research on attributions assumes that explaining negative feedback in global and stable terms is associated with maladaptive responses (e.g., Abramson, Seligman, & Teasdale, 1978; Peterson, Maier, & Seligman, 1993; Weiner, 1986). For example, attributions to global and stable

causes hamper persistence after failure (Weiner, 1986) and impair mastery-oriented behavioral patterns (Diener & Dweck, 1978).

The reformulation of the learned helplessness theory specified in detail the effects of attributions of negative feedback on subsequent goal striving (Abramson et al., 1978; Peterson et al., 1993; Seligman, 1991; see Mikulincer, 1994, for a review). For instance, one way to explain the negative feedback of getting out of breath could be to assume that one lacks the ability to become fit. Attributing negative events to such internal, stable, and global causes (i.e., pessimistic explanatory style; Abramson et al., 1978) has detrimental effects on future goal striving because it fosters the expectation that these negative events will reoccur in the future (stable), be pervasive across situations (global), and relate to personal deficits (internal). Thus, this attribution pattern harms the person's positive outlook for future goal striving and his or her self-esteem. Another way to explain the negative feedback of getting out of breath would be to assume that one felt a bit under the weather (e.g., after a night of not sleeping so well). Explaining negative events with such external, unstable, and specific attributions (i.e., optimistic explanatory style; Seligman, 1991) shelters an individual against a dreary outlook for the future and subsequent performance deficits because he or she forms the expectation that the negative event is modifiable (unstable), stays restricted to the particular situation (specific), and is caused by outside circumstances (external). This optimistic attribution pattern protects the individual's positive outlook and his or her self-esteem. As a consequence, optimistic explanatory style is related to persistence in the face of negative feedback (see Gillham, Shatté, Reivich, & Seligman, 2001, for a review). For example, in one study participants performed a basketball dribbling trial and then received false negative feedback about their performance (Martin-Krumm, Sarrazin, Peterson, & Famose, 2003). In the subsequent trial, participants with an optimistic explanatory style were less anxious, more confident, and performed better than participants with a pessimistic explanatory style. In sum, explaining negative feedback in an optimistic way enhances mastery, and by protecting one's confidence, it also facilitates the realization of the desired future.

Mentally contrasting feasible wishes fosters energization, commitment, and planning. All three factors should help people to maintain a positive future outlook in the form of optimistic attributions when facing negative feedback (Gollwitzer & Kinney, 1989; Latham & Locke, 1991). To test whether mentally contrasting a feasible wish promotes optimistic explanations of negative feedback, students were invited to participate in a study about social competence (Pak et al., 2008, Study 3). In the first part, students were asked about their expectations to perform well on an upcoming social competence test. Next, a mental contrasting condition and an indulging condition were established. Specifically, in the mental contrasting condition participants elaborated fantasies about excelling on the social competence test (e.g., pride, relief, and good feelings) as well as the negative reality (e.g., anxiety, tiredness, and clumsiness), whereas in the indulging condition they only fantasized about excelling on the social competence test. In the second part, students completed the social competence test and then received normative negative feedback on their performance. Finally, based on the explanatory style questionnaire (Peterson et al., 1982), participants indicated what they thought caused their negative performance (e.g., the unusual context) and then rated this cause on the three explanatory dimensions: stable versus unstable, global versus specific, and internal versus external. These three dimensions encompassed an overall index of optimistic attributions (Seligman, 1991). Participants in the mental contrasting condition with high expectations of success used optimistic attributions to explain the negative feedback, whereas those with low expectations of success used pessimistic attributions. Participants in the indulging condition used moderately optimistic attributions to explain their negative feedback, independent of their expectations of success.

## SUMMARY

Three studies indicated that mentally contrasting an achievable, desired future with the hindering reality enables the successful mastery of negative feedback. Participants in the mental contrasting condition with high expectations effectively processed negative feedback, protected their self-view

from threatening negative feedback, and explained negative feedback in an optimistic way. Apparently, mentally contrasting feasible futures enables people to successfully tackle negative feedback on the way to wish fulfillment.

In all three experiments (Pak et al., 2008), participants were confronted with explicit negative feedback. However, successful goal striving, particularly when solving very difficult tasks, may also present demands to overcome implicit negative feedback. For instance, when trying to make sense of a difficult mathematical problem, one may repeatedly be confronted with approaches that lead to inconclusive or negative implicit feedback (e.g., when arriving at a false intermediate solution or an unbalanced equation). Such feedback posed by facing factual obstacles and difficulties on the way to solving the problem may threaten people in their readiness to process useful information, in terms of both their self-view of competence and their optimistic future outlook. Maintaining readiness for new goal-relevant information and confidence in one's competence and future perspective furthers successful performance. We assume that mental contrasting in light of high expectations of success fosters successful performance in difficult tasks because it fosters information processing as well as the maintenance of one's self-view and optimistic outlook.

Finally, studying the effects of mental contrasting on performance addresses the question of whether the effects of mental contrasting transfer across tasks and life domains (see also Wong, Galinsky, & Kray, Chapter 11, this volume). We assume they do for the following reasons: First, as described, mental contrasting of a specific interpersonal concern created expectancy dependence in participants' self-views of general social competence and in their reported success of general goal attainment, while indulging and dwelling did not. Apparently, high versus low expectancies of successfully solving a very specific concern (e.g., to improve a relationship with a roommate, to accept teachers for who they are) were beneficial for self-evaluations of general social intelligence and goal-striving capacity. In other words, mental contrasting makes high expectations of successfully solving a specific concern benefit self-evaluations of one's general interpersonal ability. Although these transfer effects were so far observed only within one life domain, one might speculate that they would even cross domain boundaries and go beyond self-evaluations to also affect effort and performance. For example, mental contrasting might allow high expectations of successfully solving a specific interpersonal concern (e.g., getting to better know a liked person) to transfer to the attainment of success in an academic task (e.g., solving math problems).

Second, mental contrasting of a specific interpersonal concern led to expectancy-dependent planning as measured by the number of if-then statements generated during elaboration, while indulging and dwelling did not (Oettingen & Mayer, 2007). A planning mindset has also been found to transfer to other task and life domains (Gollwitzer, 1990). Third, mental contrasting of a specific interpersonal concern led to energization as measured by self-report and physiological indicators (Oettingen et al., 2007; see also Wright, 1996). We assume that energy mobilization will transfer beyond the immediate concern to affect behavior in other tasks and different life domains. For these three reasons, we hypothesize that mentally contrasting future and reality in one life domain will facilitate the effects of mental contrasting in a different life domain, a hypothesis that is tested in the study described next.

## EFFECTS ON PERFORMANCE

To examine whether mental contrasting of feasible wishes leads to successful performance in tasks that entail implicit negative feedback, participants had to mentally contrast, indulge, or dwell with respect to an important interpersonal wish. They then were asked to solve a very difficult reasoning task (Pak et al., 2008, Experiment 4). Specifically, participants were given the most difficult form of Raven's Progressive Matrices (Raven, Raven, & Court, 1992), a frequently used test for measuring reasoning ability (Mackintosh, 1996). Further, it is considered to be a test well suited for measuring Spearman's *g*, the general factor assumed to underlie various cognitive abilities (Jensen, 1998). Even though the matrices assess individual differences in intelligence and such differences are

assumed to be relatively stable (e.g., Jensen, 1989), they have been found to be amenable to motivational influences (Chaiken, Giner-Sorolla, & Chen, 1996). Thus, mental contrasting should lead to performance in line with expectations of success, whereas this effect should not be observed in the noncontrasting groups.

Students were invited to participate in two supposedly independent studies, one about interpersonal wishes and the other about cognitive skills. First, participants indicated their most important interpersonal wish and their expectations of successfully realizing the wish and listed both positive aspects of realizing the wish and negative aspects of reality standing in the way of realizing it. Thereafter, as in the previous studies, participants either had to mentally contrast aspects of the future and reality (starting with a future aspect), indulge in positive aspects of the future, or dwell on negative aspects of the reality. Next, participants completed the most difficult form of the matrices. Participants in the mental contrasting condition with high expectations of success achieved the best scores on the intelligence test, while those in the mental contrasting condition with low expectations scored the lowest. Participants in the indulging and dwelling conditions evidenced moderate levels of performance independent of their expectations of success.

Apparently, by inducing cognitive processes that benefit solving difficult tasks, mental contrasting was strong enough to make a difference in performance on the Raven intelligence test. As a limitation, the study does not explicitly test which cognitive processes boosted performance on the Progressive Matrices. However, findings from the studies described earlier suggest that by processing information entailed in negative feedback (Pak et al., 2008, Study 1) as well as by sustaining their positive self-view (Pak et al., 2008, Study 2) and optimistic attributions (Pak et al., 2008, Study 3), participants managed to show superior test performance. This interpretation of the results was supported by Jensen (1987), who found substantial correlations between degree of information processing as measured with a memory task and two visual search tasks and performance on the Progressive Matrices. Further, Stankov and Crawford (1997) observed that a positive self-view was linked to heightened performance on the Progressive Matrices. Finally, optimistic attributions that reduce test anxiety (Martin-Krumm et al., 2003) facilitate performance on intelligence tests (see Zeidner, 1995, for a review). Although we do not know which variables are responsible for the results and to what degree, the observed effects are remarkable as performance on intelligence tests are generally viewed as relatively stable (Jensen, 1989).

## SUMMARY

Mental contrasting effects transferred from the interpersonal domain to the achievement domain; that is, mental contrasting of a feasible wish in one life domain enabled participants to succeed in solving a very difficult, different task in another life domain (see also Hirt, Kardes, & Markman, 2004; Markman, Lindberg, Kray, & Galinsky, 2007). The transfer of effects from one task to another and across domains suggests that acquiring mental contrasting as a self-regulatory strategy can help people not only to translate their expectations of success into goal commitment and goal striving and to master negative feedback but also to foster achievement on a more general level. Almost everybody has high feasibility desires and could thereby potentially profit from the beneficial effects of mental contrasting. By taking advantage of the transfer effects of mental contrasting, people may be able to use the procedure strategically to influence achievement in other domains, even in those in which the perceived chances of attaining the desired future are not yet high. In sum, mental contrasting seems to be a highly useful self-regulatory tool, and practicing it should promote the fulfillment of one's wishes as well as successful performance in a variety of tasks and life domains.

## RELATED APPROACHES

The model of fantasy realization relates to several other approaches to goal pursuit in meaningful ways that may be grouped into those involving set goals, formed intentions, and aspired standards

regarding future outcomes on the one hand and mental simulations and free images about future outcomes on the other hand. Therefore, in the final part of the chapter, we consider how mental contrasting relates to goal-setting theory as it specifies goals that are particularly fruitful for enhancing effort and motivation (Locke & Latham, 1990), to the theory of planned behavior as it describes the determinants of intentions (Ajzen, 1991; see also Fishbein & Ajzen, 1975), and to the self-regulatory control-process model of Carver and Scheier (1990) as it involves a discrepancy notion involving standards and feedback. In addition, we relate the model of fantasy realization to models of mental simulation and goal pursuit such as the reflection and evaluation model (REM; Markman, Karadogan, Lindberg, & Zell, Chapter 12, this volume; Markman & McMullen, 2003, 2005) and the model of imagination, goals, and affect (IGoA; Sanna, 2000; Sanna, Carter, & Burkley, 2005) and to the notion of process versus outcome simulations (Taylor, Pham, Rivkin, & Armor, 1998) as all three models specify mental simulations that differentially affect motivation and effort in goal pursuit.

### GOALS, INTENTIONS, AND STANDARDS

The ideas as specified by the model of fantasy realization differ from those spelled out in goal-setting theory (Locke & Latham, 1990, 2002) as well as from those put forward in the theory of planned behavior (Ajzen, 1991; see also Fishbein & Ajzen, 1975). Goal-setting theory defines conscious goals as chosen or assigned and analyzes the impact of the quality and content of such goals for action. For example, setting specific, difficult goals leads to higher performance than setting "do-your-best" goals (Locke & Latham, 1990, 2002). The theory of planned behavior specifies the variables that determine behavioral intentions, such as attitudes toward the behavior, subjective norms, and importantly, perceived control over the behavior.

In contrast to goal-setting theory, the model of fantasy realization focuses on forming commitments to attaining one's fantasies rather than setting goals or standards of a certain proficiency (i.e., wanting to achieve an A versus a B on a midterm exam). In contrast to the theory of planned behavior, the model of fantasy realization explores which modes of thought (mental contrasting vs. indulging, dwelling, and reverse contrasting) translate feasibility (control beliefs) into actual behavior. The model of fantasy realization relates in parallel ways to other theories of goal pursuit (summary by Oettingen & Gollwitzer, 2001) that also specify feasibility as a critical determinant of goal striving.

Finally, the model of fantasy realization differs from the self-regulatory control-process model (Carver & Scheier, 1990). The latter tries to adapt Powers's (1973) theory of the control of perception to predict behavior, although "The heart of control theory is that organisms control, and that what they control is not behavior at all, but perception" (Powers, 1994/2005, p. 1). Carver and Scheier (1990) assumed that behavior is regulated by feedback loops. Specifically, in a discrepancy-reducing loop a perceived value (input) is compared by a comparator to a set standard, and if discrepant, the discrepancy will be reduced (output) to bring the input value closer to the standard, thereby taking into account a priori deviations as well as deviations that were caused by external influences.

In contrast, the model of fantasy realization does not assume a set standard; rather, it explicates the processes that build commitments to realizing one's future fantasies and thus are an essential part of goal setting (Locke & Latham, 1990). Second, positive fantasies differ from standards as the former are vague images about a desired future. Only by being subjected to mental contrasting do individuals acquiesce to realize these vague images in reality. Third, the model of fantasy realization does not consider behavior or behavioral effects (neither in their objective nor in their subjective form) as predictors of discrepancy reduction. It only considers perceptions of obstacles to the realization of a fantasized future (either as part of mental contrasting, dwelling, or reverse contrasting). Fourth, it does not postulate a comparator as no perceived effects of behavior are compared with a standard (or a fantasy). The model of fantasy realization simply postulates that the conjoint elaboration of the desired future and impeding reality makes people respect their expectations of success in their goal commitments and goal striving. In sum, the model of fantasy realization, unlike the

self-regulatory control-process model (Carver & Scheier, 1990), is not a feedback-loop model that entails feedback, standard, and comparator as central concepts. Rather, it specifies distinct modes of thinking about future and present reality that guide people to form more or less wise goal commitments (i.e., to engage if feasibility is high and to let go if feasibility is low after mental contrasting or to engage independent of feasibility after indulging, dwelling, or reverse contrasting).

### **MENTAL SIMULATION: REFLECTION VERSUS EVALUATION, OUTCOME VERSUS PROCESS**

The model of fantasy realization shares its focus on modes of thought with research on mental simulation and counterfactual thinking. A model that explicitly links mental simulation and counterfactual thinking to motivation and action is the REM (Markman & McMullen, 2003, 2005). This model distinguishes between assimilative and contrastive thoughts in response to upward and downward counterfactual, social, and temporal comparisons. Assimilative thoughts arise via a reflection mode, in which one vividly experiences alternative worlds, whereas contrastive thoughts arise via an evaluation mode, in which alternative worlds function as a reference point in evaluating one's present standing. With regard to emotional and motivational consequences, upward reflection leads to positive affect but diminished effort, whereas downward reflection leads to negative affect and enhanced effort. Conversely, upward evaluation (e.g., "I could have done better than I actually did") leads to negative affect but enhanced effort, whereas downward evaluation (e.g., "I could have done worse than I actually did") leads to positive affect but diminished effort. Interestingly, recent research has shown that generating upward counterfactuals in an evaluative mode elicited strategic thinking (assessed by content analysis) that benefited persistence and successful performance (Markman, McMullen, & Elizaga, 2008).

Similar to the model of fantasy realization that distinguishes between one-sided thinking (indulging and dwelling) and two-sided thinking (mental contrasting), the REM model also posits a one-sided mode of thought (reflection) and a two-sided mode of thought (evaluation). Moreover, both models postulate different emotional and motivational consequences of one-sided versus two-sided thinking. The model of fantasy realization differs, however, from the REM (among others) in three important ways. First, the model of fantasy realization deals with thoughts about the future versus present reality. Second, it postulates a mental link between future and reality by simultaneous activation of both the future and the reality in terms of the relational construct of reality "standing in the way" of realizing the future. Third, it postulates that the two-sided mode of thought of mental contrasting produces expectancy-based goal striving, while the one-sided modes of thought of indulging and dwelling fail to do so.

The REM shares commonalities with the IGoA model (Sanna, 2000; Sanna et al., 2005). Using the terminology of mental contrasting, indulging, and dwelling (Oettingen et al., 2001), the IGoA model, similar to the REM, distinguishes between reflection and evaluation modes of comparisons. The last two models agree that two-sided modes of thoughts lead to self-improvement or mood repair (depending on whether the comparison is directed upward or downward), whereas one-sided modes of thought directed upward may be described as indulging. Interestingly, the models diverge when it comes to downward reflection. The REM postulates that such thoughts serve as "wake-up calls," whereas the IGoA model postulates that they are unprofitable dwellings or ruminations (Markman et al., 2008). The model of fantasy realization might offer an integrative solution: When juxtaposed against fantasies regarding a desired future, downward reflections might trigger thoughts about obstacles standing in the way of attaining a desired future, thus leading to fantasy realization. When considered alone, however, downward reflections may typify sheer ruminative thought (Nolen-Hoeksema, 2000).

A model testing the effects of mental simulations about the future on goal striving has been postulated by Taylor and colleagues (1998). More specifically, mental simulations that focus on having attained a set standard or goal (e.g., imagining approaching the board where the aspired A is posted; outcome simulations) are less effective than mental simulations of the path toward goal attainment

(i.e., imagining going home and taking the various steps of studying for an A; process simulations). The model of fantasy realization, to the contrary, holds that mentally contrasting fantasies about a desired future (e.g., doing well in the course) with present reality (e.g., being distracted by partying) leads to goal commitment in line with one's expectations of success (i.e., perceived likelihood of doing well in the course). From this perspective, planning in the form of process simulations is conceptualized as a dependent variable that facilitates goal striving. Indeed, Oettingen (2000, Study 2) observed that female doctoral students whose expectations to combine work and family life were high generated more process simulations geared at integrating the two life tasks in the mental contrasting conditions as compared to the indulging and dwelling conditions.

Mental simulations may also refer to the past, and thereby help or hurt coping with a stressor. Rivkin and Taylor (1999; Taylor et al., 1998) distinguished process versus event simulations. These simulations refer to events and emotional experiences as they happened when the stressor arose and unfolded (event simulations) versus thoughts about having successfully coped with the stressor (outcome simulations). Event simulations lead to more positive affect and active coping strategies than outcome simulations as they are assumed to be based on processing the details of the stressor and its subsequent facilitated emotion- and problem-solving regulation. The effects of mental contrasting future and present reality, to the contrary, are assumed to be based on simultaneous accessibility of future and impeding reality, which then leads to active coping when chances look promising.

## CONCLUSION

The described research shows that mentally contrasting a desirable and feasible future with negative reality makes people remain resolute in their goal striving, even when people are confronted with strong negative feedback. Mental contrasting made people derive meaningful information from negative feedback and even preserved their positive self-view, as well as optimistic outlook, despite explicit negative feedback. In addition, the beneficial effects of mental contrasting surpass the striving for any one particular desired future as mental contrasting improved performance even in unrelated tasks and different life domains. The model of fantasy realization adds to the research on goal pursuit by tackling the long-neglected quest for the processes of forming goal commitments. In addition, it specifies the procedures that people can use to make their sense of efficacy fruitful for their goal striving and goal attainment.

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