Mental Contrasting of Future and Reality

Managing the Demands of Everyday Life in Health Care Professionals

Gabriele Oettingen,[1,2] Doris Mayer,[2] and Babette Brinkmann[3]

[1]Department of Psychology, New York University, NY, USA, [2]Department of Psychology, University of Hamburg, Germany, [3]Department of Psychology, University of Heidelberg, Germany

Abstract. Mental contrasting of a desired future with present reality leads to expectancy-dependent goal commitments, whereas focusing on the desired future only makes people commit to goals regardless of their high or low expectations for success. In the present brief intervention we randomly assigned middle-level managers ($N = 52$) to two conditions. 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. By helping people to set expectancy-dependent goals, teaching the metacognitive strategy of mental contrasting can be a cost- and time-effective tool to help people manage the demands of their everyday life.

Keywords: motivation, mental contrasting, goals, self-regulation, time management, health care professionals, thinking about the future

People commit to goals that are feasible and desirable (Ajzen, 1991; Atkinson, 1957; Bandura, 1997; Gollwitzer, 1990; Locke & Latham, 2002; meta-analysis by Klein, Wesson, Hollenbeck, & Alge, 1999). Whether or not a goal is desirable in turn depends on its short- and long-term consequences, whether or not a goal is feasible relies on judgments about future events and behaviors (Heckhausen, 1977). These judgments may refer to being able to perform goal-directed behaviors (i.e., self-efficacy expectations; Bandura, 1997), to outcomes of goal-directed behaviors (i.e., outcome expectations; Bandura, 1997; instrumentality beliefs, Vroom, 1964), and to specific outcomes (i.e., general expectations; Oettingen & Mayer, 2002). Desirability and feasibility not only affect the strength of goal commitment, but also the strength of subsequent goal striving (Bandura, 1997; Klinger, 1975; Latham & Locke, 2007).

Self-regulation approaches to goal pursuit (summary by Oettingen & Gollwitzer, 2001) examine the processes by which desirability and feasibility translate into goal attainment. These processes explain why high desirability and feasibility beliefs do not guarantee the emergence of strong goal commitments, and why strong goal commitments do not guarantee effective goal striving. They differentiate between self-regulation strategies that create strong goal commitments versus those that translate strong goal commitments into effective goal striving. Well-researched strategies of effective goal striving include shielding a desirable goal

from competing goal pursuits (Kuhl & Beckmann, 1994), planning the implementation of goal-directed actions by if-then plans (Gollwitzer, 1999) or mental simulations (Taylor, Pham, Rivkin, & Armor, 1998), preventing overextension (Baumeister, Bratslavsky, Muraven, & Tice, 1998), and controlling relevant emotions (Koole & Jostmann, 2004). Heckhausen and Kuhl (1985) postulate five criteria for desirability and feasibility before people commit to a goal: Is there an *O*pportunity to act, *T*ime to act, is goal attainment *I*mportant and *U*rgent, and are there *M*eans for goal attainment (OTIUM)? In addition, people feel more committed when they have chosen their own goals and when they adopt assigned goals as their own (Locke & Latham, 2002). In the same vein, falsely ascribing assigned goals to oneself fosters goal commitment (Kuhl & Kazén, 1994). Still, people do not freely commit to every goal that meets these criteria.

Thus Oettingen (2000) has pointed out that mental contrasting of future and reality rather than indulging in the future is an effective strategy to regulate one's goal commitments. The present brief intervention study analyzes whether health care professionals can be taught mental contrasting versus indulging as metacognitive strategies to regulate their goal commitments. We hypothesized that mental contrasting is more successful in helping participants to manage the stresses of everyday life than indulging as the former is an effective strategy to select feasible and desirable goals.

Mentally Contrasting Future and Reality

When people use the self-regulation strategy of mental contrasting (Oettingen, 2000; Oettingen, Pak, & Schnetter, 2001; Oettingen et al., 2009), they imagine a desired future (e.g., excelling in academic or professional achievement) and then reflect on the current reality that stands in the way of reaching that future (e.g., obstacles or temptations such as having little time or being distracted). When feasibility (expectations of success) is high, elaborating both future and reality makes them simultaneously accessible and links them together. Now the reality is seen as an obstacle to realizing the desired future. When feasibility is low, future and reality are disconnected as the reality is seen as insurmountable (Kappes & Oettingen, 2010). Therefore, mental contrasting helps to decide whether to commit to the goal of realizing the future or not. It creates either energization and strong goal commitments or de-energization and weak goal commitments (Oettingen et al., 2009). On the contrary, only focusing on the desired future (indulging) should fail to create expectancy-dependent commitment as the reality is not perceived as an obstacle to realizing the future. Indulging should leave the a priori commitment of the person untouched (Oettingen et al., 2001, 2009; Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005).

Mental contrasting versus indulging differ in line with Metcalfe and Mischel's (1999) distinction between hot and cool self-regulation systems. As mental contrasting depicts the reality as standing in the way of the desired future it should activate the cool system. On the contrary, by focusing on the desired future indulging should activate the hot system. Using continuous magnetoencephalography, a brain-imaging technique measuring magnetic fields produced by electrical activity in the brain, Achtziger, Fehr, Oettingen, Gollwitzer, and Rockstroh (2009) showed that mental contrasting, unlike indulging and resting, implicates brain activity in areas associated with working and episodic memory, intention maintenance and action preparation, as well as vivid visualization. Accordingly, mental contrasting more than indulging should enable people to recognize feasibility issues that are based on experiences in the past when committing to goals.

A series of experiments supports these hypotheses (summary by Oettingen & Stephens, 2009). Participants were randomly assigned to either mentally elaborate both the desired future and present reality (mental-contrasting condition) or only the desired future (indulging condition). In one experiment, adolescent students had to elaborate the future of excelling in mathematics (participants imagined e.g., pride, job prospects) with a negative reality (participants reflected on e.g., being distracted, feeling lazy) or indulge in the desired future only. Two weeks after the experiment, students in the mental-contrasting condition who had initially felt they could excel in mathematics received better effort evaluations and course grades than in the indulging condition. The same was true for school children who learned a foreign language, in students wanting to solve an interpersonal problem, and in students wanting to get to know an attractive stranger. The results held for commitments measured via self-report or observations, directly after the experiment or weeks later. Mental contrasting is an easy-to-apply self-regulation tool, as the described effects showed up even when participants elaborated the future and the reality very briefly (Oettingen, 2000; Oettingen, Hönig, & Gollwitzer, 2000; Oettingen et al., 2001, 2009).

In all of these studies, mental contrasting led to strong goal commitments when feasibility was high, but also prevented wasting valuable resources when feasibility was low, thus allocating energy to pursue alternative, more feasible projects (Janoff-Bulman & Brickman, 1982; Klinger, 1975). As expectations reflect past experiences (Bandura, 1977, 1997; Mischel, 1973), mental contrasting creates goal commitments based on performances in the past. Thus it leads to discriminative skills (Mischel, 1973) that are beneficial in everyday life: It trains people only to get involved where past experiences predict further successes. Indulging in the positive future, on the contrary, leads to commitment irrespective of expectations of success, and thus disconnects a person from his/her past experience. It therefore provokes too much investment in unfeasible goals, and too little investment in feasible ones, thus potentially wasting resources. Indeed, futile goal pursuit breeds negative affect (Higgins, Roney, Crowe, & Hymes, 1994), anxiety (Pomerantz, Saxon, & Oishi, 2000), mental problems and physical exhaustion (Baumeister et al., 1998; Emmons, 1996), and low well-being (Brunstein, 1993; Strauman et al., 2006).

Mental Contrasting Versus Indulging as Metacognitive Strategies: A Brief Intervention

Previous work on mental contrasting has investigated its effects in experimental paradigms that directed participants' thoughts at a predefined desired future, and then assessed the effects on commitments to realizing the very same future. For example, future thoughts pertained to excelling in mathematics or to solving a specified interpersonal concern (Oettingen et al., 2001). Consequently, dependent variables were higher math grades and specific actions taken. In the present study, we explored whether we could teach participants to apply mental contrasting versus indulging strategies to all sorts of everyday wishes and concerns. Specifically, we randomly assigned participants to two conditions. In one condition we taught how to mentally contrast, in the other how to indulge. Then all participants were encouraged to apply the strategies they had learned to their own idiosyncratic everyday concerns. Thus we taught individuals how to control their own mental processes, a way of thinking that has been described as metacognition (Brinol & DeMarree, in press; Flavell, 1979; Metcalfe, 2003) or higher order executive processes (Sternberg, 1997). Such metacognitive strategies enable people to direct and control their own mental processes (Nelson & Narens, 1994).

In addition, the present brief intervention fulfills recent recommendations that extensive and multimodal interventions in behavior change be replaced by more targeted and theory-driven approaches. That is, instead of teaching a variety of self-management techniques (Frayne & Geringer, 2000; Uhl-Bien & Graen, 1998), we taught self-regulation

strategies that would specifically target engaging and disengaging from goals. However, our study also differs from more specified goal-related interventions in that we do not tell people how to strive for an a priori defined goal (e.g., weight control, Stice, Shaw, & Marti, 2006; alcohol control, Lock, 2004; forgiveness, Harris et al., 2006, see also Webb & Sheeran, 2006), but teach people how to apply the strategies of mental contrasting versus indulging to their own daily concerns and behaviors that may vary in specificity, proximity, content, scope (Latham & Locke, 2007), and framing (Dweck & Leggett, 1988; Higgins, 1997).

Consequently, rather than focusing on outcome variables pertaining to single concerns, we measured variables of general success in managing everyday life. Specifically, two weeks after the intervention we asked how well participants had managed their most precious resource: Time. Second, based on Sternberg's triarchic model of intelligence (1997), we measured the three different determinants of developing practical abilities: Adaptation, shaping of existing environments, and selection of different environments. Participants had to report about their success in relinquishing projects (adaptation), completing projects (shaping), and making decisions (selection). These indicators of effective resource management have also been used in other research traditions such as when predicting well-being in institutions (Frayne & Geringer, 2000) or over the life span (Brandtstädter, Wentura, & Rothermund, 1999).

We chose full-time employed middle-level health care managers as participants in our study because professional development in this high-stress career path demands strong resource management. The career path is characterized by plentiful and often conflicting demands from superiors and subordinates and by high responsibility in contrast to relatively low authority (Cobb, 1976). In the health care profession (review by McVicar, 2003), high workload and time pressure, especially in light of low provision resources, relate to psychological distress and somatic complaints; the same is true for an imbalance of high effort and low rewards (Gelsema, van der Doef, Maes, Akerboom, & Verhoeven, 2005; Siegrist, 1996; review by Dollard, LaMontagne, Caulfield, Blewett, & Shaw, 2004). Also, lack of organization and communication at work hampers job satisfaction and increases emotional exhaustion. Thus middle-level health care managers should greatly benefit from being taught a self-regulation strategy that helps them cope with the host of demands in their everyday work life.

Method

Participants and Design

A total of 52 middle-level personnel managers (34 women, 11 men, 7 did not specify gender) working in various units of four large hospitals in Germany participated in groups of 5–7. Their mean age was 42 years (SD = 7.48), ranging from 26 to 59 years. We randomly assigned participants to one of the two experimental conditions: a mental-contrasting condition and an indulging condition. We trained them in either mental contrasting or indulging, by targeting their own everyday problems. Participation was voluntary and the training took place during work hours.

Procedure

The female experimenter greeted participants and explained that the current practice session was part of a larger investigation analyzing the importance of free thoughts and images in everyday life. She gave an overview of the procedure, assured confidentiality, and stressed that participation was voluntary. To guarantee anonymity, the experimenter requested participants to write down a personal code instead of their names. She informed participants that after the initial three-step practice session, she would ask them to fill out a booklet with daily reminders for a period of 14 days to help them rehearse what they had learned. Participants were alerted to the importance of this daily exercise. Finally, the experimenter told them that two weeks after the practice session she would invite them to fill out a final questionnaire.

After these general instructions, participants started with the first part of the practice session by indicating their presently most important personal problem. They named, for example, conflict with an employee, writing a report, or coming up with a proposal. Participants then had to list four positive aspects that they associated with their problem coming to a happy ending and four negative aspects of reality that stood in the way of their problem coming to a happy ending. Thereafter, participants received a large blank sheet of paper where they were supposed to draw four large thought bubbles from the top to the bottom of the page. Participants were told to write their thoughts and mental images into the thought bubbles. Participants in the mental-contrasting condition had to elaborate in writing two positive aspects of a happy ending to their problem and two negative aspects of reality that stand in the way of a happy ending, in alternating order, beginning with a positive aspect of the desired future. Participants in the indulging condition elaborated in writing four positive aspects associated with a happy ending to their problem.

To practice the procedures of mental contrasting versus indulging, participants in the second step of the training session had to generate as many pressing professional and private everyday problems as possible. These problems had to be quite controllable, but had to make them feel clearly uneasy. Each participant named at least 20 such problems or concerns, they named for example, being assertive in a meeting, visiting a mother, canceling the contract of a coworker, throwing a dinner party. Depending on the conditions, they then had to either mentally contrast or indulge with respect to the first six of these problems: the first problem in writing and the other five in their mind.

Finally, in the third part of the practice session, all participants received a booklet where three pages were available for each day of the upcoming two weeks. On the first page of Day 1, participants had to indicate the problem of the day that made them feel most uneasy. Instructions were the following:

Table 1. Correlations, *M*s, and *SD*s for the relevant variables (*N* = 52)

Variables	*M* (*SD*)	1	2	3
1. Time management	4.87 (1.44)	–		
2. Project relinquishment	2.52 (1.14)	.11	–	
3. Project completion	4.02 (1.62)	.23	.07	–
4. Ease of deciding	4.71 (1.41)	.05	.18	.003

Please name today's professional or private problem that makes you feel most uneasy. If you have more than one, please name the problem that is associated with the strongest feelings of uneasiness. The problem that makes me feel most uneasy today is _____.

On the second page of Day 1, participants in the mental-contrasting condition had to jot down and then elaborate in writing a positive future keyword and a negative reality keyword pertaining to the named problem. In the indulging condition, participants had to jot down and mentally elaborate two positive future keywords. On the third page of Day 1, we told participants that for other projects or problems of the day, they should mentally elaborate the respective keywords in their minds whenever those problems appeared or when participants had a good opportunity to do so (e.g., while waiting for the bus or when walking home).

Two weeks later the experimenter approached participants again and handed them a short questionnaire assessing the dependent variables. After completion of this questionnaire, we fully debriefed participants about the purpose of the study. We also offered a practice session in mental contrasting should participants in the indulging condition want to learn it, and provided extensive information to all participants about further strategies to manage everyday problems and daily hassles.

Dependent Variables

In the follow-up questionnaire, we measured the indicators of resource management and of the development of practical intelligence described above. Specifically, participants reported about their time management: "How successful were you in the past two weeks in organizing your time?" The answer scale ranged from 1 (*not at all*) to 7 (*very*). Participants also reported relinquished projects: "How many tasks or projects did you relinquish in the past two weeks?", and on their completed projects: "How many tasks or projects which are long overdue did you complete in the last two weeks?" The answer scales ranged from 1 (*none at all*) to 7 (*very many*). Finally, we asked "Compared to previous experiences, how easy was it for you in the past two weeks to make decisions?" Again, the answer scale ranged from 1 (*not at all*) to 7 (*very*). Of the total number of participants (*N* = 52), 45 (23 in the mental-contrasting condition and 22 in the indulging condition) completed the final questionnaire as well as the booklet (for at least half of the

assigned days, i.e., 6 days in total). Thus, the following analyses include 45 participants.

Results

Descriptive Analyses

Means and standard deviations are provided in Table 1. As predicted, the dependent variable time management did not correlate with project relinquishment (*r* = .11, *p* = .47), project completion (*r* = .23, *p* = .14), or with ease of making decisions (*r* = .05, *p* = .76). Project relinquishment did not correlate with project completion (*r* = .07, *p* = .66), or ease of making decisions (*r* = .18, *p* = .19), and project completion did not correlate with ease of making decisions (*r* = .003, *p* = .99). These low correlations support the notion that the dependent variables assessed distinct aspects of resource management and of the development of practical intelligence (see also Sternberg, 1988, 1997).

Management of Everyday Life

Two weeks after the practice session, participants in the mental-contrasting condition reported more success in managing their time than those in the indulging condition, $F(1, 43) = 8.38$, $p < .007$. They also reported more success in relinquishing projects, $F(1, 43) = 6.24$, $p < .02$ (Figure 1, left bars) and in completing projects, $F(1, 43) = 3.24$, $p < .04$ (one-tailed). Finally, compared to participants in the indulging condition, participants in the mental-contrasting condition experienced an easier time making decisions, $F(1, 43) = 5.28$, $p < .03$ (Figure 1, right bars).

Discussion

The present brief intervention shows that people can be trained to use mental contrasting in a short practice session and then readily apply it to the various problems they are confronted with during their everyday life. In comparison to participants in the indulging condition, those in the mental-contrasting condition reported having solved problems in their everyday life more successfully. They reported success
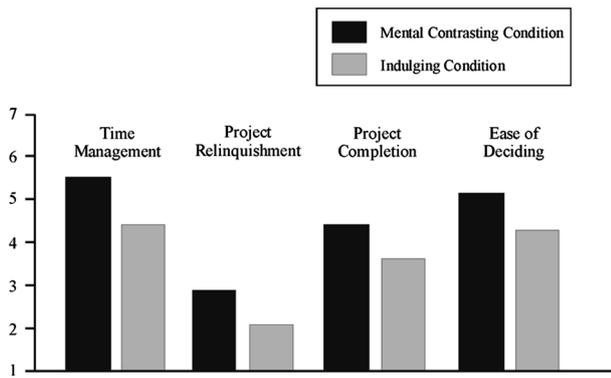
Figure 1. Mean values depict the difference between the mental contrasting and the indulging condition in successful time management (left), project relinquishment (middle left), project completion (middle right), and ease of deciding (right).

in managing their time, making decisions, and mastering their projects by letting some go and completing others.

Mental Contrasting Versus Indulging as Metacognitive Strategies: Processes

We do not know which exact processes were responsible for the differential effects of teaching mental contrasting versus indulging as metacognitive strategies. Based on past research that mental contrasting leads to expectancy-dependent goal commitments, we speculate that by applying mental contrasting, our participants may have relinquished those projects where chances of success were low, thus avoiding psychological distress of pursuing unfeasible goals. To the contrary, when chances of success were high, mental contrasting may have led participants to vigorously pursue and complete feasible projects. We speculate that mental contrasting eased the burden of unpromising and multiple projects and thus helped the health care professionals to manage their everyday lives.

Certainly, our results may have stemmed from other processes than deciding on feasible projects. For example, participants in the two conditions may have differed in the frequency of using the strategies and they may have applied them to different types of concerns. Thus future research should assess the frequency of use as well as record the types of concerns in each condition. In addition, participants in the two conditions might have differed in the amount of advice and instrumental help sought from others. Responses from participants' colleagues and supervisors should yield clues to what extent such help may have contributed to completing projects and easing decisions.

Further, in the present study we did not measure the baseline of our outcome variables. Thus the data are silent about change over time. In fact, participants in both conditions may have benefited in the management of their everyday problems which would imply that in the present paper we underestimated the beneficial effects of mental contrasting. Future studies should check this possibility.

Mental Contrasting Versus Indulging as Metacognitive Strategies: Consequences

We also do not know which aspects of our dependent variables were differentially affected by participants being taught mental contrasting versus indulging. For example, mental contrasting and indulging might have differentially affected time management in terms of taking notes, planning meetings, or organizing work materials (Green & Skinner, 2005); they might have differentially influenced relinquishing projects in terms of postponing, delegating, or letting go of projects; mental contrasting may have fostered completion of projects by changing standards, working faster, or working more effectively. Finally, they may have differentially affected decision making by promoting problem solving skills, fostering insight, or strengthening people's assertiveness. Previous research has supported differential effects of mental contrasting versus indulging on all these variables (summary by Oettingen & Stephens, 2009).

In the present study, we focused on indicators of goal commitment as measured by single-source self-report measures of relevant behavior. Future research should use multiple source data and assess behavioral consequences as measured by more objective indicators. For example, one may assess persistence in pursuing daily chores, job absenteeism, or productivity and creativity (e.g., as reported by peers and supervisors) and physiological and nonverbal indicators of effective stress management (e.g., systolic blood pressure; Oettingen et al., 2009; gestures, postures, facial movements; Oettingen & Gollwitzer, 2009). Finally, the study is silent about the downstream effects on performance and well-being. We speculate that teaching mental contrasting, since it has been found to make people commit to feasible goals and drop unfeasible goals, should equip people to manage their everyday life in a more self-disciplined way. Self-discipline, characterized by control over impulses, thought, emotion, and behavior, should then lead to high achievement and increased well-being as well as job satisfaction (Duckworth & Seligman, 2005; Kahneman, Diener, & Schwarz, 1999; Tangney, Baumeister, & Boone, 2004).

Importantly, however, the present research adds to the literature in that we established a brief intervention to induce mental contrasting versus indulging as metacognitive strategies (Brinol & DeMarree, in press; Flavell, 1979; Metcalfe, 2003) or higher order executive processes (Sternberg, 1997). We observed that health care managers in the mental-contrasting condition more effectively managed their time and decision making than those in the indulging condition.

Benefits of Teaching Mental Contrasting

Teaching mental contrasting made people take action to relinquish some projects and complete others. Accordingly, mental contrasting may be an effective self-regulation tool

to ensure that people commit themselves only to a manageable number of relatively promising goals. Although mental contrasting demands the performance of a series of relatively complex cognitive procedures in a specific order, it still can be easily learned and applied. Learning how to use mental contrasting rather than elaborating only the desired future would provide people with the opportunity to actively determine whether or not to commit to specific endeavors, depending on their prospects. We observed that teaching mental contrasting versus indulging produced the predicted effects within the two-week period of the study. Future studies should assess to what extent such effects can be maintained over time, beyond setbacks and first successes.

Assuming that mental contrasting benefited time management and project selection in line with feasibility concerns, one may speculate that the metacognitive strategy of mental contrasting may be more beneficial for some participants than for others. For example, one may argue that individuals prone to negative feelings or depression (who are inclined to generate projects of low feasibility) may suffer from being taught mental contrasting as it fosters disengagement. Precisely such disengagement, however, may also liberate a person to subsequently pursue more feasible endeavors (Klinger, 1978; Strauman, 2002), at least as long as such opportunities exist. This consideration has the following implications, however: if relinquishment is not an option because there are no feasible alternatives, then indulging in the desired future should be a helpful self-regulation strategy because it guarantees that individuals stay engaged at least to a moderate degree (Oettingen & Stephens, 2009).

Finally, our findings are silent with respect to whether people have a predilection for mental contrasting versus indulging, and if so, which factors influence such a predilection. We speculate that the kind of problems people face during their everyday life might play a role. Individuals whose everyday life demands separating the feasible from the unfeasible (e.g., pilots, air traffic controllers, doctors, policemen) might be those who predominantly engage in mental contrasting, while people whose everyday life brings unsure gratification (e.g., musicians, artists) or bleak prospects (e.g., social workers) may engage more in indulging (Oettingen, 1997). Thus the professional context of health care management may work in two ways: It may foster the predilection to mentally contrast, but in turn will benefit from mental contrasting as mental contrasting fosters successful mastery of its everyday demands and challenges.

Acknowledgment

References

Achtziger, A., Fehr, T., Oettingen, G., Gollwitzer, P. M., & Rockstroh, B. (2009). Strategies of intention formation are reflected in continuous MEG activity. *Social Neuroscience, 4*, 11–27.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211.

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review, 64*, 359–372.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191–215.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: Freeman.

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology, 74*, 1252–1265.

Brandtstädter, J., Wentura, D., & Rothermund, K. (1999). Intentional self-development through adulthood and later life: Tenacious pursuit and flexible adjustment to goals. In J. Brandtstädter & R. M. Lerner (Eds.), *Action and self-development: Theory and research through the life span* (pp. 315–342). Thousand Oaks, CA: Sage.

Brinol, P., & DeMarree, K. (in press). *Social meta-cognition. Frontiers of social psychology series.* New York, NY: Psychology Press.

Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology, 65*, 1061–1070.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38*, 300–314.

Dollard, M. F., LaMontagne, A. D., Caulfield, N., Blewett, V., & Shaw, A. (2007). Job stress in the Australian and international health and community services sector: A review of the literature. *International Journal of Stress Management, 14*, 417–445.

Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science, 16*, 939–944.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.

Emmons, R. A. (1996). Striving and feeling: Personal goals and subjective well-being. In J. Bargh & P. M. Gollwitzer (Eds.), *The psychology of action: Linking motivation and cognition to behavior* (pp. 314–337). New York, NY: Guilford.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*, 906–911.

Frayne, C. A., & Geringer, J. M. (2000). Self-management training for improving job performance: A field experiment involving salespeople. *Journal of Applied Psychology, 85*, 361–372.

Gelsema, T. I., van der Doef, M., Maes, S., Akerboom, S., & Verhoeven, C. (2005). Job stress in the nursing profession: The influence of organizational and environmental conditions and job characteristics. *International Journal of Stress Management, 12*, 222–240.

Gollwitzer, P. M. (1990). Action phases and mind-sets. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (Vol. 2, pp. 53–92). New York, NY: Guilford Press.

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

Green, P., & Skinner, D. (2005). Does time management training work? An evaluation. *International Journal of Training and Development, 9*, 124–139.

Harris, A. H. S., Luskin, F., Norman, S. B., Standard, S., Bruning, J., Evans, S., & Thoresen, C. E. (2006). Effects of a group forgiveness intervention on forgiveness, perceived stress, and trait-anger. *Journal of Clinical Psychology, 62*, 715–733.

Heckhausen, H. (1977). Achievement motivation and its constructs: A cognitive model. *Motivation and Emotion, 1*, 283–329.

Heckhausen, H., & Kuhl, J. (1985). From wishes to action: The dead ends and short cuts on the long way to action. In M. Frese & J. Sabini (Eds.), *Goal directed behavior: The conception of action in psychology* (pp. 134–159). Hillsdale, NJ: Erlbaum.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280–1300.

Higgins, E. T., Roney, C. J. R., Crowe, E., & Hymes, C. (1994). Ideal versus ought predilections for approach and avoidance distinct self-regulatory systems. *Journal of Personality and Social Psychology, 66*, 276–286.

Janoff-Bulman, R., & Brickman, P. (1982). Expectations and what people learn from failure. In N. T. Feather (Ed.), *Expectations and actions: Expectancy-value models in psychology* (pp. 207–237). Hillsdale, NJ: Erlbaum.

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: The foundations of hedonic psychology.* New York, NY: Russell Sage.

Kappes, A., & Oettingen, G. (2010). From wishes to goals: Mental contrasting connects future and reality. Manuscript in preparation.

Klein, H. J., Wesson, M. J., Hollenbeck, J. R., & Alge, B. J. (1999). Goal commitment and the goal setting process: Conceptual clarification and empirical synthesis. *Journal of Applied Psychology, 64*, 885–896.

Klinger, E. (1975). Consequences of commitment to and disengagement from incentives. *Psychological Review, 82*, 1–25.

Klinger, E. (1978). Modes of normal conscious flow. In K. S. Pope & J. L. Singer (Eds.), *The stream of consciousness: Scientific investigations into the flow of human experience* (pp. 225–258). New York, NY: Plenum Press.

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect. *Journal of Personality and Social Psychology, 87*, 974–990.

Kuhl, J., & Beckmann, J. (Eds.). (1994). *Volition and personality: Action versus states orientation.* Seattle, WA: Hogrefe and Huber.

Kuhl, J., & Kazén, M. (1994). Self-discrimination and memory: State-orientation and false self-ascription of assigned activities. *Journal of Personality and Social Psychology, 66*, 1103–1115.

Latham, G. P., & Locke, E. A. (2007). New developments in and directions for goal setting research. *European Psychologist, 12*, 290–300.

Lock, C. A. (2004). Screening and brief alcohol interventions: What, why, who, where and when? A review of the literature. *Journal of Substance Use, 9*, 91–101.

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.

McVicar, A. (2003). Workplace stress in nursing: A literature review. *Journal of Advanced Nursing, 44*, 633–642.

Metcalfe, J. (2003). Drawing the line on metacognition. *Behavioral and Brain Sciences, 26*, 350–351.

Metcalfe, J., & Mischel, W. (1999). A hot/cool system analysis of delay of gratification: Dynamics of willpower. *Psychological Review, 106*, 3–19.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review, 80*, 252–283.

Nelson, T. O., & Narens, L. (1994). Why investigate metacognition? In J. Metcalfe & A. P. Shimamura (Eds.), *Metacognition* (pp. 1–26). Cambridge, MA: The MIT Press.

Oettingen, G. (1997). Culture and future thought. *Culture & Psychology, 3*, 353–381.

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

Oettingen, G. & Gollwitzer, P. M. (2001). Goal setting and goal striving. In A. Tesser, N. Schwarz (Vol. Eds.), M. Hewstone, & M. Brewer (Series Eds.), *Intraindividual processes. Volume 1 of the Blackwell handbook in social psychology* (pp. 329–347). Oxford, England: Blackwell.

Oettingen, G., & Gollwitzer, P. M. (2009). Embodied goal pursuit. *European Journal of Social Psychology, 39*, 1210–1213.

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

Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future: Expectations versus fantasies. *Journal of Personality and Social Psychology, 83*, 1198–1212.

Oettingen, G., Mayer, D., Sevincer, A. T., Stephens, E. J., Pak, H., & Hagenah, M. (2009). Mental contrasting and goal commitment: The mediating role of energization. *Personality and Social Psychology Bulletin, 35*, 608–622.

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. (2009). Fantasies and motivationally intelligent goal setting. In G. B. Moskowitz & H. Grant (Eds.), *The psychology of goals* (pp. 153–178). New York, NY: Guilford Press.

Pomerantz, E. M., Saxon, J. L., & Oishi, S. (2000). The psychological trade-offs of goal investment. *Journal of Personality and Social Psychology, 79*, 617–630.

Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology, 1*, 27–41.

Sternberg, R. J. (1988). *The triarchic mind: A new theory of human intelligence.* New York, NY: Viking.

Sternberg, R. J. (1997). Intelligence and lifelong learning: What's new and how we can use it? *American Psychologist, 52*, 1134–1139.

Stice, E., Shaw, H., & Marti, C. N. (2006). A meta-analytic review of obesity prevention programs for children and adolescents: The skinny on interventions that work. *Psychological Bulletin, 132*, 667–691.

Strauman, T. J. (2002). Self-regulation and depression. *Self and Identity, 1*, 151–157.

Strauman, T. J., Vieth, A. Z., Merrill, K. A., Woods, T. E., Kolden, G. G., Klein, M. H., . . . Kwapil, L. (2006). Self-system therapy as an intervention for self-regulatory dysfunction in depression: A randomized comparison with cognitive therapy. *Journal of Consulting and Clinical Psychology, 74*, 367–376.

Tangney, J. P., Baumeister, R. F., & Boone, A. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271–324.

Taylor, S. E., Pham, L. B., Rivkin, I. D., & Armor, D. A. (1998). Harnessing the imagination: Mental simulation, self-regulation, and coping. *American Psychologist, 53*, 429–439.

Uhl-Bien, M., & Graen, G. (1998). Individual self-management: Analysis of professionals' self-managing activities in functional and cross-functional work teams. *Academy of Management Journal, 41*, 340–350.

Vroom, V. H. (1964). *Work and motivation.* New York, NY: Wiley.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*, 249–268.

Gabriele Oettingen

Psychology Department
New York University
6 Washington Place
New York, NY 10003
USA
Tel. +1 212 998-7915
Fax +1 212 533-1024
E-mail gabriele.oettingen@nyu.edu