# Personality and Social Psychology Bulletin

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*Pers Soc Psychol Bull* 2013 39: 1240 originally published online 5 July 2013
DOI: 10.1177/0146167213492428

The online version of this article can be found at:
http://psp.sagepub.com/content/39/9/1240

Published by:
SAGE
http://www.sagepublications.com

On behalf of:
Society for Personality and Social Psychology

Personality and Social
Psychology Bulletin
39(9) 1240–1254

DOI: 10.1177/0146167213492428
pspb.sagepub.com

# Spontaneous Mental Contrasting and Selective Goal Pursuit

**A. Timur Sevincer[1] and Gabriele Oettingen[1,2]**

**Abstract**

Mental contrasting a desired future with reality is a self-regulation strategy that fosters selective goal pursuit; people pursue goals for which they have high expectations of success, and let go of those for which they have low expectations. Indulging in the future, dwelling on the reality, or contrasting the reality with the future lead to indiscriminate goal pursuit. We developed a content analytic measure to observe spontaneous mental contrasting in people writing about an important wish (Study 1). Just like induced mental contrasting, spontaneous mental contrasting predicted selective goal pursuit measured by self-reported performance (Study 2) and observed performance (Study 3). The developed coding scheme opens the way to investigating situation, person, and cultural predictors of spontaneous mental contrasting.

**Keywords**

mental contrasting, expectations, goal pursuit, performance, content analysis

Received November 22, 2012; revision accepted April 22, 2013

People often face decisions whether or not to pursue a certain course of action. Consider a young adult, who besides pursuing her graduate studies wishes to start a career in singing, work for a charity organization, and play varsity basketball. Trying to fulfill all these wishes is likely to interfere with her studies, and therefore she is well advised to select her goals (i.e., goal commitment and subsequent performance) based on whether they can be realized.

Considering whether one can actually attain a desired future is vital for successfully pursuing goals and for well-being. Bringing projects to completion requires personal resources such as attention, time, and energy; resources that are limited. Therefore, pursuing goals based on whether they can be realized (i.e., according to expectations of success) assures that people invest sufficient resources when goal attainment is possible and prevents them from wasting their resources when goal attainment is impossible. Indiscriminately pursuing goals independent of expectations of success may in contrast lead to unjustified investments (sunk cost effect; Arkes & Ayton, 1999; Janoff-Bulman & Brickman, 1982) and ego depletion (Muraven & Baumeister, 2000). Even worse, it may lead to accumulated failures that undermine people's sense of efficacy (Bandura, 1997) and their subjective well-being (Brunstein, 1993). Indiscriminate investment may even lead to depressive affect, neuroticism, and psychosomatic complaints (Emmons & King, 1988; Klinger, 1975). Finally, according to Mischel (1973), indiscriminate responding to situational circumstances, such as pursuing goals independent of expectations, is a hallmark of ineffective self-regulation.

We investigated mental contrasting, a self-regulation strategy leading people to engage in desired futures for which they have high expectations but abandoning those for which they have low expectations. In contrast to previous research that examined the effects of experimentally induced mental contrasting on selective goal pursuit (summary by Oettingen, 2012), we developed a measure to observe spontaneously applied mental contrasting and investigated whether spontaneous mental contrasting predicts selective goal pursuit (just like induced mental contrasting does).

## Mental Contrasting Produces Selective Goal Pursuit

When people apply mental contrasting, they first name an important desired future (fulfilling a wish or solving a concern) in a specific area (e.g., improving math grade); then they imagine having attained the future (e.g., feeling pride) and thereafter they imagine the present reality that stands in the way of realizing the future (e.g., getting distracted). In doing so, expectations of success become activated as a

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platform for action (Oettingen, Pak, & Schnetter, 2001; Oettingen et al., 2009). Expectations can be conceptualized by people's judgments about the likelihood of goal attainment (Bandura, 1997). When expectations are high, mental contrasting leads to vigorous goal pursuit; people commit to and effectively strive toward fulfilling the wish. Conversely, when expectations are low people explicitly refrain from committing to and striving toward wish fulfillment. Thus, mental contrasting sensitizes people to their expectations and causes selective goal pursuit.

Merely elaborating the future (indulging) or the reality (dwelling) leads to goal pursuit independent of expectations (Oettingen, 2012; Oettingen et al., 2001). These one-sided elaborations fail to induce a perception of the reality as standing in the way of the desired future. Expectations are less likely to become activated and to translate into goal pursuit than in mental contrasting. Of importance, mentally elaborating reality before the future (reverse contrasting) also fails to induce a perception of reality as standing in the way of the future because the future is not a reference point for the reality, and thus the reality cannot be perceived as an obstacle (Oettingen et al., 2001). Therefore, expectations are less likely to become activated and to translate into goal pursuit.

A multitude of experimental studies support the effects of mental contrasting on selective goal pursuit (summary by Oettingen, 2012). These studies measured goal pursuit using cognitive (e.g., making plans), affective (e.g., anticipated disappointment in case of failure), motivational (e.g., determination), and behavioral indicators (e.g., effort and performance). They found the predicted pattern irrespective of whether these indicators were assessed via self-report or observations, directly after the experiment or weeks later, and whether expectations were measured or manipulated (e.g., A. Kappes, Oettingen, & Pak, 2012; A. Kappes, Singmann, & Oettingen, 2012; Oettingen, 2000; Oettingen, Marquardt, & Gollwitzer, 2012; Oettingen et al., 2009; Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005; Oettingen et al., 2001).

Furthermore, a number of intervention studies support the beneficial effects of mental contrasting for behavior change in everyday life and over time. In these studies, participants were taught to apply mental contrasting as a meta-cognitive strategy in various domains. For example, teaching mental contrasting (vs. indulging) resulted in more effective time management and easier decision making in health care professionals (Oettingen, Mayer, & Brinkmann, 2010), better academic performance in disadvantaged schoolchildren (A. Gollwitzer, Oettingen, Kirby, Duckworth, & Mayer, 2011) and improved health behavior in dieting students (Johannessen, Oettingen, & Mayer, 2012).

Finally, regarding the motivational and cognitive processes mediating the effects of mental contrasting on goal pursuit, research has identified energization (measured by self-report and physiological indicators; Oettingen et al., 2009), planning (measured implicitly and explicitly; Oettingen et al., 2005; Oettingen et al., 2001), and the strength of mental associations between the future and the reality as well as between the reality and instrumental means (A. Kappes, Singmann, et al., 2012).

## Assessing Mental Contrasting

As summarized above, the bulk of mental contrasting research focused on investigating (a) the effects of experimentally induced mental contrasting on goal pursuit, (b) the effectiveness of interventions using mental contrasting for behavior change, and (c) mediators for the effect of mental contrasting on goal pursuit (Oettingen, 2012). Whereas these lines of research examined the consequences of mental contrasting for goal pursuit, recent attempts have been made to assess people's use of mental contrasting. Being able to assess whether people use mental contrasting versus indulging, dwelling, and reverse contrasting allows exploring variables that predict mental contrasting (i.e., antecedents of mental contrasting).

To assess the use of mental contrasting, indulging, dwelling, and reverse contrasting, H. B. Kappes, Oettingen, Mayer, and Maglio (2011) asked students to name an important wish and then to list four aspects that pertained to the desired future and four aspects that pertained to the present reality. Thereafter, students had to choose four of the eight listed aspects to mentally elaborate. Students who predominantly chose aspects about the future were classified as indulging; students who predominantly chose aspects about the reality as dwelling; and students who chose two aspects about the future and two aspects about reality as mental contrasting, if they chose a future aspect first, and as reverse contrasting, if they chose a reality aspect first. H. B. Kappes et al. used their paradigm to investigate the effects of various moods on mental contrasting. They found that, presumably because sad mood signals the presence of a problem and leads people to engage in problem solving (Schwarz & Bless, 1991), people in a sad mood were more likely to use the self-regulatory strategy of mental contrasting than those in a happy or neutral mood.

Whereas H. B. Kappes et al.'s (2011) paradigm assesses participants' use of mental contrasting in response to stimuli related to the desired future and the present reality (participants were asked to list four future and four reality aspects), we developed a measure to observe people's *spontaneous* use of mental contrasting, as it appears in the stream of thought. With this measure people are not asked to generate idiosyncratic aspects related to the future of wish fulfillment and its impeding reality.

## The Present Research: Observing Spontaneous Mental Contrasting by Content Analysis

To observe spontaneous self-regulatory thought, we used a straightforward approach: We simply asked people to think about an important personal wish and to write down their thoughts. We then content analyzed people's thoughts with respect to whether these thoughts focused on the desired future followed by the present reality (mental contrasting), on the future only (indulging), on the reality only (dwelling), or on the reality followed by the future (reverse contrasting).

The assessment of psychological processes by content analyses has a long tradition. Content analyses have been applied, for instance, to interpret responses on the Rorschach inkblot test (Elizur, 1949) and on the thematic apperception test (Eron, 1950), to examine spontaneous thoughts during problem solving ("think aloud protocol"; Newell & Simon, 1972), or to assess optimistic versus pessimistic explanatory style in written materials or historical records (newspapers, songs, stories; Oettingen, 1995; Oettingen & Seligman, 1990). Content analyses have been used to reliably assess mental states in many areas, such as clinical (Peterson, Luborsky, & Seligman, 1983), personality (Freedman, Blass, Rifkin, & Quitkin, 1972), developmental (Gottschalk, 1976), community (Rapoport, 1969), and health psychology (Westbrook & Viney, 1982). Content analyses allow for the unobtrusive assessment of mental states via verbal or written responses (Viney, 1983). The present content analytic approach differs from the choice approach by H. B. Kappes et al. (2011) in the following ways.

First, whereas the choice approach assesses whether participants mental contrast in response to being prompted with the future and reality, our measure does not use future and reality words as prompts. Rather, we unobtrusively observe whether participants self-generate mental contrasting in their stream of thought (i.e., the constant flow of ideas and images that run through a person's mind; James, 1892). Second, H. B. Kappes et al. (2011) had participants choose among aspects of future and reality. In contrast, our approach does not involve participants making a choice; rather we simply ask them to freely elaborate their wish as it appears in their mind's eye. Third, whereas the identification of self-regulatory thought by H. B. Kappes et al. relied on the choices made by the participants themselves, we establish an outside perspective on participants' spontaneous generation of self-regulatory thought by content analyzing their written elaborations. In sum, whereas the choice approach is modeled after experimental research on mental contrasting, the present approach advances the measurement of mental contrasting by allowing to unobtrusively observe the participants' spontaneously generated self-regulatory thought in a setting that more closely resembles a naturalistic situation.

In future research, the present measure may be used to investigate situation, person, and cultural factors that influence whether people self-regulate their goal pursuits by spontaneously mental contrasting in a given situation. In addition, the content analytic approach allows the examining of any kind of verbal material with regard to self-regulatory thought, such as transcribed interviews or therapy sessions (Peterson et al., 1983), online communications (McKenna & Bargh, 1998), group interactions (Pavitt, High, Tressler, & Winslow, 2007), and even cultural products (historical or religious documents; Oettingen, 1995; Oettingen & Seligman, 1990; poems, stories, songs, and school textbooks; McClelland, 1964).

## The Predictive Validity of Spontaneous Mental Contrasting for Selective Goal Pursuit

To test whether our measure indeed assesses modes of self-regulatory thought, we investigated whether spontaneous mental contrasting is associated with the strong expectations–goal pursuit relation that experimental studies on mental contrasting typically find. Testing whether spontaneous mental contrasting produces selective goal pursuit, just as induced mental contrasting does, also sheds light on whether mental contrasting is an effective self-regulatory strategy during everyday life. In this vein, long-standing research asks whether self-regulatory strategies that are effective when experimentally induced yield comparable benefits when they are spontaneously applied (Blackwell, Trzesniewski, & Dweck, 2007; Kruglanski, Pierro, & Higgins, 2007).

## Studies Overview

To develop a coding system that differentiates between the four modes of thought in participants writing about an important wish, in Study 1, we established four experimental conditions: We prompted students to either think about the future and reality (future–reality condition), about the future only (future-only condition), the reality only (reality-only condition), or we simply asked them to think about a wish without alluding them to either the future or the reality (no-prompt condition). We then content analyzed the written elaborations and hypothesized that the future and the reality would be reflected in the elaborations. The purpose of the no-prompt condition was to explore people's spontaneous self-regulatory thought. Of importance, we also tested whether mental contrasting as observed in the students' elaborations would predict selective (i.e., expectations based) goal pursuit (measured by commitment), just like in past experimental research (summary by Oettingen, 2012).

Studies 2 and 3 aimed to replicate and extend that mental contrasting as observed with our coding system predicts selective goal pursuit. Because we wanted to unobtrusively observe the *spontaneous* use of the four modes of thought, we did not prompt any of the participants with the future, the reality, or both. Rather, like in the no-prompt condition in Study 1, we asked all participants to freely think about their wish, and assessed the spontaneous use of mental contrasting versus the other modes of thought. We then tested whether spontaneous mental contrasting predicted selective goal pursuit measured by self-reported (Study 2) and observed performance (Study 3).

## Study 1: Developing a Coding Scheme to Observe Spontaneous Mental Contrasting

To develop our coding system to assess self-regulatory thought (mental contrasting, indulging, dwelling, or reverse contrasting), we asked students to first name an important wish and then to write down their thoughts and images about that wish. We prompted students to either think about the desired future followed by the present reality (future–reality condition), the future (future-only condition), or the reality (reality-only condition), so that we would be able to differentiate the modes of thought in students' written elaborations. We predicted that in each condition, students would use the mode of thought prompted in the instructions. In addition, we included a fourth condition in which we did not prompt students but just asked them to think about their wish (no-prompt condition). The purpose was to investigate whether the four modes of thought would *spontaneously* occur in students' stream of thought when they were not prompted with the desired future, present reality, or both.

Furthermore, we hypothesized that across conditions, students who mental contrasted should show a stronger relation between expectations and goal pursuit (measured by their commitment to realize their wish) than those who engaged in the other modes of thought (indulging, dwelling, and reverse contrasting combined). To address the alternative explanation that the hypothesized stronger expectations–commitment relation in students who spontaneously mental contrasted is due to them thinking more about their wishes than other students, we adjusted our analyses for the number of statements that students generated regarding their wish.

### *Method*

*Participants and design.* We recruited 231 students (192 female, 38 male, 1 unidentified, *M* age = 20.06 years, *SD* = 2.87) from universities in Germany, Austria, and Switzerland for this online study. The study was advertised on a free access social-networking website for students as a study on life tasks. Participation was voluntary and students could win book coupons. We randomly assigned students to one of the four conditions (future–reality, future only, reality only, and no prompt).

*Procedure.* In line with past experimental research (Oettingen, 2000; Oettingen et al., 2009; Oettingen et al., 2001), students first named their currently most important interpersonal wish. Students read the following:

> Most people value their relationships to other people and are often concerned about starting or maintaining such relationships. Which personal wish about starting or maintaining an interpersonal relationship is presently most on your mind?

Students listed, for example, to start a romantic relationship. Next, using the same items as in past research (Oettingen et al., 2009; Oettingen et al., 2001), we measured students' expectations ("How likely do you think it is that you will realize your wish?") and the incentive value of their wish ("How important is it to you that you will realize your wish?"). Like in previous research, we used 7-point scales ranging from 1 (*not at all*) to 7 (*very*).

*Experimental conditions.* To establish the four conditions (future–reality, future only, reality only, and no prompt), we asked students to think about their wish. They saw the interpersonal wish they had named beforehand and the following instructions on the screen. In the future–reality condition, students read the following:

> Now we would like you to think about your wish. For instance, you may imagine aspects of the future that you associate with having realized your wish, aspects of the present reality that impede it, or both. Let the mental images pass by in your thoughts and do not hesitate to give your thoughts and images free rein. Take as much time and space as you need to describe your thoughts.

In the future-only condition, the second sentence was replaced by "For instance, you may imagine aspects of the future that you associate with having realized your wish"; in the reality-only condition it was replaced by "For instance, you can imagine aspects of the present reality that impede realizing your wish"; and in the no-prompt condition it was replaced by "You are free to think about any aspects related to your wish that come to mind."

*Segmentation of elaborations into statements.* Students typed their thoughts into a designated space. Two independent raters blind to conditions divided students' written elaborations into statements. A statement was defined as a phrase consisting of no more than one subject–predicate–object–adverb sequence (Cousins, 1989). For example, if a student wrote "I dream about finding a spontaneous and affectionate partner, who is also down to earth," this text was segmented into three statements: (a) I dream about finding a spontaneous (b) and affectionate partner, (c) who is also down to earth. If a student wrote "I would like to meet nice people in my new city because I like having someone to talk to," this text was segmented into two statements: (a) I would like to meet nice people in my new city (b) because I like having someone to talk to. If students listed only keywords (e.g., "family," "loving partner"), each keyword was considered as one statement. The average agreement on the appropriate segmentation was 95%. Disagreements were resolved through discussion between the two raters. If an agreement could not be reached, the text was segmented according to the coding which suggested the larger number of statements.

*Coding of the statements.* The raters coded each statement into one of three categories: (a) desired future, (b) present reality, or (c) other. The categories are described in Appendix A. The segmentation and coding of one student's elaboration is given as an example in Appendix B. The interrater agreement for the category coding was 79% ($\kappa = .68$). Out of 21% of statements on which raters disagreed, for 9%, an agreement could be reached through discussion between the two raters, and for the remaining 12%, it could not be reached. If agreement could not be reached, the respective statements were coded into the category "other."

*Classifying coded statements.* We used the coded statements to identify each student's mode of thought. If a student generated at least one statement about the desired future but no statement about the reality, we classified the student as indulging. If a student generated at least one statement about the reality but no statement about the desired future, we classified the student as dwelling. If a student generated at least one statement about the desired future and at least one statement about reality, we classified the student as mental contrasting if the future was mentioned first. If the reality was mentioned first, we classified the student as reverse contrasting. If a student generated only statements categorized as "other" we did not include that student in any of the aforementioned categories.

*Goal commitment.* We assessed goal pursuit by students' commitment to realizing their wish. As people who are strongly committed to realizing a wish are likely to show frustration when experiencing failure (P. M. Gollwitzer & Kirchhof, 1998), the degree of anticipated disappointment if people anticipate failing to realize their wish is an indirect indicator of their commitment. The two disappointment items read the following: "How disappointed would you feel if you did not realize your wish?" and "How hard would it be for you if you did not realize your wish?" In addition, to assess commitment in a more direct way, we asked, "How determined are you to realize your wish?" "How hard will you try to realize your wish?" and "How energized do you feel to realize your wish?" Answer scales ranged from 1 (*not at all*) to 7 (*very*). All five items have been successfully used in previous studies to assess commitment (Oettingen, 2000; Oettingen et al., 2009; Oettingen et al., 2001; Sevincer & Oettingen, 2009). We combined the five items into an index of commitment ($\alpha = .82$). Finally, students answered some demographic questions and were fully debriefed.

## Results

*Descriptive analyses.* Means and standard deviations for expectations and incentive value are provided in Table 1. Expectations and incentive value correlated positively ($r = .28$, $p < .001$). On average, students generated 7.19 statements ($SD = 4.98$).

**Table 1.** Means for Expectations and Incentive Value in Studies 1 to 3.

| Study | Wish | Expectation | Incentive |
|---|---|---|---|
| 1 | Interpersonal | 5.00 (1.36) | 6.51 (.81) |
| 2 | Achievement | 5.31 (1.38) | 6.25 (1.01) |
| 3 | Attending graduate school | 3.41 (1.47) | 3.81 (1.70) |

*Note.* Standard deviations are given in parentheses.

*Self-regulatory thought: Conditions with prompts.* We reasoned that the self-regulatory thought students predominantly engaged in would concur with the prompts provided. Table 2 gives an overview of the proportion of self-regulatory thought in each condition. Because a small number of students (6 or 4%) generated only statements categorized as other we did not include them in the analyses. The pattern did not change when these students were included.

As predicted, of those students who were prompted to think about the future and the reality (future–reality condition), more mental contrasted (35 or 59%) than engaged in the other modes of thought (indulging, dwelling, reverse contrasting) combined, $\chi^2(1, N = 55) = 4.09$, $p = .04$. Of those who were prompted to think about the desired future (future-only condition), more indulged (34 or 64%) than engaged in the other modes of thought (dwelling, mental contrasting, and reverse contrasting) combined, $\chi^2(1, N = 52) = 4.92$, $p = .03$. Of those who were prompted to think about the present reality (reality-only condition), more dwelled (40 or 71%) than engaged in the other modes of thought (indulging, mental contrasting, and reverse contrasting) combined, $\chi^2(1, N = 55) = 11.36$, $p = .001$.

*Self-regulatory thought: No prompt condition.* Moreover, we examined the extent to which the modes of thought occurred in the condition where students were not prompted to think about the future, the reality, or both. Six (10%) students spontaneously mental contrasted, 21 (33%) indulged, 20 (32%) dwelled, and 7 (11%) reverse contrasted. Nine students (14%) generated only statements categorized as "other."

*Goal commitment.* We hypothesized that across conditions, students who mental contrasted would show a stronger expectations–commitment relation than those who used the other modes of thought (indulging, dwelling, and reverse contrasting) combined.[1] We used hierarchical regression analyses with commitment as the dependent variable. In the first step, we entered the dummy-coded, categorical self-regulatory thought variable (0 = mental contrasting; 1 = indulging, dwelling, and reverse contrasting combined) and the continuous expectations measure as independent variables. *Expectations* was centered around the mean as recommended by Aiken and West (1991); the interaction term of self-regulatory thought by expectations was added as an

**Table 2.** Number of Persons Engaging in the Modes of Thought in Studies 1 to 3.

| | | Self-regulatory thought | | | | |
|---|---|---|---|---|---|---|
| Study | *N/n* | Mental contrasting | Indulging | Dwelling | Reverse contrasting | Other |
| Study 1 | | | | | | |
| Future–reality | 59 | 35 (59) | 4 (7) | 11 (19) | 5 (8) | 4 (7) |
| Future only | 53 | 11 (21) | 34 (64) | 2 (4) | 4 (8) | 1 (2) |
| Reality only | 56 | 1 (2) | 2 (4) | 40 (71) | 12 (21) | 1 (2) |
| No prompt | 63 | 6 (10) | 21 (33) | 20 (32) | 7 (11) | 9 (14) |
| Study 2 | 321 | 29 (9) | 117 (36) | 77 (24) | 36 (11) | 62 (19) |
| Study 3 | 212 | 58 (27) | 108 (51) | 7 (3) | 25 (12) | 14 (7) |

*Note*. Percentages are given in parentheses.

**Table 3.** Study 1: Summary of Hierarchical Regression Analyses for Self-Regulatory Thought and Expectations Predicting Commitment.

| Independent variables | *B* | *SE B* | β | *p* |
|---|---|---|---|---|
| Step 1 | | | | |
| Self-regulatory thought | −.06 | .14 | −.03 | .67 |
| Expectation | .33 | .04 | .46 | .001 |
| Step 2 | | | | |
| Self-regulatory thought | −.02 | .14 | −.01 | .87 |
| Expectation | .54 | .09 | .73 | .001 |
| Self-regulatory thought × Expectation | −.26 | .10 | −.32 | .01 |

*Note*. $R^2$ = .21 for Step 1; $R^2$ = .24 for Step 2 (*p*s < .001).

independent variable in the second step. As predicted, adding the interaction term improved the model, $R^2_{change}$ = 11%, $F_{change}(1, 212) = 6.60$, $p = .01$ (Table 3).

In all following regression analyses, only significant effects are reported. We observed a main effect of expectations, $t(213) = 7.53$, $p < .001$, which was qualified by the predicted interaction effect, $t(212) = 2.56$, $p = .01$. The expectations–commitment relation was stronger in mental contrasting students than in the other students combined (Figure 1). When expectations were high, mental contrasting students were more committed than the other students, $t(212) = 2.31$, $p = .02$; when expectations were low, they were less committed, $t(212) = 2.34$, $p = .02$.

*Number of generated statements as alternative explanation.* One may argue that students who mental contrasted showed a stronger expectations–commitment relation because they thought more (generated more statements) about their wishes than the other students. To investigate this possibility, we reran the aforementioned regression analysis, adding the number of generated statements as independent variable as well as all two-way and the three-way interaction terms. The self-regulatory thought by expectations interaction effect remained significant, $t(208) = 2.60$, $p = .01$,

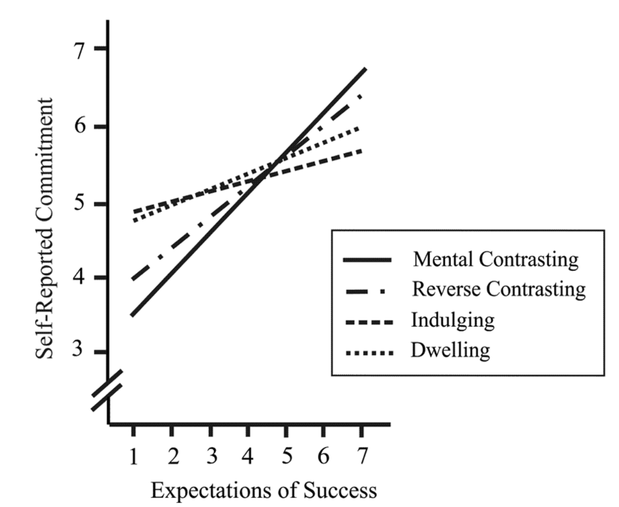


**Figure 1.** Study 1: Regression lines depict the relation between expectations and commitment as a function of self-regulatory thought across conditions.
*Note.* Regression lines were plotted using the equations for the simple regression analysis of expectations predicting commitment in each group (mental contrasting, indulging, dwelling, and reverse contrasting).

indicating that the results were independent of the number of generated statements.

## Discussion

Our content analysis of students' written elaborations successfully captured students' self-regulatory thought. In the conditions with prompts, the self-regulatory thought that students primarily used in each condition agreed with the respective prompts. In the no-prompt condition, a great majority of students (86%) could be categorized as using either one of the four modes of thought. Apparently, even if people are not prompted to think about the future, the reality, or both, the four modes of thought spontaneously occur in their stream of thought when they think about their wishes or concerns.

In addition, those students classified as mental contrasting showed the typical strong expectations–goal pursuit relation that has been found when mental contrasting was experimentally induced. The relation between expectations and commitment to wish fulfillment was stronger in mental contrasting students than in those who engaged in the other modes of thought. These results were independent of the number of statements students generated.

However, because in Study 1 most (35 or 66%) of the 53 mental contrasting students were prompted with the desired future and the present reality, it is possible that presenting students with the future and reality may have produced a stronger expectations–commitment relation in mental contrasting participants. Only students in the no-prompt condition were not presented with the future, the reality, or both. However, in this condition there were too few mental contrasting students (6 or 10%) to investigate any differences in the expectations–commitment relation. Therefore, to investigate whether spontaneous mental contrasting, (i.e., mental contrasting initiated without being prompted by the future or reality) produces selective goal pursuit, in Study 2, like in the no-prompt condition in Study 1, we asked all participants to freely think about their wish, without providing them with any examples of what they could think about.

Furthermore, in Study 1, we assessed goal pursuit by commitment to realize the wish. However, it is still unclear whether spontaneous mental contrasting produces selective performance in realizing the wish just like experimentally induced mental contrasting does. Moreover, Study 1 focused on the interpersonal domain. To investigate, whether the four modes of thought can also be observed in another life domain, in Study 2, we asked students to name an important wish from the achievement domain. Finally, because, in Study 1, we had too few male students (38 or 20%) to test for gender differences in self-regulatory thought, we recruited a more balanced sample for Study 2.

## Study 2: Spontaneous Mental Contrasting and Self-Reported Performance

Participants named their currently most important professional or academic wish and indicated their expectations of realizing it, as well as its incentive value. We wanted to examine whether spontaneously applied mental contrasting produces selective goal pursuit as measured by self-reported performance, and therefore we asked all participants to freely think about their wish without providing them with any prompts. One week after the experiment, we asked participants how they performed regarding fulfilling their wish.

### Method

*Participants.* We recruited 456 participants for this online study. The retention rate was 70%. Thus, our final sample consisted of 321 participants (210 female, 106 male, 5 unidentified, *M* age = 33.89 years, *SD* = 11.26). Those 135 participants who did not complete the follow-up did not differ from the rest on any of the following variables: expectations, incentive, or self-regulatory thought. The study was advertised on a free access website for classified ads as a two-part study on life tasks. Participation was voluntary and participants could win Amazon gift cards. The study used a correlational design.

### Procedure

*Observing self-regulatory thought.* We used the same procedure as in the no-prompt condition in Study 1. To observe self-regulatory thought with regard to a wish from the achievement domain, we asked

> Most people value professional or academic achievement and are often concerned about their professional or academic accomplishments. Which personal wish about your professional or academic achievement is presently most on your mind?

Participants named, for example, to get a promotion or to pass an exam. We then measured expectations and incentive value, and asked participants to freely think about their wish, just like in Study 1. We then content analyzed the written elaborations. The interrater reliability for segmentation into statements was 86%; for the category coding, it was 83% ($\kappa = .75$). Out of 17% of statements on which raters disagreed about the categorization, for 9%, an agreement could be reached through discussion between the two raters. The remaining 8% were coded into category "other."

*Self-reported performance.* After 1 week, we sent participants a link to a follow-up, which they were requested to complete within 3 days. We used two items that have been successfully used in the previous research to assess goal pursuit (Sheldon & Elliot, 1998) as our measure of self-reported performance: "How hard did you try to realize your wish since taking part in this survey about 1 week ago?" and "How successful have you been in realizing your wish since taking part in this survey about 1 week ago?" Answer scales ranged from 1 (*not at all*) to 7 (*very*). Participants also listed all actions they had undertaken to realize their wish since the initial survey (participants named, for example, "talked to my boss" and "met with friends to study"). The number of actions people perform to fulfill a wish is a valid indicator of goal pursuit (Oettingen et al., 2001; Sevincer & Oettingen, 2009; Wicklund & Gollwitzer, 1982). We *z*-transformed and combined the three items into one index of self-reported performance ($\alpha = .66$). Finally, participants answered some demographic questions and were fully debriefed.

### Results

*Descriptive analyses.* Means and standard deviations for expectations and incentive value are provided in Table 1.

**Table 4.** Study 2: Summary of Hierarchical Regression Analyses for Self-Regulatory Thought and Expectations Predicting Self-Reported Performance.

| Independent variables | *B* | *SE B* | β | *p* |
|---|---|---|---|---|
| Step 1 | | | | |
| Self-regulatory thought | −.14 | .16 | −.06 | .36 |
| Expectation | .13 | .04 | .22 | .001 |
| Step 2 | | | | |
| Self-regulatory thought | −.24 | .16 | −.09 | .14 |
| Expectation | .40 | .12 | .71 | .001 |
| Self-regulatory thought × Expectation | −.30 | .13 | −.51 | .02 |

*Note.* $R^2$ = .05 for Step 1; $R^2$ = .07 for Step 2 (*p*s = .001).

Expectations and incentive value correlated positively ($r$ = .28, $p$ < .001). On average, participants generated 3.78 statements ($SD$ = 2.79).

*Self-regulatory thought.* Twenty-nine (9%) participants spontaneously mental contrasted, 117 (36%) indulged, 77 (24%) dwelled, and 36 (11%) reverse contrasted. Sixty-two (19%) participants generated only statements categorized as "other" (Table 2).

*Self-reported performance.* We used hierarchical regression analyses with self-reported performance as the dependent variable. In the first step we entered the dummy-coded, categorical self-regulatory thought variable (0 = mental contrasting vs. 1 = indulging, dwelling, and reverse contrasting combined) and the continuous expectations measure (centered around the mean; Aiken & West, 1991); the self-regulatory thought by expectations interaction term was added as independent variable in the second step. As predicted, adding the interaction term improved the model, $R^2_{\text{change}}$ = 17%, $F_{\text{change}}(1, 253) = 5.36$, $p$ = .02 (Table 4).

We observed a main effect of expectations, $t(254) = 3.62$, $p$ < .001, which was qualified by the predicted interaction effect, $t(253) = 2.32$, $p$ = .02.[1] The expectations–performance relation was stronger in mental contrasting participants than in the other participants combined (Figure 2). When expectations were high, mental contrasting participants performed better than the other participants, $t(253) = 2.50$, $p$ = .01; when expectations were low, they performed worse, $t(253) = 2.12$, $p$ < .05. Moreover, when we added the number of generated statements as independent variable as well as all two-way and the three-way interaction terms, the self-regulatory thought by expectations interaction effect remained significant, $t(249) = 2.40$, $p$ = .02.

*Gender effects.* The proportion of men and women who spontaneously mental contrasted, indulged, or dwelled did not differ (mental contrasting, 13% vs. 11%; indulging, 52% vs. 42%; and dwelling, 29% vs. 30%, for men and women, respectively, $\chi^2$s < 2.20, $p$s > .14). However, fewer men (7%) than women (17%) reverse contrasted, $\chi^2$ = 5.22, $p$ = .02. To investigate whether the expectations–performance relation after mental contrasting differed between men and women, we repeated the aforementioned regression analyses adding gender, gender by self-regulatory thought, gender by expectations, and gender by self-regulatory thought by expectations into the regression equation. We did not observe any main or interaction effects with gender, $t$s < 1.38, $p$s > .17, indicating that gender did not influence the expectations–performance relation in mental contrasting participants.

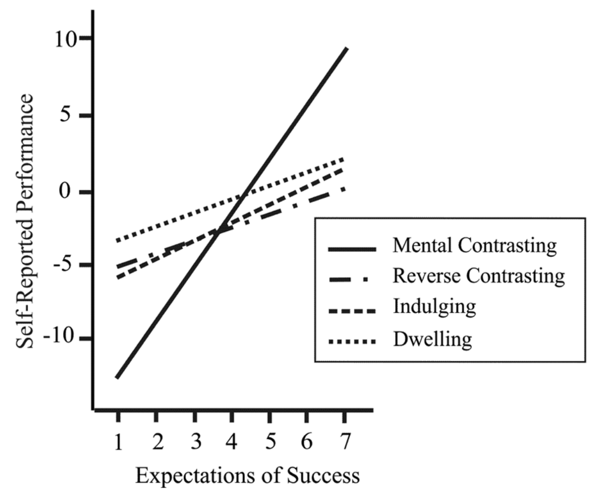


**Figure 2.** Study 2: Regression lines depict the relation between expectations and self-reported performance 1 week after the experiment as a function of self-regulatory thought.
*Note.* Regression lines were plotted using the equations for the simple regression analysis of expectations predicting performance in each group.

## Discussion

Just like in the no-prompt condition in Study 1, the great majority of students (81%) could be categorized as engaging in either one of the four modes of thought. Mental contrasting participants showed a stronger relation between expectations and goal pursuit (measured by self-reported performance) than those who used the other modes of thought combined. Apparently, spontaneous mental contrasting produces the same benefits regarding selective (expectations based) performance as experimentally induced mental contrasting.

Furthermore, men and women did not differ in the extent to which they mental contrasted, indulged, or dwelled. Men, however, were less likely to reverse contrast than women. Given the absence of any gender differences in the other modes of thought, this may be a spurious finding. The relation between expectations and performance after mental contrasting did not differ between men and women. Thus, men and women should equally benefit from spontaneous mental contrasting. In Study 2, we assessed participants' performance by self-report; we conducted Study 3 to test whether spontaneous mental contrasting is also associated with selective performance when performance is observed, rather than self-reported.

## Study 3: Spontaneous Mental Contrasting and Observed Performance

We examined whether spontaneous mental contrasting predicted selective goal pursuit assessed by observed performance. Furthermore, in Studies 1 and 2, participants generated their own idiosyncratic wishes. In Study 3, we presented all participants with the same wish: being admitted to their favorite graduate school. Specifically, we tested undergraduate students who wanted to attend graduate school by asking them to write a fictitious admission essay. We stressed that performance in writing the essay strongly predicts the chance of being accepted to their favorite school. We used students' performance in writing the essay as a behavioral indicator for their goal pursuit toward being accepted to their favorite school.

Moreover, to test whether spontaneous mental contrasting is associated with expectations-dependent performance, independent of participants' prior commitment to being accepted at their favorite school, we measured participants' baseline commitment before they elaborated on their wishes. Because we measured rather than manipulated mental contrasting, assessing participants' baseline commitment also allowed us to test whether the stronger expectations–goal pursuit relation, after spontaneous mental contrasting, indeed emerged as a result of the mental contrasting procedure during the study. Specifically, we predicted that the strength of the expectations–goal pursuit relation in mental contrasting participants would increase from baseline after they spontaneously mental contrasted.

### *Method*

*Participants.* We recruited 212 undergraduate students (147 female, 61 male, 4 unidentified, $M$ age = 19.33 years, $SD$ = 1.43) from a large university in the United States. The study was advertised as a laboratory study on cognitive processes and performance for students who intended to apply for graduate school. Participants received course credit. Like in Study 2, we used a correlational design.

#### *Procedure*

*Observing self-regulatory thought and assessing baseline commitment.* We tested students in groups of up to 10 people. On arrival, students were told that their task was to write a fictitious graduate admission essay. We stressed that their essay would be analyzed by experts of a graduate admission committee and that their performance in writing the essay was highly indicative of their chance of being accepted to their favorite school. Students were also informed that they would receive feedback on their essays, that their answers would remain confidential, and that participation was voluntary. To assure that we were successful in recruiting undergraduates who intended attending graduate school, we asked: "Do you plan to attend graduate school?" We used a 7-point scale ranging from 1 (*definitely no*) to 4 (*not sure*) to 7 (*definitely yes*).

Thereafter, students named their favorite school: "Which graduate school would you like to attend the most?" To measure students' expectations and incentive value to write an excellent essay, we asked: "How likely is it that you will write an excellent fictitious admission essay?" and "How important is it to you to write an excellent fictitious admission essay?" We used 7-point scales ranging from 1 (*not at all*) to 7 (*very*). To obtain a baseline measure of students' commitment to being admitted to their favorite school, we used the five commitment items from Study 1 adapted to being admitted to one's favorite school (e.g., "How determined are you to being admitted to your favorite graduate school?"). We combined the five items into one index of baseline commitment ($\alpha$ = .89).

Thereafter, we asked students to freely think about being admitted to their favorite school. Students read

> Now we would like you to think about being admitted to your favorite graduate school. You are free to think about whatever aspects come to your mind that are related to being admitted to your favorite graduate school. Let the mental images pass by in your thoughts and do not hesitate to give your thoughts and images free rein. Take as much time and space as you need to describe your thoughts.

When content analyzing students' elaborations according to the same principles as in Studies 1 and 2, the interrater reliability for the segmentation into statements was 80% and for the category coding it was 79% ($\kappa$ = .64). Out of 21% of statements on which raters disagreed about the categorization, for 10%, agreement could be reached through discussion. The remaining 11% were coded into category "other."

*Observed performance.* Students then wrote their essays. We instructed them to detail their past academic achievements, their present study interests, their future career plans, and the reasons for choosing their field of study. The essays should not exceed 300 words. Students had 25 min to complete their essays. Finally, students answered some demographic questions and were fully debriefed.

Two raters unaware of the hypotheses graded the students' essays based on Oettingen et al. (2009). Specifically, an A meant that students outlined in detail all of the required topics, clearly structured their essay, used concise and professional language, highlighted their strengths, and detailed their enthusiasm about attending their favorite school. A B meant that students outlined all of the required topics, structured their essay, used appropriate language, talked about their strengths, and expressed general enthusiasm about their favorite school. A C meant that students mentioned all topics but presented them in a confusing order, sometimes used inappropriate language, did not elaborate on their academic strengths, and only briefly mentioned their favorite school. A D meant that students left out required topics, did not structure their essay, used inappropriate language, mentioned no strengths and occasionally even weaknesses, and hardly referred to their favorite school. Finally, an F meant that students failed to elaborate on most or all of the required topics, used slang or swear words, or made indifferent remarks about themselves and their favorite school. The interrater agreement was α = .71. Disagreements were resolved through discussion between the two raters. If agreement could not be reached the higher grade was given.

## Results

*Descriptive analyses.* In response to the question whether they plan to attend graduate school, 198 students (93%) answered with a 4 or higher on the 7-point scale. Means and standard deviations for expectations and incentive value are provided in Table 1. Students' baseline commitment to being admitted to their favorite school correlated positively with their observed performance in essay writing, $r = .17$, $p = .01$. On average, students generated 9.27 ($SD = 4.26$) statements. Thirty-five percent of the students earned an A for their admission essay, 47% a B, 11% a C, and 6% a D or an F.

*Self-regulatory thought.* Fifty-eight (27%) students spontaneously mental contrasted, 108 (51%) indulged, 7 (3%) dwelled, and 25 (12%) reverse contrasted. Fourteen (7%) students generated only statements categorized as "other" (Table 2).

*Observed performance.* We used hierarchical regression analyses with essay grades as the dependent variable. In the first step, we entered the dummy-coded self-regulatory thought variable (0 = mental contrasting vs. 1 = indulging, dwelling, and reverse contrasting combined) and the continuous expectations measure (centered around the mean; Aiken & West, 1991); the interaction term of self-regulatory thought by expectations was added as an independent variable in the second step. As predicted, adding the interaction term improved the model, $R^2_{change} > 100\%$, $F_{change}(1, 194) = 6.37$, $p = .01$ (Table 5).

We observed the predicted interaction effect of self-regulatory thought by expectations, $t(194) = 2.52$, $p = .01$.[1] The relation between expectations and grades was stronger in the mental contrasting students than in the other students combined (Figure 3). When expectations were high, mental contrasting students earned better grades than the other students, $t(194) = 2.40$, $p = .02$; when expectations were low, they earned poorer grades, $t(194) = 2.05$, $p = .04$. Moreover, when we added the number of generated statements as an independent variable, as well as all two-way and three-way interactions, the self-regulatory thought by expectations interaction remained significant, $t(190) = 2.61$, $p = .01$. Furthermore, it remained significant when we adjusted for students' prior commitment to being admitted to their favorite school by adding baseline commitment as an independent variable, $F(1, 193) = 2.70$, $p = .008$.

**Table 5.** Study 2: Summary of Hierarchical Regression Analyses for Self-Regulatory Thought and Expectations Predicting Observed Performance (Grades in Essay Writing).

| Independent variables | *B* | *SE B* | β | *p* |
|---|---|---|---|---|
| Step 1 | | | | |
| Self-regulatory thought | .07 | .38 | .01 | .85 |
| Expectation | .06 | .12 | .04 | .63 |
| Step 2 | | | | |
| Self-regulatory thought | .05 | .38 | .01 | .89 |
| Expectation | −.15 | .14 | −.09 | .31 |
| Self-regulatory thought × Expectation | .64 | .25 | .22 | .01 |

*Note.* $R^2 = .001$ for Step 1, $p = .88$; $R^2 = .03$ for Step 2, $p = .09$.

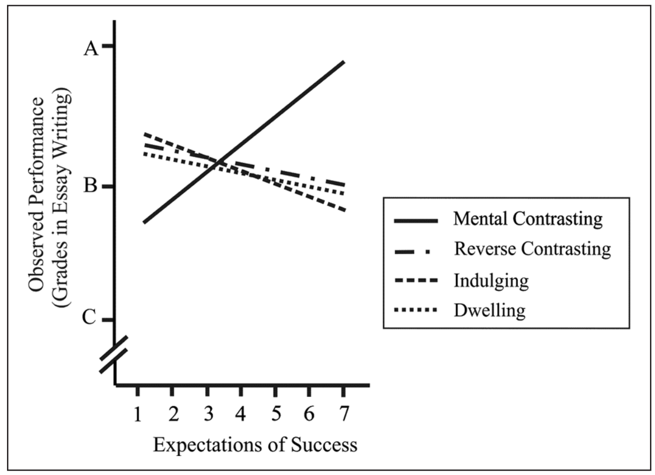


**Figure 3.** Study 3: Regression lines depict the relation between expectations and observed performance (grades in essay writing) as a function of self-regulatory thought.
*Note.* Regression lines were plotted using the equations for the simple regression analysis of expectations predicting performance in each group.

*Strength of the Expectations–Goal Pursuit Link Before and After the Elaboration in Mental Contrasting Participants.* To test whether in mental contrasting participants the strength of the expectations–goal pursuit relation increased from baseline to after participants elaborated their wishes, we estimated a repeated-measurement General Linear Model (GLM) with baseline commitment before the elaboration (T1) and observed performance after the elaboration (T2) as within-subject variables and the continuous expectations measure as covariate focusing only on mental contrasting participants. The predicted interaction effect of measurement time (T1–T2) by expectations was marginally significant $F(1, 56) = 3.45$, $p = .07$, indicating that the strength of the expectations–goal pursuit link tended to be stronger after participants spontaneously mental contrasted, $\beta = .49$, $t(56) = 3.04$, $p = .004$, than before, $\beta = .19$, $t(56) = 1.92$, $p = .06$.

### Discussion

Undergraduate students who spontaneously mental contrasted the desired future of being accepted to their favorite school with obstacles to being accepted showed a stronger relation between expectations and observed performance in writing a fictitious admission essay than those who used the other modes of thought combined. Apparently, spontaneous mental contrasting also led to selective performance when performance was observed rather than self-reported. The stronger expectations–goal pursuit relation in mental contrasting students was independent of any differences in students' prior commitment to being accepted to their favorite school and it indeed emerged as a result of spontaneous mental contrasting during the study.

## General Discussion

We developed a content analytic measure to unobtrusively observe spontaneous mental contrasting as it occurs in people's stream of thought, when they think about important wishes. When assessed in this way, mental contrasting produced the same typical strong expectations–goal pursuit relation as when mental contrasting was experimentally induced. Observed mental contrasting predicted selective goal pursuit assessed by self-reported (Studies 1 and 2) and observed (Study 3) indicators, for motivational (commitment, Study 1) and behavioral indicators (performance, Studies 2 and 3), for immediately assessed performance (Study 3), and for performance assessed 1 week after the experiment (Study 2). Moreover, we replicated these findings across domains (interpersonal, academic, and professional achievement), in the laboratory, online, across cultures (Germany and the United States), and in different samples (university students and website users responding to classified ads).

The findings indicate that when people spontaneously mental contrast, they enjoy the same benefits as when they are explicitly instructed to do so. Long-standing research asks whether self-regulatory strategies that are effective when experimentally induced indeed yield comparable benefits when they are spontaneously applied (Blackwell et al., 2007). Moreover, Study 3 suggests that selective goal pursuit resulted from the spontaneous use of mental contrasting during the experiment.

In sum, spontaneous mental contrasting can be measured by analyzing people's written elaborations of important wishes. Being able to observe spontaneously occurring self-regulatory thought opens up the way to investigate situational, person, and cultural variables that predict mental contrasting.

### Investigating Influences on Spontaneous Mental Contrasting

*Situational variables.* In Study 3, students anticipated to write their essay directly after they thought about their wish (being admitted to graduate school). In this study, about 27% of students mental contrasted, compared with 10% in the no-prompt condition in Study 1 and 9% in Study 2. The need to engage in goal-related behavior might have led participants to engage in active self-regulation by mental contrasting. Future research should examine whether anticipating engaging in goal-related actions indeed leads people to mental contrast. Similarly, participants may be more likely to mental contrast when their wish is in the near future than when it is in the distant future, as the need to act toward wish fulfillment in the near future is more pressing.

*Person variables.* Mental contrasting is more cognitively demanding than indulging (Achtziger, Fehr, Oettingen, Gollwitzer, & Rockstroh, 2009). Thus, people who tend to engage in and enjoy effortful processing (those with a high need for cognition; Cacioppo, Petty, & Kao, 1984) may be more likely to mental contrast. Moreover, because mental contrasting is an effective self-regulatory strategy that induces change rather than stability, people who have high (vs. low) self-regulation skills (Baumeister & Heatherton, 1996) may be more likely to mental contrast. Finally, people's implicit theories (Dweck, 1999) may affect their self-regulatory thought. People who believe their present state can be changed for the better (incremental theorists) may focus more on the desired future (mental contrasting or indulging), whereas those who believe their present state cannot be changed (entity theorists) may focus more on the present reality (reverse contrasting or dwelling; Sevincer, Kluge, & Oettingen, in press).

*Cultural variables.* People in tight cultures (i.e., cultures with strong social norms; Triandis, 1989) are more constrained by social roles and obligations in pursuing their goals than those in loose cultures (i.e., cultures with weak social norms). For people in tight cultures, there should be little need to select their goals according to their expectations. People's actions are ritualized and their goals determined by their cultural context rather than their expectations. Therefore, fewer people in tight (vs. loose) cultures should spontaneously mental contrast (Oettingen, 1997).

### *Content Analyzing Other Verbal Material*

As mentioned before, the developed coding system may also be applied to other verbal materials, such as historical or religious documents (Oettingen, 1995), cultural products (poems, stories, songs, and school textbooks; McClelland, 1964), online communications (McKenna & Bargh, 1998), therapy sessions (Peterson et al., 1983), and group interactions (Pavitt et al., 2007).

### *The Occurrence of the Modes of Thought*

As previously stated, which mode of thought people spontaneously use is likely to be influenced by the characteristics of the situation (e.g., situational demands, mood, opportunities to act, experimental instructions, etc.). Nevertheless, to obtain a rough estimate of the spontaneous occurrence of the modes of thought, we calculated the relative proportions of the four modes of thought across all studies. From Study 1, we only included the no-prompt condition. Across all three studies, 16% of participants mental contrasted, 41% indulged, 17% dwelled, 11% reverse contrasted, and 14% could not be classified.

When inspecting the proportion of the modes of thought, at least two observations can be made. First, about twice as many people used the one-sided modes of thought (indulging and dwelling combined; 58%) than the two-sided modes of thought (mental contrasting and reverse contrasting combined; 27%). Research suggests that activation of a positive concept (such as the desired future) or a negative concept (such as the present reality) makes concepts of similar valence more accessible (Bargh, Chaiken, Raymond, & Hymes, 1996). Thus, once people start thinking about a positive or a negative event, they should be more likely to subsequently think of events of similar valence (as in indulging or dwelling) than of opposing valence (as in mental contrasting or reverse contrasting). Indeed, switching to concepts of opposing valence might take effortful self-regulation (Bargh et al., 1996). In support of this contention, neuropsychological evidence indicates that mental contrasting is cognitively more demanding than indulging or resting (Achtziger et al., 2009). Moreover, in another study, people whose self-regulatory resources were depleted (vs. not depleted; Muraven & Baumeister, 2000) were less (vs. more) likely to spontaneously mental contrast (Schlier, Sevincer, & Oettingen, 2012).

Second, within the two-sided modes of thought, participants mental contrasted (16%) and reverse contrasted (11%) to a similar extent. In contrast, within the one-sided modes of thought, more than twice as many participants indulged (41%) than dwelled (17%). The latter finding is consistent with evidence that people think positively rather than negatively about the future (Markus & Nurius, 1986; Perloff & Fetzer, 1986).

### *Relation of the Findings With the Choice Measure*

While our coding scheme allows observing which self-regulatory thought participants spontaneously generate in their stream of thought when they think about a wish, the H. B. Kappes et al. (2011) measure assesses which self-regulatory thought participants engage in, in response to being given the choice to either think about the future or the reality, or both. Presenting participants with the desired future and the present reality, as is done in the choice measure, should make the future and the reality highly accessible. As a consequence, the choice approach should lead to a relatively high number of mental contrasting participants, as compared with our measure. Indeed, when mental contrasting was assessed using the choice paradigm, the baseline use of mental contrasting was about 40% compared with, on average, only about 16% of participants in the present research. The results of H. B. Kappes et al. resemble the future–reality condition from Study 1, in which participants were prompted to think about the future and the reality. In this condition, mental contrasting was the predominant self-regulatory thought as well (about 60%). Furthermore, in one study, H. B. Kappes et al. asked participants to name and elaborate two aspects related to their wish and only later asked them to categorize the aspects as pertaining to the future or to the reality. In this study (Study 6), on average only 12% of participants mental contrasted. Finally, the higher number of mental contrasting participants in the H. B. Kappes et al. approach may be explained by the fact that participants are asked to make a choice. As people seek variety in their choices (Ratner, Kahn, & Kahneman, 1999), they may choose to elaborate aspects of the future *and* reality rather than either the future *or* reality.

## Conclusion

People's spontaneously occurring self-regulatory thought (mental contrasting, indulging, dwelling, and reverse contrasting) can be unobtrusively observed by content analyzing their written elaborations regarding an important wish. Spontaneous mental contrasting led to selective (i.e., expectations based) goal pursuit just like experimentally induced mental contrasting. Our coding scheme opens up a way to investigate situational, personal, and cultural variables that predict people's effective self-regulation of goal pursuit by the spontaneous use of mental contrasting.

## Appendix A

*Coding Scheme With Examples From Students' Statements.*

| Desired future |
| --- |
| Descriptions of the desired future ("I would like to get to know some people with whom I can spend my leisure time"). |
| Consequences of attaining the desired future |
| feelings ("starting a family would make me very happy") |
| events ("our whole family would be together at Christmas") |
| material gains ("moving in together allows us to afford a bigger apartment") |
| nonmaterial gains ("I would have someone to talk to") |
| improvements of current situation ("I would not feel lonely anymore") |
| **Present reality** |
| Descriptions of the present reality ("currently I am not very satisfied") |
| Obstacles in the present reality to attaining the desired future |
| internal ("I am still mad at my brother") |
| external ("it is difficult to find a nice apartment") |
| potential ("I might get sick") |
| **Other** |
| Statements that could not be categorized as pertaining to the desired future or to the present reality: |
| Ambiguous ("I have to take risks") |
| Past ("we always had a lot of fun together") |
| Self in general ("I am studying Psychology") |
| Experimental situation ("I hope I win the lottery") |

## Appendix B

*Example of Segmentation and Coding of One Student's Elaboration*

> I would like to move in together with my boyfriend. We would find a cozy apartment, cook together, fall asleep, and wake up together. There will be always someone waiting for me at home. However, my boyfriend does not want to lose his personal freedom. Also, it is hard to find a nice apartment at a reasonable price.

This elaboration was divided and coded as follows: I would like to move in together with my boyfriend (desired future). We would find a cozy apartment (desired future), cook together (desired future), fall asleep (desired future), and wake up together (desired future). There will be always someone waiting for me at home (desired future). However, my boyfriend does not want to lose his personal freedom (present reality). Also, it is hard to find a nice apartment at a reasonable price (present reality).


### Acknowledgment

We thank Daniel Busatta, Johanna Kalvelage, Helena Klass, Tobias Lerner, Verena Linhart, Simon Pradel, Tilman Reinelt, and Greta Wagner for their help with collecting the data.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Preparation of this article was supported by German Science Foundation Grant OE 237/12-1 awarded to Gabriele Oettingen and a postdoctoral fellowship from the German Exchange Service to Timur Sevincer.


### Note

1. In all studies, the interaction effect between expectations and self-regulatory thought (mental contrasting vs. indulging, dwelling, and reverse contrasting combined) remained significant when participants who generated only statements categorized as "other" were included in the group of nonmental contrasting participants, *F*s > 5.38, *p*s < .02.

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