Motivation Science
2018, Vol. 4, No. 2, 137–157


2333-8113/18/$12.00 http://dx.doi.org/10.1037/mot0000080

# Mental Contrasting of Counterfactual Fantasies Engages People in Their Present Life

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Positive counterfactuals about an alternative past are "if only" reconstructions of the factual past. They are functional in preparing people to act when subsequent opportunities to restore the counterfactual past will arise. When the counterfactual past cannot be restored, however, counterfactuals can be dysfunctional by leading to distress and difficulties in coping with everyday life. In those cases, letting go of the counterfactual past should help people to actively engage in their present life. Previous research showed that people let go of the counterfactual past when they used the self-regulation strategy of mental contrasting. Building on these findings, we investigate whether mental contrasting helps people to actively engage in their present life. In 3 experimental studies, mental contrasting (vs. indulging in counterfactual fantasies and elaborating on irrelevant content) led people to exert effort and successfully perform in the interpersonal domain (i.e., writing a high-quality get-well letter to a close friend, Study 1), the professional domain (i.e., writing a high-quality job application, Study 2), and the academic domain (i.e., successfully solving Raven matrices, Study 3). The results suggest that mental contrasting of counterfactual fantasies can help people to actively engage and succeed in their present life.

*Keywords:* counterfactual thinking, self-regulation, mental contrasting, fantasies, performance



Imagine a young woman who has failed her job interview some time ago. Even though she knows that the position has been filled by now, she still feels frustrated and angry that she ended up without the job. She cannot help thinking, "If only I had gotten that job, I would have made a career, and I would have been so much happier." Those thoughts might keep her from applying for other jobs and eventually from moving on with her present life.

This article was published Online First September 28, 2017.

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Preparation of this article was supported by German Research Foundation Grant Oe-237/13-1 awarded to Gabriele Oettingen. We are grateful to the members of the Motivation Lab at New York University for making valuable comments on a previous version of this article.

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When people imagine alternative scenarios to past events, they engage in *counterfactuals* (Kahneman & Miller, 1986; Kahneman & Tversky, 1982; Roese, 1997). After negative life events, counterfactuals often represent better alternative scenarios (*upward counterfactuals*; Nasco & Marsh, 1999; Roese, 1997; Roese & Hur, 1997). That is, people tend to imagine how negative outcomes could have turned out better.

Those positive (i.e., upward) counterfactuals have traditionally been defined as conditionals, evaluating the desired imagined alternative against the present reality (Byrne, 2007). However, in some cases people might solely refer to the desired imagined alternative without considering the present reality. That is, people might mentally simulate and experience the counterfactuals as if they were real (*reflective mode*; Markman & McMullen, 2003, 2005; *"as if" thinking*; Markman & McMullen, 2007; *experiential mode*; McMullen, 1997; *simulation-based comparisons*; Summerville & Roese, 2008). Such mental simulations about a desired counterfactual past resemble mental simulations

about a desired future outcome (Taylor & Pham, 1999; Taylor, Pham, Rivkin, & Armor, 1998) or positive future fantasies (Oettingen, 2012; Oettingen & Wadden, 1991). Positive future fantasies are free images about desired events that might happen in the future, and they have been distinguished from positive expectations, which are judgments about a high likelihood that these desired events will occur in the future (Oettingen & Mayer, 2002). In the present research, we use the term *positive counterfactual fantasies* to refer to free images about desired events or scenarios that could have happened in the past.

## Functional and Dysfunctional Counterfactuals

Most research on counterfactual thinking has focused on functional aspects of positive counterfactuals. Whereas positive counterfactuals, in first instance, lead to negative affect because the reality seems worse in contrast to the idealized counterfactual alternative (Roese, 1994; Roese & Morrison, 2009), they facilitate simulations of potential routes to better outcomes and thereby can prepare people for future encounters of similar kind (Epstude & Roese, 2008). Specifically, the mental elaboration of a better alternative to a negative outcome might increase a person's perceived control in general (Nasco & Marsh, 1999), inform the person about potential routes to improvement by producing causal inferences (Markman, Gavanski, Sherman, & McMullen, 1993; Roese & Olson, 1996; Wells & Gavanski, 1989), and eventually lead to specific intentions and behaviors toward restoring the alternative outcome (Roese, 1994; Smallman & Roese, 2009). The negative affect resulting from upward counterfactuals may thereby signal the need for behavior change (Markman & McMullen, 2003, 2005; Markman, McMullen, & Elizaga, 2008).

However, counterfactuals can only successfully prepare for the future when subsequent opportunities to restore the positive counterfactual past are likely to arise (Epstude & Jonas, 2015; Epstude & Roese, 2011). Accordingly, research has identified the anticipated subsequent opportunity to restore the counterfactual past as one key moderator of the preparative functions of counterfactuals (Markman et al., 1993; see also Markman, Karadogan, Lindberg, & Zell, 2009). Most studies on the preparative functions of counterfactuals have focused on repeatable events in laboratory settings in which participants anticipated that they could potentially improve their performance, such as in anagram tasks or exam performances. After receiving negative feedback about a past performance in the first part of the experiment, participants were asked to generate upward counterfactuals, anticipating that they would be provided with a subsequent opportunity to improve their performance in the second part of the experiment (e.g., Dyczewski & Markman, 2012; Markman et al., 1993, 2008; McMullen & Eppers, 2001; Nasco & Marsh, 1999; Roese, 1994).

In contrast, the present research focuses on everyday life counterfactuals regarding lost opportunities, which we define as positive counterfactual pasts for which it is unlikely or impossible that they can be restored (for a similar definition see Beike, Markman, & Karadogan, 2009). In everyday life situations, people are often *not* provided with subsequent opportunities to restore the positive counterfactual past. Markman et al. (2009) state,

> Windows of opportunity are often quite bounded and finite. Courses end, college ends, and interpersonal relationships are often irrecoverably terminated, at which point the present and the future are shunted to the past, and the possibility for corrective action is lost. (p. 187)

Such positive counterfactuals arise not only after negative events that the person had control over (e.g., "If only I had taken a different route home . . ."), but also after uncontrollable negative events (e.g., "If only my partner had not left me . . .") and may lead to feelings of self-blame and distress (Branscombe, Wohl, Owen, Allison, & N′gbala, 2003; Callander, Brown, Tata, & Regan, 2007; Davis, Lehman, Wortman, Cohen Silver, & Thompson, 1995; Epstude & Jonas, 2015). In the case of lost opportunities, that is, positive counterfactual pasts for which it is unlikely or impossible that they can be restored, counterfactuals are associated with long-term regrets and difficulties to cope with everyday life (Markman et al., 2009; McMullen & Markman, 2002; see also Davis & Lehman, 1995; Roese et al., 2009; Sherman & McConnell, 1995).

### Counterfactuals From a Goal Perspective

Positive counterfactuals are a common response to failed goal pursuit. That is, they occur after a futile attempt to reach a goal and may pertain either to the missed outcome or to the alternative means of how this outcome could have been reached (Epstude & Roese, 2011). Both positive counterfactual pasts and future goals represent a desired state, and both signal the need to correct current behavior in order to attain this desired state (Epstude & Roese, 2007, 2008; Markman & McMullen, 2003). Thus, when subsequent opportunities to restore the counterfactual past are likely to arise, being committed to the counterfactual past might resemble being committed to an attainable goal. In contrast, when subsequent opportunities to restore the counterfactual past are unlikely or impossible to arise, being committed to the counterfactual past might resemble being committed to an unattainable goal. Being committed to unattainable goals leads to negative affect and depression (Brandstätter, Herrmann, & Schüler, 2013; Johnson, Carver, & Fulford, 2010; Jones, Papadakis, Orr, & Strauman, 2013; Strauman, 2002), while disengagement from unattainable goals benefits well-being and health (e.g., Carver & Scheier, 1998; Miller & Wrosch, 2007; Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, & Miller, 2013). Disengagement from unattainable goals also provides the opportunity to engage in other goal pursuits, which is associated with high subjective well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003; see also Herrmann & Brandstätter, 2013; Huang & Bargh, 2014; Kruglanski et al., 2002). Similarly, being committed to attain a lost counterfactual past leads to negative affect and depression (Callander et al., 2007; Davis & Lehman, 1995), while letting go of wanting to attain the counterfactual past should provide people with the opportunity to engage in alternative endeavors provided by their present life (Markman et al., 2009; Sherman & McConnell, 1995).

In the present research, we used the self-regulation strategy of mental contrasting to help people let go of their lost counterfactual past and engage in their present life. Mental contrasting highlights the obstacles of current reality that stand in the way of the idealized counterfactual past still coming true. By highlighting those obstacles, mental contrasting elucidates that the past is forgone and cannot be brought back. Thus, people should be able to let go of the longed-for counterfactual past. In turn, they should be liberated to actively engage in alternative endeavors provided by their present life.

### Mental Contrasting

When people mentally contrast, they first imagine the attainment of a desired future, and thereafter elaborate on the critical obstacle of their current reality that stands in the way of attaining their desired future (Oettingen, 1999, 2012, 2014). When the obstacle of current reality is surmountable (expectations of attaining the desired future are high), people fully commit to the desired future and vigorously strive to attain it. Important in the context of the present research, when the obstacle of current reality is difficult or impossible to overcome (expectations of attaining the desired future are low), people let go of attaining the desired future and are free to commit to other endeavors (Oettingen, Pak, & Schnetter, 2001; review by Oettingen, 2012).

The theory of fantasy realization (Oettingen, 1997, 2012) specifies two other modes of thought about a desired future. People may engage in indulging (imagining only the attainment of the desired future), or in dwelling (elaborating only on the current reality). In those one-sided elaborations, no obstacle of current reality standing in the way of attaining the desired future is recognized, and thus commitment to the desired future should be unchanged (review by Oettingen, 2012).

Important in the context of the present research, mental contrasting helps people let go of wanting to attain their desired future when the obstacle of current reality standing in the way of attaining the desired future is difficult or impossible to overcome and expectations of attaining the desired future are low (review by Oettingen, 2012). In the present research, we extrapolated those findings to positive fantasies about a counterfactual past. Specifically, mental contrasting should help people realize that the obstacle of current reality standing in the way of still attaining the desired counterfactual past is difficult or impossible to overcome. Mental contrasting should thus help people let go of

wanting to attain their desired counterfactual past. In contrast, the other two modes of thought (i.e., indulging in positive fantasies about the desired counterfactual past, or dwelling on the current reality) should not unveil that the obstacle of current reality is difficult or impossible to overcome. Thus, indulging and dwelling should not help people realize that expectations of still attaining the counterfactual past are low. Therefore, these two modes of thought should keep people wanting to establish the desired counterfactual past (Oettingen et al., 2001; review by Oettingen, 2012).

Previous research has shown that for mental contrasting effects to occur, future and reality concepts do not have to be only named, but they have to be explicitly mentally elaborated. In this vein, the simple listing of future and reality aspects does not trigger the processes responsible for behavior change to occur (see Oettingen, 2012; Oettingen et al., 2001). Furthermore, mental contrasting produces behavior change in line with the obstacles that exist in current reality. That is, mental contrasting enables people to let go of their desired future by making it clear that the obstacle of current reality is difficult or impossible to overcome. That is, it leads people to acknowledge their expectations of attaining the desired future, rather than changing levels of expectations (see also Oettingen et al., 2001). Not being based on changes in expectations, mental contrasting effects recruit cognitive and motivational mechanisms, which should similarly hold for mental contrasting of counterfactual fantasies.

### Mental Contrasting: Mechanisms

**Cognitive mechanisms.** Regarding positive fantasies about a desired future, when the obstacle of current reality is difficult or impossible to overcome (expectations of attaining the desired future are low), mental contrasting weakens the implicit cognitive associations that spur goal pursuit. Specifically, mental contrasting weakens the implicit associations between the desired future and the obstacle of current reality. Now people can freely think about the desired future, without being reminded of the obstacle of current reality that needs to be overcome (Kappes & Oettingen, 2014). Furthermore, mental contrasting weakens the implicit associations between the obstacle of current reality and the instrumental means to overcome this obstacle. Now people do not allocate effort to overcome the obstacle of current reality (Kappes, Singmann, & Oettingen, 2012). These effects, in turn, predict behavior change. Regarding positive fantasies about a desired counterfactual past, mental contrasting should weaken the implicit association between the desired counterfactual past and the obstacle of current reality that stands in the way of still attaining the desired counterfactual past. Furthermore, mental contrasting should weaken the implicit associations between the obstacle of current reality and the instrumental means to overcome this obstacle. People should thus let go of wanting to attain the desired counterfactual past.

**Motivational mechanisms.** Regarding positive fantasies about a desired future, when the obstacle of current reality is difficult or impossible to overcome (expectations of attaining the desired future are low), mental contrasting weakens the implicit motivational processes that spur goal pursuit. Specifically, mental contrasting reduces people's mobilization of energy regarding their desired future as measured by self-report (Oettingen et al., 2009, Study 2) and by physiological indicators (Sevincer, Busatta, & Oettingen, 2014). Now people are free and can invest their energy in other, more promising endeavors. These effects, in turn, predict behavior change (Oettingen et al., 2009). Again, regarding positive fantasies about a desired counterfactual past, mental contrasting, by reducing the energy to attain the desired counterfactual past, should enable people to invest their energy in more promising endeavors in their present life.

## Related Approaches

### Content-Specific and Content-Neutral Effects and Performance

According to the functional theory of counterfactual thinking (Epstude & Roese, 2008), counterfactuals serve to manage and coordinate ongoing behavior. They may do so via two pathways: a content-specific pathway and a content-neutral pathway. Via the content-specific pathway, specific information entailed in the counterfactual (e.g., "If only I had studied harder, I would have passed the exam") is di-

rectly converted into a behavioral intention and thereby fuels specific behavior directed at restoring the counterfactual past (e.g., "study harder in order to pass the exam in a second attempt"; see also Roese, 1994; Smallman & Roese, 2009). Via the content-neutral pathway, counterfactuals instigate more general attentional, cognitive, and motivational processes that, in turn, alter ongoing behavior. As an example, positive (i.e., upward) counterfactuals might increase creative performance by promoting the consideration of various means to a given problem (*counterfactual mind-sets*; Markman, Lindberg, Kray, & Galinsky, 2007). Furthermore, they might increase task persistence by activating a promotion focus (Markman, McMullen, Elizaga, & Mizoguchi, 2006; Pennington & Roese, 2003). Lastly, positive counterfactuals, by pointing to actions one could have done, might increase a person's perceived control in general, which might result in self-inferences of efficacy and mastery (Nasco & Marsh, 1999).

The present approach differs from both content-specific and content-neutral effects of positive counterfactuals on subsequent behavior as depicted by Epstude and Roese (2008). First, studies investigating content-specific effects of counterfactuals on subsequent behavior focus on repeatable events and thus investigate behavior aimed at restoring the desired counterfactual past (e.g., Roese, 1994; Smallman & Roese, 2009). In contrast, our research focuses on events that are unlikely or even impossible to repeat and thus aims to assess people's behavior toward alternative tasks in their present life.

Second, studies investigating content-neutral effects of counterfactuals on subsequent behavior either prime participants with counterfactual mind-sets and then assess their performance on creativity tasks (e.g., Kray, Galinsky, & Wong, 2006; Markman et al., 2007), or they assess associations between counterfactual structure (i.e., additive vs. subtractive counterfactuals) and regulatory focus (i.e., promotion vs. prevention focus) and their interactive effects on subsequent behavior (e.g., Markman et al., 2006). In contrast, our research does not aim to investigate how counterfactual mind-sets or structures affect behavior. We want to investigate whether letting go of lost opportunities in the past liberates people to actively engage in tasks in their present life, irrespective of whether those lost opportunities represent additive counterfactuals (e.g., "If only I had married again") or subtractive counterfactuals (e.g., "If only I had not quit my job").

Third, studies investigating content-neutral effects of counterfactuals on subsequent behavior have proposed that counterfactuals increase people's perceived control in general, which, in turn, promotes feelings of efficacy and mastery (e.g., Nasco & Marsh, 1999). In our research, we differentiate between the perceived controllability of an event at the time it happened and the low opportunity to restore the better counterfactual outcome in the here and now. In previous studies (Krott & Oettingen, 2017), we showed that mental contrasting helped people let go of lost opportunities, irrespective of whether those lost opportunities pertained to controllable events (e.g., "If only I had not quit my job") or to uncontrollable events (e.g., "If only my partner had not left me"). Thus, an increase in perceived control in general might be functional for restoring the counterfactual outcome in future encounters of a similar kind (e.g., exam performances; see Nasco & Marsh, 1999). However, in cases where those future encounters are unlikely or impossible to occur, counterfactuals might be dysfunctional for engagement in alternative endeavors in present life. As Epstude and Roese (2011) state, "Counterfactuals can become dysfunctional when they interfere with the initiation of goal pursuit" (p. 24). We similarly argue that, in cases where opportunities to restore the better alternative outcome are unlikely or impossible to arise, letting go of those lost opportunities should liberate people to engage in other, more promising endeavors in their present life (see also Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003). This should be true for both controllable and uncontrollable past events.

## Reflective Upward Counterfactuals and Performance

Positive counterfactual fantasies seem at first glance similar to reflective upward counterfactuals (*reflective mode*; Markman & McMullen, 2003, 2005; *"as if" thinking*; Markman & McMullen, 2007; *experiential mode*; McMullen, 1997). Markman and McMullen (2003) propose two distinctive modes of counterfactuals: a reflective mode, in which people mentally simu-

late the successful attainment of the counterfactual as if it was real (e.g., "What if I had actually gotten an A?"), and an evaluative mode, in which people evaluate their current state against the counterfactual (e.g., "I could have gotten an A, but I got a B"). Markman et al. (2008) investigated the effects of reflective upward counterfactuals and evaluative upward counterfactuals on effort and performance. Reflective upward counterfactuals led to complacency, and thereby decreased effort and performance. Evaluative upward counterfactuals led to affective contrast, and thereby increased effort and performance.

The present research differs from Markman et al.'s (2008) theory and studies: First, in the Markman et al. (2008) studies, participants were in a laboratory setting, in which they anticipated a subsequent opportunity to restore the desired counterfactual past. Accordingly, the researchers assessed people's effort and performance toward restoring the desired counterfactual past. In contrast, we asked people to generate positive counterfactual fantasies in an everyday life setting, in which they did not anticipate a subsequent opportunity to restore the desired counterfactual past (see also Beike et al., 2009). Accordingly, we aimed to assess people's effort and performance toward engaging in alternative tasks in their present life.

Second, Markman et al. (2008) view counterfactuals from a within-person comparison perspective. They argue that counterfactuals are comparative thoughts that might occur in either a reflective or evaluative mode. Those modes, in turn, differentially predict effort and performance. In contrast, we view counterfactuals from a goal perspective. We argue that being committed to a lost counterfactual past might resemble being committed to an unattainable goal. Being committed versus letting go of a lost counterfactual past should differentially predict effort and performance.

Third, Markman et al. (2008) state that the effects of upward counterfactuals on effort and performance are based on evaluative and comparative processes. That is, people evaluate and compare the desired counterfactual past with their present standing, which, in turn, leads to effort and performance toward restoring the desired counterfactual past. Markman et al. (2008) propose that this effect is mediated by affective states. In contrast, the effects of mental contrasting on effort and performance are based on imagery, rather than on evaluative or comparative processes. Only when people vividly imagine both the desired counterfactual past and the *obstacle* of current reality that stands in the way of attaining the desired counterfactual past, mental contrasting should lead to changes in effort and performance (see also Oettingen et al., 2001). Furthermore, mental contrasting effects are not mediated by affective states, but rather by implicit cognitive and motivational processes (i.e., processes that occur outside a person's awareness).

By understanding the hopeless situation of getting the counterfactual past back, people who mentally contrast let go of wanting to attain the counterfactual past (Krott & Oettingen, 2017). Building on these recent findings, we ask whether mental contrasting propels people right back into their present life.

## The Present Research

Recent research showed that mental contrasting reduces people's commitment to attain their lost counterfactual past (Krott & Oettingen, 2017). The present research builds on these findings and investigates whether mental contrasting of counterfactual fantasies helps people to actively engage in their present life. In three experimental studies with between-subjects designs, participants were induced to mentally contrast their positive counterfactual fantasies with the obstacle of current reality, to indulge in their positive counterfactual fantasies (Studies 1 & 2), or in addition to mental contrasting and indulging to elaborate on irrelevant content (Study 3).

Our dependent variable was participants' engagement in unrelated tasks with which they were confronted in their present life. We chose tasks that were unrelated to participants' counterfactual fantasies but were relevant to their present life. Mental contrasting, by helping people let go of their counterfactual past, should liberate them to more actively engage in these unrelated tasks. We operationalized engagement by successful performance on an unrelated task from the interpersonal domain (Study 1), the professional domain (Study 2), and the academic domain (Study 3).

## Study 1: Interpersonal Engagement

Study 1 examined the effect of mental contrasting of a positive counterfactual past on people's performance in their present interpersonal life. Participants were asked to name a positive counterfactual scenario regarding their interpersonal life, which was defined as a better alternative to a negative event caused by another person. They were then asked to only positively fantasize about the scenario (indulging condition) or to mentally juxtapose their positive fantasies about the counterfactual scenario with the obstacle of current reality standing in the way of their counterfactual scenario coming true (mental contrasting condition).

We assumed that those who mentally contrast (vs. indulge) their positive counterfactual scenarios about a better alternative to a negative interpersonal event would let go of their positive counterfactual past. They should, in turn, be free to actively engage in their present life. In order to measure participants' engagement, we presented them with a second task, unrelated to the topic of the previous mental exercise. Specifically, after the mental exercise, we asked participants to write an authentic get-well letter to a close friend. We assessed the quality of participants' get-well letters by letting both the participants and two independent raters evaluate the quality of the letters. The raters focused on the quality of the letters' contents and language, and on the empathy displayed by participants. Furthermore, we assessed authenticity as an objective measure of quality of the get-well letters. Authenticity reflects self-determined and autonomous behavior that is consistent with intrinsic needs (see also Goldman & Kernis, 2002; Ryan & Deci, 2000). We assumed that mental contrasting (vs. indulging) should liberate people to actively engage in the present task in a self-determined and autonomous way and should thus lead them to write an authentic letter to their friend. In order to assess how authentic participants' get-well letters were, we analyzed the language of the get-well letters using Linguistic Inquiry and Word Count (LIWC; Pennebaker, Francis, & Booth, 2001).

We hypothesized that people who mentally contrast (vs. indulge) should more successfully perform the interpersonal task: They should write a high-quality, authentic get-well letter to their friend.

### Method

**Power analysis.** Based on previous mental contrasting literature, we based our power analysis on the assumption that the experimental manipulation should exert a medium effect ($f = 0.30$, $d = 0.60$). We applied this effect size to an a priori power analysis for two groups within an ANOVA. The power analysis indicated that approximately 120 participants would be needed to achieve 90% power ($1-\beta$) at a .05 alpha level ($\alpha = .05$). In Study 1, we recruited 140 participants.

**Participants.** One hundred forty participants (90 females) completed the experiment online via Amazon's Mechanical Turk (MTurk). Participants were aged 18–63 years ($M$ age = 36.34, $SD$ = 11.06). They were randomly assigned to either a mental contrasting ($n$ = 74) or an indulging condition ($n$ = 66). All participants were told that they would take part in a survey about how people think about the past. The ethical review committee of the university approved the procedure and materials.

**Procedure and materials.**

***Mental exercise.*** Participants were asked to name an alternative positive scenario to a negative past event caused by a specific person, that is, an alternative that would have made their life better. Specifically, all participants read the following:

> People often think about hypothetical scenarios that could have happened in their past and of which they think that they would have been for the better. After other people cause negative events which impede our progress, we often imagine alternative scenarios to those events. Examples of those scenarios could be "If only this person hadn't done this," "If only this person hadn't hindered me from doing this," "If only this person hadn't put obstacles in my way." Is there any alternative scenario of your past about which you think pretty frequently and of which you cannot stop thinking that this scenario would have made your life much better?

Participants generated scenarios such as "If only this person hadn't rejected me," or "If only he hadn't hurt me." Furthermore, participants were asked to name the person who was responsible for the actual negative event. After naming a positive scenario, participants indicated how often they thought about it ("How often do you think about the positive scenario you just named?") using a scale with anchor points 1 (*rarely*), 2 (*monthly*), 3 (*several times a month*),

4 (*weekly*), 5 (*several times a week*), 6 (*daily*), and 7 (*all the time*). Participants also indicated the desirability of the scenario ("How desirable would the scenario have been?"), and their expectations of the scenario still coming true ("How likely do you think it is that the positive scenario you just named can still come true?"). Scales ranged from 1 (*not at all desirable/not at all likely*) to 7 (*very desirable/very likely*).

Thereafter, participants in the mental contrasting and indulging conditions were asked to name the best aspect they associated with the alternative scenario coming true (participants named, e.g., "I would have felt strong" or "Love") and to elaborate on this aspect in writing:

> Think about the best positive aspect you just named in more detail. Elaborate on the respective events or experiences of the scenario in your thoughts as intensively as possible! Let the mental images pass by in your thoughts and do not hesitate to give your thoughts and images free reign. Take as much time and space as you need to imagine and write down your thoughts and images.

Whereas participants in the indulging condition then had to name the second-best aspect they associated with the scenario and elaborated on this positive aspect, participants in the mental contrasting condition were asked to name the main obstacle of their current reality that hindered their positive scenario from coming true. Participants named, for example, "Time and distance," or "That time has passed." They were then asked to elaborate on this obstacle:

> Now think about the obstacle you just named in more detail. Elaborate on the main obstacle as intensively as possible! Let the mental images pass by in your thoughts and do not hesitate to give your thoughts and images free reign. Take as much time and space as you need to imagine and write down your thoughts and images.

***Performance get-well letter.*** After the mental exercise, participants were directed to the second part of the experiment. We instructed participants to proceed to the next screen as soon as they were ready (see Sevincer et al., 2014 for a similar procedure). On the next screen, all participants read the following:

> Your best friend had a car accident and has to stay at the hospital for a few weeks. Please write an authentic letter and send him/her your best wishes for a speedy recovery. You can write up to 250 words.

Participants were asked to write the get-well letter to their friend in the designated space and to proceed to the next screen as soon as they were ready.

*Self-rated performance.* Participants were asked to evaluate the get-well letter they wrote by indicating their level of agreement with four statements: "My get-well letter was meaningful," "I used inappropriate language" (reverse coded), "I honestly stated my best wishes for a speedy recovery," "The get-well letter would be greatly appreciated by my friend." All statements were rated on scales ranging from 1 (*not at all true*) to 7 (*very true*). High scores on the scales indicate a positive evaluation of the get-well letter.

*Other-rated performance.* Additionally to participants' self-rated performance, we asked two independent raters blind to the condition of the participants to code the get-well letters based on Oettingen et al. (2009); Sevincer et al. (2014), and Sevincer and Oettingen (2013). The get-well letters were coded on a scale ranging from 1 (*very poor performance*) to 4 (*moderate performance*) to 7 (*excellent performance*). Specifically, a "1" indicated that participants did not write about their friend's recovery, used inappropriate language, and did not show empathy for their friend. For example, they wrote about themselves, used slang or swear words, and made indifferent remarks about their friend's recovery. A "4" meant that participants partly wrote about their friend's recovery, used moderately appropriate language, and were empathetic only to some extent. For example, they mentioned their friend's recovery but also wrote about unrelated topics, used slang or swear words only rarely, and formally expressed concern about their friend's recovery. A "7" meant that participants focused on their friend's recovery, chose appropriate language, and honestly displayed empathy for their friend. For example, they wrote in detail about their friend's accident and current condition, used warm and personal language, and offered help to their friend or promised to visit.

*Authenticity.* We analyzed participants' get-well letters using LIWC (Pennebaker et al., 2001). We used a multivariate linguistic profile developed and validated by Newman, Pennebaker, Berry, and Richards (2003) to assess how authentic the get-well letters were. The authenticity score developed by Newman et al. (2003)

is based on findings that more authentic communication is characterized by more first-person singular pronouns (e.g., I, me), more positive emotion words (e.g., happy, good), more exclusive words (e.g., but, except), and less motion words (e.g., walk, move), and has shown to reliably differentiate between authentic and deceptive communication, with a mean of $M = 61.32$ in natural speech (Pennebaker, Boyd, Jordan, & Blackburn, 2015). High authenticity scores indicate honest and disclosing get-well letters.[1]

## Results

**Thought frequency.** Average frequency of thoughts about the positive counterfactual scenarios reached from several times a month to weekly ($M = 3.54$, $SD = 1.98$), with no significant difference between the mental contrasting and indulging conditions, $F(1, 138) = 0.11$, $p = .744$.

**Desirability and expectations.** The counterfactual scenarios were rated as desirable across both conditions ($M = 5.79$, $SD = 1.61$), $F(1, 138) = 0.24$, $p = .625$. Desirability of the scenarios correlated positively with thought frequency, $r(139) = .34$, $p < .001$, 95% CI [0.21, 0.46], with people rating their scenario as highly desirable reporting a high frequency of thoughts about it. On average, expectations of the scenarios still becoming reality were low to moderate in both conditions ($M = 3.26$, $SD = 2.19$), $F(1, 138) = 1.94$, $p = .166$.

**Dependent variable: performance get-well letter.**

***Self-rated performance.*** Reliability of the scale was moderate ($\alpha = .44$). We therefore dropped one item ("I used inappropriate language") from the scale. Dropping the item improved reliability to $\alpha = .77$. We submitted the self-rated performance to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was no significant effect of condition on self-rated performance, $F(1, 138) = 0.22$, $p = .638$. All participants rated their performance as strong ($M = 6.05$, $SD = 1.02$).

***Other-rated performance.*** Since interrater reliability was high ($\alpha = .96$), we combined scores of both raters into one other-rated performance score. Four participants were excluded from the analysis because they did not write a get-well letter. For the remaining 136 participants, other-rated performance correlated positively with self-rated performance, $r(135) = .42$, $p < .001$, 95% CI [0.26, 0.56]. We submitted the other-rated performance to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was a significant effect of condition, $F(1, 134) = 14.34$, $p < .001$, $\omega^2 = .09$. Participants who mentally contrasted showed a stronger performance ($M = 4.61$, $SD = 1.29$) compared with participants who indulged in their counterfactual scenarios ($M = 3.72$, $SD = 1.44$), $p < .001$, 95% CI [0.42, 1.34] (see Table 1).[2]

***Authenticity.*** The authenticity scores correlated positively with other-rated performance, $r(135) = .27$, $p = .002$, 95% CI [0.11, 0.42]. We submitted the authenticity scores to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was a trend for a condition effect, $F(1, 134) = 2.82$, $p = .096$. Participants who mentally contrasted tended to write a more authentic get-well letter ($M = 54.96$, $SD = 29.11$) compared with indulging participants ($M = 46.99$, $SD = 25.93$; Table 1).

## Discussion

Participants who mentally contrasted their positive counterfactual fantasies about a better alternative to a negative interpersonal event performed more successfully on an interpersonal task in their present life compared with participants who indulged in their counterfactual fan-

[1] In all three studies, we assessed participants' mood (Brief Mood Introspection Scale, BMIS; Mayer & Gaschke, 1988), coping self-efficacy (Coping Self-Efficacy (CSE) scale; Chesney, Neilands, Chambers, Taylor, & Folkman, 2006), trait regret levels (Regret Scale; Schwartz et al., 2002), trait resentment levels (Gratitude Resentment and Appreciation Test, GRAT-R; Watkins, Woodward, Stone, & Kolts, 2003), and levels of depression (revised Center for Epidemiologic Depression Scale, CESD-R; Eaton, Smith, Ybarra, Muntaner, & Tien, 2004) as control variables before the experimental manipulation, in order to ensure that our experimental effects would hold beyond baseline levels of these variables. Our experimental effects remained significant (Study 1, $p = .001$; Study 3, $p = .026$) or marginally significant (Study 2, $p = .089$), when we entered our control variables as covariates in the analysis.

[2] Additional measures were administered before the letter task. Since they are not the focus of the present paper, they are not addressed further here.

Table 1
*Other-Rated Performance and Authenticity in the Mental Contrasting and Indulging Conditions: Study 1 and Study 2*

| Variable | MC | | Indulging | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *df* | *F* | *p* | $\omega^2$ |
| Study 1: Get-well letter | | | | | | | | |
| Other-rated performance | 4.61 | 1.29 | 3.72 | 1.44 | 134 | 14.34 | <.001 | .09 |
| Authenticity | 54.96 | 29.11 | 46.99 | 25.93 | 134 | 2.82 | .096 | .01 |
| Study 2: Application letter | | | | | | | | |
| Other-rated performance | 4.58 | 1.40 | 3.94 | 1.56 | 109 | 5.25 | .024 | .04 |
| Authenticity | 60.64 | 26.81 | 50.33 | 29.34 | 109 | 3.74 | .056 | .02 |

*Note.* High scores indicate strong other-rated performance, with scores ranging from 1 to 7, and high levels of authenticity, with a grand mean of 49.17 ($SD$ = 20.92) across different genres within a corpus of 230 million words (LIWC 2015; Pennebaker et al., 2015). MC = Mental contrasting.



tasies. Specifically, mental contrasting (vs. indulging) participants wrote a more qualitative and authentic get-well letter to a close friend. Those results speak to the fact that mental contrasting (vs. indulging) led people to let go of their counterfactual past and to free up their resources in order to actively engage in their present life.

Performance on the get-well letters coded by two independent raters differed significantly between mental contrasting and indulging participants, with mental contrasting participants writing a more qualitative get-well letter compared to indulging participants. The difference in authenticity trended in the expected direction. There was no significant difference between the two conditions in their self-reported performance. Since all participants evaluated their get-well letters very positively, we speculate that social desirability might have been influencing participants' self-report (see McCambridge, de Bruin, & Witton, 2012; Weber & Cook, 1972), resulting in a ceiling effect for the self-report variable.

In the present research, we chose an interpersonal task to measure engagement in the present life, assuming that letting go of a desired alternative to a negative interpersonal event should liberate people to actively engage in their interpersonal life in the here and now.

The effect of mental contrasting on active engagement should, however, hold across various life domains. In Study 1, we asked participants to name a positive counterfactual alternative for a negative event in their interpersonal life. In Study 2, we aimed to conceptually replicate the findings of Study 1, and to investigate positive counterfactual alternatives for negative events in participants' work life.

## Study 2: Professional Engagement

In Study 2, we aimed to conceptually replicate the findings of Study 1, and to extend those findings to the professional domain. We recruited participants who were currently unemployed and asked them to name positive counterfactual scenarios regarding lost job opportunities. We assessed professional engagement by presenting participants with a professional task. Specifically, we directed participants to a second, unrelated task in which they were asked to write an authentic letter of application for a job.

We hypothesized that in comparison to participants who indulged in their counterfactual scenarios about lost job opportunities, participants who mentally contrasted their counterfactual scenarios about lost job opportunities with current reality should let go of wanting to restore those lost job opportunities and actively work toward a job in their present life. Participants who mentally contrast (vs. indulge) should write a high-quality, authentic application letter.

### Method

**Power analysis.** We based our power analysis on the assumption that the experimental manipulation should exert a medium effect ($f$ = 0.30, $d$ = 0.60). We applied this effect size to an

a priori power analysis for two groups within an ANOVA. The power analysis indicated that approximately 120 participants would be needed to achieve 90% power ($1-\beta$) at a .05 alpha level ($\alpha = .05$). In Study 2, we recruited 120 participants.

**Participants.** We invited participants who were currently unemployed to take part in the survey. One hundred twenty participants (58 females) completed the study online via Amazon's Mechanical Turk (MTurk). Participants were aged 18–75 years ($M$ age = 32.67, $SD$ age = 11.51) and were randomly assigned to either a mental contrasting ($n = 61$) or an indulging condition ($n = 59$). All participants were told that they would take part in a survey about how people think about the past. The ethical review committee of the university approved the procedure and materials.

**Procedure and materials.**

***Mental exercise.*** Instructions of the mental exercise were those described in Study 1. However, participants had to name an alternative positive scenario to a negative event that happened in their work life rather than an event of their interpersonal life, as in Study 1. They were asked to think of an alternative scenario that would have made their life much better. Participants named, for example, "If only I hadn't quit my job" or "If only I had been hired." Participants in the indulging condition were asked to name and elaborate two positive aspects they associated with the alternative scenario (e.g., "I would still have a career," "An independent income"). Participants in the mental contrasting condition first named and elaborated on a positive aspect of their counterfactual scenario and thereafter named and elaborated on the main obstacle standing in the way of their counterfactual scenario coming true (e.g., "Retirement" or "I'm too old").

***Performance application letter.*** After the mental exercise, all participants were directed to the second part of the survey. We instructed participants to proceed to the next screen as soon as they were ready. Specifically, all participants read the following:

> One day you read the newspaper and find exactly the job offer that perfectly suits your qualifications, salary requirements, and personal interests. Please write an authentic letter of application in which you state your motivation for this job and also explain why you would be the best candidate for this job. You can write up to 250 words.

Participants were asked to write the letter of application in the designated space and were asked to proceed to the next screen as soon as they were ready.

*Self-rated performance.* Participants were asked to evaluate their letter of application by indicating their level of agreement to four statements: "My application letter was meaningful," "I used inappropriate language" (reverse coded), "I honestly stated my qualifications and motivation for getting that job," "The application letter would be greatly appreciated by the employer." All statements were rated on scales ranging from 1 (*not at all true*) to 7 (*very true*). High scores on the scales indicate a positive evaluation of the application letter.

*Other-rated performance.* Like in Study 1, we let two independent raters code the application letters (see Oettingen et al., 2009; Sevincer et al., 2014; Sevincer & Oettingen, 2013). The application letters were rated on a scale ranging from 1 (*very poor performance*) to 4 (*moderate performance*) to 7 (*excellent performance*). Specifically, a "1" indicated that participants did not state any qualifications they had, used inappropriate language, and did not show any motivation to get the job. For example, they only wrote about work-unrelated content, used slang or swear words, and made indifferent remarks regarding their motivation to get the job. A "4" meant that participants partly wrote about their qualifications, used moderately appropriate language, and showed their motivation only to some extent. For example, they mentioned their qualifications but also wrote about work-unrelated content, used slang or swear words only rarely, and formally expressed their motivation. A "7" meant that participants focused on their qualifications to get the job, chose appropriate language, and honestly displayed their motivation to get the job. For example, they wrote in detail about their qualifications and interests, provided information about their skills and experiences, used professional language, and explicitly stated their motivation by explaining why they would be the best candidate for the job.

*Authenticity.* Like in Study 1, we analyzed participants' application letters using LIWC (Pennebaker et al., 2001). We used the linguis-

tic profile developed by Newman et al. (2003) to assess how authentic the application letters were. High authenticity scores indicate honest and disclosing application letters.

## Results

**Thought frequency.** Average frequency of thoughts about the positive counterfactual scenarios reached from several times a month to weekly ($M = 3.62$, $SD = 1.79$), with no significant difference between the mental contrasting and indulging conditions, $F(1, 118) = 0.12$, $p = .732$.

**Desirability and expectations.** The counterfactual scenarios were rated as desirable across both conditions ($M = 5.30$, $SD = 1.67$), $F(1, 118) = 0.82$, $p = .366$. Desirability of the scenarios correlated positively with thought frequency, $r(119) = .43$, $p < .001$, 95% CI [0.27, 0.57], with people rating their scenario as highly desirable also reporting a high frequency of thoughts about it. On average, expectations of the scenarios still becoming reality were low to moderate in both conditions ($M = 3.52$, $SD = 2.20$), $F(1, 118) = 1.66$, $p = .201$.

**Dependent variable: Performance application letter.**

***Self-rated performance.*** Similar to Study 1, the reliability of the scale was moderate ($\alpha = .63$). We therefore dropped one item ("I used inappropriate language") from the scale. Dropping the item improved reliability to $\alpha = .82$. We submitted the self-rated performance to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was no significant effect of condition on self-rated performance, $F(1, 118) = 0.12$, $p = .390$. Participants rated their performance as relatively strong ($M = 5.04$, $SD = 1.42$).

***Other-rated performance.*** Interrater reliability was high ($\alpha = .88$), and thus we combined scores of both raters into one other-rated performance score. Nine participants were excluded from the analysis because they did not write an application letter. For the remaining 111 participants, other-rated performance correlated only moderately positively with self-rated performance, $r(110) = .17$, $p = .067$. We submitted the other-rated performance to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was a significant effect of condition, $F(1, 109) = 5.25$, $p = .024$, $\omega^2 = .04$. Participants who mentally contrasted showed a stronger performance ($M = 4.58$, $SD = 1.40$) compared with participants who indulged in their counterfactual scenarios ($M = 3.94$, $SD = 1.56$), $p = .024$, 95% CI [0.09, 1.20] (see Table 1).[3]

***Authenticity.*** The authenticity scores correlated positively with other-rated performance, $r(110) = .24$, $p = .012$, 95% CI [0.06, 0.41]. We submitted the authenticity scores to a one-way ANOVA with condition (mental contrasting vs. indulging) as the fixed between-subjects factor. There was a marginally significant effect of condition, $F(1, 109) = 3.74$, $p = .056$. Participants who mentally contrasted wrote a more authentic letter ($M = 60.64$, $SD = 26.81$) compared with indulging participants ($M = 50.33$, $SD = 29.34$; Table 1).

## Discussion

In Study 2, we conceptually replicated the findings of Study 1 and extended those findings to the professional domain. Participants who mentally contrasted their positive counterfactual fantasies about a lost job opportunity were more successful in solving a present task related to a current job compared with participants who indulged in their counterfactual fantasies. Specifically, mental contrasting (vs. indulging) participants wrote a high-quality, authentic application letter. The results speak to the fact that mental contrasting (vs. indulging) led people to free up their resources in order to actively engage in their present life. Similar to Study 1, we obtained significant and marginally significant differences between the two conditions in other-rated performance and authenticity of the letters, whereas there was no significant difference between the two conditions in self-rated performance. Since all participants evaluated their application letters very positively, we assume that, again, social desirability might have influenced participants' self-report, resulting in a ceiling effect for the self-report variable.

In Study 2, we focused on participants who were currently unemployed and might therefore form a risk group for indulging in lost job

[3] Like in Study 1, additional measures were administered before the letter task. Since they are not the focus of the present paper, they are not addressed further here.

opportunities. In fact, recent findings by Roese and Summerville (2005) and Beike et al. (2009) suggest that people experience the biggest regrets about lost opportunities in the education and career domains. Mental contrasting might be useful in helping people to let go of those lost opportunities and to actively work toward jobs in the here and now. Our sample consisted of participants of a wide age range (i.e., 18–75 years). One might argue that for older participants in our sample who were already retired, the task of writing an application letter might be less relevant. Because we did not obtain any significant correlations of age with either the quality of the application letter or with the authenticity ratings, $r$s $< .12$, $p$s $> .24$, we can assume that participants' age and their current situation (e.g., retirement) did not play a role for how they performed when writing the letter.

In Studies 1 and 2, we asked participants to name counterfactual fantasies regarding highly specific past events. Although in both studies, the counterfactuals and the tasks with which we confronted participants in present life were from identical domains (i.e., interpersonal and professional, respectively), they still represented different content. In Studies 1 and 2, as dependent variables we chose performance on tasks in the present that we assumed to be relevant to our participants and on which performance (e.g., writing a high-quality job application) might be hindered by holding on to a lost counterfactual past (e.g., holding on to a lost job opportunity). In Study 3, we aimed to conceptually replicate the findings in an experimental setting where positive counterfactuals and the tasks in present life did not pertain to the same life domain. Specifically, in Study 3, we let participants name any counterfactual fantasies they frequently think of. We assessed engagement in the present life as effort and performance in an unrelated problem-solving task. We chose Raven matrices as a problem-solving task in the academic domain. The Raven test assesses general analytical reasoning (Raven, 1976, 2000). Thus, it does not relate to any specific domain of counterfactual fantasies.

## Study 3: Academic Engagement

In Study 3, we asked participants to name and elaborate on any positive counterfactual scenario they frequently think of, and thereafter assessed their performance on a problem-solving task. We hypothesized that in comparison to participants who indulged in positive fantasies about their counterfactual scenario, those who mentally contrasted should let go of their lost counterfactual past and be free to more actively engage in a given task in the here and now. Participants who mentally contrast (vs. indulge) should perform better on the problem-solving task. We included an additional control condition in order to investigate the direction of effects. In the control condition, participants named a positive counterfactual scenario, but elaborated on irrelevant content.

### Method

**Power analysis.** We based our power analysis on the assumption that the experimental manipulation should exert a medium effect ($f = 0.30$, $d = 0.60$). Applying this effect size to a power analysis of a one-way ANOVA with three groups indicated that approximately 144 participants would be needed to achieve 90% power ($1-\beta$) at a .05 alpha level ($\alpha = .05$). In Study 3, we recruited 143 participants.

**Participants.** One hundred forty-three participants (89 females) completed the study online via Amazon's Mechanical Turk (MTurk). Participants were aged 18–66 years ($M$ age = 35.87, $SD$ age = 11.98) and were randomly assigned to either a mental contrasting ($n = 45$), an indulging ($n = 47$), or a control condition ($n = 51$). All participants were told that they would take part in a survey about how people think about the past. The ethical review committee of the university approved the procedure and materials.

**Procedure and materials.**

***Mental exercise.*** Instructions of the mental exercise were those described in Studies 1 and 2. However, participants had to name any positive alternative scenario of which they think that this alternative would have made their life much better. Participants named, for example, "If only I had married again" or "If only I had gotten that promotion." Participants in the indulging condition were asked to name and elaborate on two positive aspects they associated with their counterfactual scenario (e.g., "I would have a home," "Improvement"), whereas participants in the mental contrasting condition first named and elaborated on a positive aspect

of their counterfactual scenario and thereafter named and elaborated on the main obstacle standing in the way of their counterfactual scenario coming true (e.g., "Current relationship" or "My present job"). Participants in the control condition named a positive counterfactual scenario and were then asked to elaborate on how their regular Saturday morning runs off.

***Task performance.*** After the mental exercise, all participants were directed to a second, unrelated task. Participants were presented with 10 items from Standard Progressive Matrices (Raven, 1965). We chose 10 matrices from categories of medium difficulty (i.e., C, D, & E) in order to ensure enough variance within our sample. We told participants that solving those matrices would require some effort and asked them to solve as many matrices correctly as possible. We then asked participants how motivated they were to perform well on the upcoming task using a scale from 1 (*not at all motivated*) to 7 (*very motivated*). For each participant, we computed the number of matrices solved correctly as an indicator of successful task performance and the total time spent on the task (in seconds) as an indicator of task persistence. The total time spent on the task was thereby calculated as the sum of time spent on each of the matrices.

## Results

**Thought frequency.** Average frequency of thoughts about the positive counterfactual scenarios reached from several times a month to weekly ($M = 3.22$, $SD = 1.76$), with no significant difference between the three conditions, $F(2, 140) = 0.07$, $p = .935$.

**Desirability and expectations.** The counterfactual scenarios were rated as desirable across the three conditions ($M = 5.81$, $SD = 1.46$), $F(2, 140) = 0.09$, $p = .917$. Desirability of the scenarios correlated positively with thought frequency, $r(142) = .26$, $p = .002$, 95% CI [0.12, 0.39], with people rating their scenario as highly desirable also reporting a high frequency of thoughts about it. On average, expectations of the scenarios still coming true were low to moderate ($M = 3.27$, $SD = 2.39$), $F(2, 140) = 2.88$, $p = .059$.

**Dependent variable: Task performance.** We submitted participants' task performance (i.e., the number of matrices solved correctly) to a one-way ANOVA with condition (mental contrasting vs. indulging vs. control) as the fixed between-subjects factor. There was a significant effect of condition, $F(2, 140) = 5.16$, $p = .007$, $\omega^2 = .06$. Participants who mentally contrasted solved more matrices correctly ($M = 6.51$, $SD = 1.77$) compared with indulging participants ($M = 5.51$, $SD = 2.11$), $p = .027$, 95% CI [0.12, 1.88], and compared with control participants ($M = 5.14$, $SD = 2.45$), $p = .002$, 95% CI [0.51, 2.24]. There was no significant difference in task performance between indulging and control participants, $p = .390$ (see Table 2).

We further submitted participants' task persistence (i.e., the total time spent on the task) to a one-way ANOVA with condition (mental contrasting vs. indulging vs. control) as the fixed between-subjects factor. There was a marginally significant effect of condition, $F(2, 140) = 2.78$, $p = .066$. Participants who mentally contrasted spent more time on the task ($M = 238.60$, $SD = 127.45$) compared with participants in the indulging condition ($M = 193.61$, $SD = 89.63$), $p = .052$, 95% CI [−0.42, 90.41], and compared with participants in the control condition ($M = 190.40$, $SD = 110.83$), $p = .034$, 95% CI [3.66, 92.74]. There was no significant difference between indulging and control participants in time spent on the task,

Table 2
*Task Performance and Task Persistence in the Mental Contrasting, Indulging, and Control Conditions: Study 3*

| | MC | | Indulging | | Control | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | *M* | *SD* | *M* | *SD* | *M* | *SD* | *df* | *F* | *p* | $\omega^2$ |
| Task performance | 6.51 | 1.77 | 5.51 | 2.11 | 5.14 | 2.45 | 140 | 5.16 | .007 | .06 |
| Task persistence | 238.60 | 127.45 | 193.61 | 89.63 | 190.40 | 110.83 | 140 | 2.78 | .066 | .02 |

*Note.* High scores indicate successful task performance, measured as the number of matrices solved correctly. Scores range from 0 to 10. High scores indicate high levels of task persistence, measured as total time spent on the task (in seconds). MC = Mental contrasting.

$p = .886$ (see Table 2). Time spent on the task also correlated positively with task performance, $r(142) = .49$, $p < .001$, 95% CI [0.35, 0.61].

Next, we tested whether the effect of condition (mental contrasting vs. other) on task performance was mediated by the time spent on the task. To test this mediation, we followed a bootstrapping procedure using the SPSS PROCESS macro provided by Hayes (2013). The indirect effect of condition (mental contrasting vs. other) on task performance through time spent on the task was significantly different from 0, 95% CI [0.07, 0.90], with 5,000 iterations. Within the mediation model, the direct effect of condition on task performance was still significant, 95% CI [0.08, 1.47] (see Figure 1). Thus, mental contrasting (vs. the other conditions) led participants to spend more time on the task, which partially explained their relatively better performance.

After establishing the three conditions, right before participants started to work on the Standard Progressive Matrices, we had asked them how motivated they were to perform well. We submitted the motivation scores to a one-way ANOVA with condition (mental contrasting vs. indulging vs. control) as the fixed between-subjects factor. There was a marginally significant effect of condition, $F(2, 140) = 2.79$, $p = .065$. Participants who mentally contrasted reported marginally higher levels of motivation to perform well ($M = 5.96$, $SD = 1.60$) compared with participants in the indulging condition ($M = 5.36$, $SD = 1.59$), $p = .055$, 95% CI [−0.01, 1.20], but not compared with participants in the control condition ($M = 6.00$, $SD = 1.22$), $p = .883$. Participants in the control condition also reported higher levels of motivation compared with indulging participants, $p = .034$, 95% CI [0.05, 1.23]. There was no significant correlation between motivation to perform well on the task and actual task persistence or performance, all $r$s $< .06$, all $p$s $> .474$.

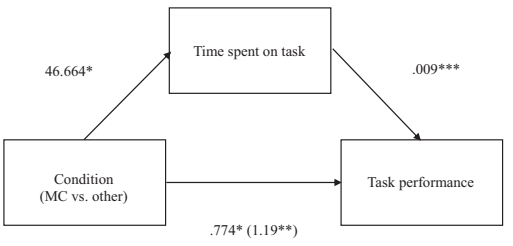


*Figure 1.* Time spent on task as a mediator of the effect of condition (MC vs. other) on task performance. * $p < .05$, ** $p < .01$, *** $p < .001$. MC = Mental Contrasting.

## Discussion

In Study 3, we conceptually replicated the findings of Studies 1 and 2 and extended those findings to the academic domain. Participants in the mental contrasting condition solved more matrices correctly compared with participants in the indulging and control conditions. Although scores on the Raven's test have been suggested to reflect general cognitive ability that is relatively stable over time (Raven, 2000), the present study shows that participants who mentally contrasted their positive fantasies about a desired counterfactual past showed better scores than those who were wrapped in fantasies about the counterfactual past or did not receive any instructions. Other research has confirmed that self-regulation strategies can change Raven scores. Planning in the form of implementation intentions also had performance heightening effects on Raven matrices (Bayer & Gollwitzer, 2007; Wieber, Odenthal, & Gollwitzer, 2010).

The effect of mental contrasting on task performance was partially mediated by task persistence. Mental contrasting led participants to be more persistent and, in turn, to solve more matrices correctly compared with participants in the other two conditions. Those results speak to the fact that participants who mentally contrast let go of their counterfactual past and were free to invest their energy and effort in their present life; participants in the indulging and control conditions were not as able to invest energy and effort in their present life. So far, we assessed an indirect measure of effort investment, namely task persistence. Future studies might assess physiological indicators of energy and effort as mediators for the effects of mental contrasting on successful performance in the present life.

Within the mediation model, the direct effect of condition on task performance was still significant. Thus, the effort invested in the problem-solving task only partially explained the variance between the conditions in task performance. Presumably, other variables besides effort have led mental contrasting participants to

perform better on the problem-solving task. We speculate that by letting go of wanting to attain the counterfactual past, participants in the mental contrasting condition might have been free to more decisively focus on the current task, which might have helped their performance. Future studies should shed light on this hypothesis.

One alternative explanation for the observed findings might be that participants' generation of positive counterfactuals increased their perceived control in general and thereby increased their performance on the Raven task (see Nasco & Marsh, 1999). This explanation, however, seems unlikely since all participants in the present study were asked to name and elaborate on positive counterfactuals. Thus, an increase in perceived control should have occurred for participants across the three conditions. However, only mental contrasting (vs. indulging and control) participants showed better performance on the dependent variables (i.e., high-quality get-well letter, Study 1; high-quality application, Study 2; persistence and performance on the Raven task, Study 3).

## General Discussion

Across three studies, we observed that mental contrasting of positive counterfactual fantasies helped people to actively engage in their present life. These results appeared for positive fantasies about counterfactual alternatives to various life events (interpersonal and work-related events), and for various measures of engagement (high-quality performance on a get-well letter, high-quality performance on an application letter, and persistence and successful performance on a problem-solving task). The effects occurred compared with relevant control conditions, in which participants either indulged in their positive counterfactual alternatives, or elaborated on irrelevant content. Furthermore, we identified the investment of effort as measured by task persistence as a mediator for the effects of mental contrasting on task performance.

Letting go of unfeasible projects is helpful for leading a constructive life when other more promising ones exist (Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003). By highlighting the obstacles of current reality, mental contrasting seems to liberate people to actively engage in endeavors that arise in their present life. One might expect that reminding people of their low expectations to attain the counterfactual past per se should be enough to make them let go of their lost counterfactual past. However, our findings show that mentally elaborating on irrelevant content as well as mentally elaborating about a positive counterfactual past fail to bring the unwelcome news that the longed-for counterfactual past is lost. This finding is in line with past research showing that free thoughts and images about the future, regardless of whether they are relevant or irrelevant to the desired future, make people act irrespective of the existing low expectations (e.g., Oettingen, 2000). That is, people can freely indulge in positive fantasies about a desired counterfactual past or about a desired future, without taking into account that the counterfactual past or the desired future will ever come true, and this expectancy-independence even guides their actions (Oettingen et al., 2001).

### Implications

In the present research, we viewed people's positive counterfactuals from a goal perspective. Specifically, we inferred that letting go of the counterfactual past in cases in which this past is unlikely or impossible to still come true should liberate people to engage in more promising endeavors that arise in their present life. Therefore, the findings have implications for research on goal disengagement. Many studies have shown that disengagement from unattainable goals is associated with well-being and health (e.g., Carver & Scheier, 1998; Wrosch et al., 2003, 2007) and that it liberates people to engage in other goal pursuits (Herrmann & Brandstätter, 2013). However, little research has been conducted on possible interventions that might support disengagement from unattainable goals. Mental contrasting might be an effective intervention to help people disengage from unattainable goals, irrespective of whether those goals pertain to the future (e.g., Oettingen et al., 2001) or to a counterfactual past.

In fact, intervention research on mental contrasting showed that it is a self-regulation strategy that people can apply to their future wishes in everyday life (Oettingen, Mayer, & Brinkmann, 2010; see Oettingen, 2014). Specifically, mental contrasting helps people to wisely select and commit to fulfill those future wishes that are

feasible, and to let go of those future wishes that are unfeasible. Similarly, we propose that people can apply mental contrasting to their wished-for counterfactual pasts in everyday life. Specifically, mental contrasting should help people to wisely select and commit to those wished-for counterfactual pasts that are likely to be restored, and to let go of those wished-for counterfactual pasts that are unlikely or impossible to be restored.

### Low and High Expectations

Most research on counterfactuals differentiates between situations in which people do versus do not anticipate subsequent opportunities to attain the desired counterfactual past (Markman et al., 1993, 2009). Similarly, our research differentiates between situations in which people have high versus low expectations of attaining the desired counterfactual past (Krott & Oettingen, 2017; see also Oettingen, 2012; Oettingen & Mayer, 2002). In the present studies, expectations of attaining the counterfactual past were low to moderate, speaking to the assumption that we investigated lost opportunities.

It would be interesting to investigate behavioral effects of mental contrasting in situations in which people have *high* expectations of attaining the desired counterfactual past and thus anticipate subsequent opportunities to restore the counterfactual past. In those cases, mental contrasting (vs. indulging) should lead to more effort and better performance explicitly toward restoring the desired counterfactual past rather than to alternative and unrelated tasks (see also Markman et al., 2008; Oettingen & Mayer, 2002). Mental contrasting should give people clarity whether they can or cannot restore their desired counterfactual past, and, in turn, provide them with the energy either to restore the counterfactual past or to pursue a more promising project in their present life (Oettingen et al., 2001). In sum, mental contrasting might help people to discriminate between future and lost opportunities. It should help people to restore those counterfactual pasts that can be restored, and to let go of those counterfactual pasts that are lost. Future studies should shed light on these hypotheses.

### Limitations and Future Directions

In the present studies, the tasks we presented to participants were standardized and might not have been equally relevant to every participant. Future studies should investigate whether mental contrasting of positive counterfactual fantasies helps people to actively engage in their present life within personally relevant, idiosyncratic everyday life contexts. Indeed, mental contrasting should help people let go of their counterfactual past and solve any task in their present life or strive for any goal in their short-term or long-term future. Furthermore, we obtained effects of mental contrasting on participants' short-term engagement in their present life. Assuming that people who mentally contrast understand that their counterfactual past will not come true and, in turn, let go of their counterfactual past (Krott & Oettingen, 2017), it might be important to investigate effects of mental contrasting also on people's long-term active engagement in their present life.

More studies are needed to assess the mechanisms by which mental contrasting of positive counterfactual fantasies leads people to let go of their counterfactual past and to actively engage in their present life. Previous research on mental contrasting of positive future fantasies has focused on changes in implicit cognition and energization (review by Oettingen, 2012). Future studies should investigate whether those mechanisms also hold for mental contrasting of positive counterfactual fantasies. That is, disengagement of the counterfactual past should be mediated by changes in implicit cognition and energization. These changes should, in turn, liberate people to actively engage in other endeavors.

## Conclusion

Referring back to the example of the young woman who has been rejected at a job interview, and who is still engaged in counterfactual fantasies, such as "If I had gotten that job," or "If only I had performed better at the interview": When the desired alternative is unlikely to ever come true, indulging in idealized fantasies might hinder her from living in the here and now. The present experiments suggest that mental contrasting might help her come to terms

with the counterfactual past and to actively engage in her life in the here and now.

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Received April 1, 2017
Revision received August 24, 2017
Accepted August 26, 2017 ■