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Needs instigate positive fantasies of idealized futures

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Abstract

One form that mental time travel takes is fantasies about the future. Research to date has not established when people generate fantasies that depict an imagined future as particularly positive. We identify need state as a variable promoting positive fantasies about relevant stimuli (i.e., those that could address the need). In four studies, people with an aroused need (or with a stronger need) generated more positive fantasies depicting idealized future scenarios that were relevant to addressing the need, compared with people without this need (or with a weaker need). These results held for a variety of needs (meaning in life, drinking, relatedness, and power) and whether needs were manipulated (Studies 1–3) or measured (Study 4). The findings shed light on when and why people depict imagined futures as particularly positive. Copyright © 2012 John Wiley & Sons, Ltd.

A fair amount is known about why and when people engage in mental time travel. Most broadly, "mentally simulating various versions of the future, and their respective consequences, enables one to act flexibly in the present to increase one's future survival chances" (D'Argembeau & Van der Linden, 2007, p. 320). Thus, people are thought more likely to mentally simulate the future when they need to decide how to act in the present (Suddendorf & Corballis, 2007). However, relatively little is known about why and when people make their mental future look a certain way. Better understanding such influences is important because different ways of depicting the future have different consequences. In the present research, we built on the idea that mental time travel is beneficial for addressing people's needs. Accordingly, we focused on need states as a variable that should shape the way imagined futures are depicted.

EFFECTS OF NEEDS

Needs were initially understood to result from deprivation and to stimulate behavior that would correct the deprivation (e.g., Hull, 1943). Thus, having a need raises the incentive value of stimuli that may satisfy the need. Although the concepts of needs and incentives have been both enlarged and refined in recent years, this basic principle remains (for reviews, see, e.g., Gollwitzer, Kappes, & Oettingen, 2011; Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Reeve, 2008).

How do needs guide people's behavior toward correcting the deprivation? One way is by heightening the readiness to perceive relevant (i.e., potentially need-satisfying) stimuli.

For instance, participants who were made thirsty were faster to recognize drinking-related words (e.g., cup, water) in a lexical decision task and also remembered more drinking-related objects (e.g., a glass, a bottle) that they had seen in a room than participants who were not thirsty (Aarts, Dijksterhuis, & De Vries, 2001). A second way is by influencing the perception of certain features of stimuli that are conducive to need satisfaction. For example, compared with non-thirsty people, thirsty people perceived water bottles and water glasses as larger (Veltkamp, Aarts, & Custers, 2008) and also as closer at hand (Balcetis & Dunning, 2010).

Of course, sometimes need-satisfying stimuli are not present in one's current physical environment. So, it might be effective for mental images of relevant stimuli to also change in response to the strength of the respective need. Indeed, a long tradition of research has shown that needs are reflected in the content of people's free thoughts and images, or fantasies.

Needs and Fantasy Content

In these studies, needs have been inferred via behavior, self-report, or deprivation, and fantasies have typically been studied by examining the themes in imaginative stories that participants generate. For example, men with a chronic power need, such as student politicians and office holders, wrote more stories with characters striving for social influence and status than did men whose pursuits did not suggest they had a chronic power need (Skolnick, 1966; Veroff, 1957). Adult men who as adolescents had been rated by their peers as submissive, unassertive, and unsociable, suggesting that they

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might have an unsatisfied need for positive contact and affiliation, generated stories with more affiliation themes than adult men who had not been so rated as adolescents (Skolnick, 1966). Likewise, college students who were recently rejected by fraternities had more affiliation themes in their imaginative stories than did students who were accepted (Shipley & Veroff, 1952). And induced needs for food and for achievement increased the inclusion in fantasy stories of themes related to eating and achieving, respectively (Atkinson & McClelland, 1948; McClelland, Clark, Roby, & Atkinson, 1949). These studies suggest that needs increase the presence of relevant stimuli in fantasies.

What these studies do not address is whether needs also influence fantasies by changing the way that relevant stimuli are depicted. This question is the focus of the present paper: How do needs affect the *positivity* of the generated fantasies, rather than the content of fantasies or the likelihood of fantasizing in general? We suspected that needs might lead people to generate particularly positive fantasies about relevant stimuli. Positive fantasies depict an idealized version of future situations and events; they portray a wonderful future that is easily and smoothly attained (Oettingen & Mayer, 2002). In this way, positive fantasies do something that other forms of imagery cannot: They allow people to mentally enjoy the fantasized future in the present moment, free from restrictions. Thereby, positive fantasies should allow people to mentally address their needs when they cannot immediately do so in reality. Accordingly, we hypothesized that when prompted to think about relevant stimuli (i.e., those that they expect could satisfy the need), people with a need would generate more positive fantasies than people without a need. We conducted four studies to test this hypothesis.

THE PRESENT RESEARCH

We either induced (Studies 1–3) or measured (Study 4) a need and then measured the positivity of people's fantasies about relevant stimuli. To assess the generalizability of the results, we examined four different needs: meaning in life, drinking (thirst), relatedness, and power. Like in previous research (Kappes, Oettingen, & Mayer, 2011; Kappes, Stephens, & Oettingen, 2011; Oettingen & Mayer, 2002; Oettingen & Wadden, 1991), positivity of fantasies was measured by having participants fantasize the ending to incomplete scenarios, before indicating how positive their thoughts and images were. We hypothesized that people with a need would report that their fantasies about relevant stimuli were more positive than people without a need, and we assumed that like in previous research (Oettingen & Mayer, 2002), participants' self-reported positivity of fantasies would represent the degree to which they had imagined an idealized, best-case-scenario version of the stimuli.

We recognized, however, that this was not the only possibility; perhaps people, depending on their need, experience their fantasies as differentially positive but do not differ in the degree of idealization when it comes to the content of these fantasies. Perhaps merely by virtue of the depicted stimulus being relevant to their needs, the former experience these

fantasies as being more positive; perhaps the same fantasies have a greater hedonic impact when they are relevant (see, e. g., Loewenstein, 1996). To rule out this explanation, and verify that positivity of fantasies indeed reflected content differences (in the form of idealized imagery), we also utilized content analysis in Studies 1–3. We expected that other-rated idealization would be strongly correlated with self-reported positivity, which would imply that needs change the way relevant stimuli are depicted in imagination.

STUDY 1: MEANING IN LIFE

Meaning in life refers to the view that one's life has a purpose, has significance beyond the trivial or momentary, and matters in some larger sense (King, Hicks, Krull, & Del Gaiso, 2006; Ryff & Singer, 1998). To manipulate the arousal of people's need for meaning, we focused on the role of employment. We had adult participants read an article linking their present employment status (whether unemployed or employed) to a lack of meaning in life. Control participants read an article linking the *other* employment status to a lack of meaning in life. Then, all had to fantasize the ending to a scenario about going on a job interview. This scenario was relevant to the need for meaning in life: The job interview would allow the unemployed to increase meaning by becoming employed, and the employed to find even more meaningful work than they presently had. Thus, we hypothesized that the fantasies of participants in the aroused need condition would be more positive than the fantasies of control participants.

METHODS

Participants

Eighty-five adults were recruited while waiting at governmental processing offices in a large German city. They completed the study in exchange for a lottery ticket. The sample included 61 who were employed and 24 who were unemployed. Age and gender were not recorded. Participants were told that the study concerned thoughts about work situations and were randomly assigned to an aroused need ($n = 42$) or control ($n = 43$) condition.

Procedure and Materials

Need Manipulation

Participants read a brief article with the heading "What Gives Life Meaning?" The article said that meaning in life tends to be related to the work that people do because work plays a big role in representing who people are and what they value. Selected information within the article varied by condition.

In the aroused need condition, participants read that their particular employment status was associated with life being meaningless. Specifically, employed participants ($n = 31$) read that employed people tend to lack meaning in their lives because their jobs force them to make social, romantic,

personal, and spiritual sacrifices, which are often repaid with a supervisor's ingratitude and the assignment of additional work. Unemployed participants ($n = 11$) read that unemployed people (those who have lost their jobs) tend to lack meaning in their lives because they had made social, romantic, personal, and spiritual sacrifices in their former jobs, which were repaid with a company's ingratitude and a pink slip.

In the control condition, participants did not read that their particular employment status was associated with life being meaningless. Instead, employed participants ($n = 30$) read that unemployed people tend to lack meaning in their lives, and unemployed participants ($n = 13$) read that employed people tend to lack meaning in their lives, using the same information provided in the aroused need condition.

Fantasy Measure

Fantasies were elicited, and positivity was measured using the methods of previous studies (e.g., Kappes, Oettingen et al., 2011, Kappes, Stephens et al., 2011; Oettingen & Mayer, 2002; Oettingen & Wadden, 1991). Participants were asked to read an incomplete scenario that addressed finding new employment and to fantasize the scenario to completion, writing down their thoughts and images. The scenario read, "You are sitting in a company's reception area, waiting for an interview for a position that you're interested in. The interviewer comes out, shakes your hand, and leads you to the office to begin the interview...."

On the following page, the positivity of the fantasies was assessed with three items answered on a 1 (*not at all*) to 5 (*very*) scale: "In the situation that you just described, how positive did your thoughts and images make you feel?", "How negative did your thoughts and images make you feel?" (reversed), and "How satisfied did your thoughts and images make you feel?" We calculated the mean ($\alpha = .83$).

To verify that self-reported positivity reflected the generation of an idealized depiction of the scenario, a rater blind to study design and hypotheses read the written excerpts and rated them on a 1 (*worst/not at all idealized version*) to 5 (*best/most idealized version*) scale. Excerpts rated with a 1 raised doubts or described problems such as feeling nervous, stumbling, stuttering, things going wrong, not being able to answer the questions, and not being hired. Excerpts rated with a 5 described feeling confident, easily answering all the questions, and receiving a wonderful job offer.[1] For example, one participant's excerpt rated 1 read

> Now I tell myself: absolutely don't do anything wrong. I have to manage this. Always laugh nicely, act natural. Coffee — yes or no? Damn, my application materials are messed up...panic.

One participant's excerpt rated 5 read

> I'm extremely motivated and I'm looking forward to the interview. I have the chance to get my favorite job, that's why I'm so well prepared. And I don't have any anxiety about it.

[1] In Studies 1–3, the reliability of the ratings was verified by having a second rater, also blind to condition, design, and hypotheses, rate the data of 20 participants in each study. As reliability in all studies was high (r's = .64, .77, and .59), we used only the ratings of the first rater.

RESULTS AND DISCUSSION

Participants in the aroused need condition ($M = 3.71$, $SD = 0.78$) reported that their fantasies about finding new employment were more positive than participants in the control condition ($M = 3.32$, $SD = 1.03$), $t(78.38)^2 = 1.96$, $p = .05$. The content ratings of idealization strongly correlated with self-reported positivity, $r(83) = .56$, $p < .001$, indicating that participants' reports of the positivity of their fantasies tapped the degree to which they imagined an idealized, best-case scenario. Importantly, this correlation did not differ by condition, aroused need $r(40) = .53$, $p < .001$; control $r(41) = .57$, $p < .001$, $z = 0.23$, $p = .82$.

Participants with an aroused need for meaning in life generated more positive, idealized fantasies about an opportunity to address the need than did participants without an aroused need. According to the manipulation materials, the job interview offered a chance to find meaning in life: Unemployed participants could increase meaning by finding work, and employed participants could find a more meaningful job. The latter should have imagined a job that would not entail the personal sacrifices and ungrateful employers they read about and might have experienced in their own life. The effect of need arousal on positivity of fantasies was present across participants regardless of employment status. Although one might expect that the need manipulation would be particularly powerful for unemployed participants, in light of the relatively few unemployed participants, the present study does not allow for testing this hypothesis.

These results offer first insight into where positive fantasies about the future come from: Need states lead people to (mentally) travel to a positive future whereby they can (mentally) address their need in the present. However, because we only measured the positivity of need-relevant fantasies (job interview), it is not clear whether need states increase the positivity of any fantasies or whether the effect is specific to potentially need-satisfying stimuli or scenarios. Thus, we conducted Studies 2 and 3 to verify that the effect of needs on positive fantasies is specific.

STUDY 2: THIRST

Hierarchical models of needs (e.g., Kenrick et al., 2010; Maslow, 1943) posit that physiological needs such as thirst are lower-order needs that must be satisfied before people can address higher-order psychological and social needs such as the need for meaning in life. Accordingly, in Study 2, we asked whether a physiological need stimulates positive fantasies about relevant stimuli, just as a higher-order need did in Study 1. We instilled thirst in half of the participants by using a manipulation adopted from Kappes and Oettingen (2011, Study 4). All participants had to then fantasize the ending to a relevant scenario about drinking water and to an irrelevant scenario about giving advice to a friend. We hypothesized that the relevant fantasies would be more positive for thirsty

[2] Equal variances not assumed.

participants than control participants but that the irrelevant fantasies would not differ.

METHODS

Participants and Design

Seventy American undergraduate students (45 female, 25 male, age $M = 19.17$ years, $SD = 1.09$) completed the study in partial fulfillment of a course requirement. Participants were told that the study concerned how perception of hidden health characteristics in food may be related to other attitudes and beliefs and were randomly assigned to an aroused need ($n = 35$) or control ($n = 35$) condition.

Procedure and Materials

Upon signing up for the study, participants were told, "In order to provide a controlled test of the sense of taste, it is very important that you do not eat or drink for at least 4 hours prior to the study." Those who did not meet this criterion were excluded.

At the beginning of the study, participants answered several questions about their present food cravings and typical food consumption, to support the premise that the study concerned taste perceptions. Embedded in these questions was a baseline measure of participants' thirst, which they answered by marking a 14-cm line with endpoints labeled *not at all* and *extremely*.

Need Manipulation

Next, we manipulated the need for drinking (and the resultant thirst) by having participants eat dry salty crackers in the guise of a "Taste Test." Participants were given a plate containing two pieces of sour gummy candy, two pieces of spicy cinnamon candy, one piece of chocolate, and six dry salty crackers. They were asked to eat each food sample slowly and carefully before answering several questions about its taste (e.g., how rich *versus* bland it tasted, how healthy *versus* unhealthy). Between food samples, they were asked to eat two crackers to cleanse their palates. The resultant consumption of six dry crackers was intended to heighten the need for drinking, as indicated by feelings of thirst. Finally, participants again answered several questions about their present food cravings, including a second measure of thirst.

At this point, an experimenter gave participants in the control condition a cup and filled it three-quarters of the way full with water from a new 1-L Fiji bottle. She told each participant, "You can drink some water now if you want to. Drink as much as you want and let me know if you want more, but don't go on to the rest of the questionnaire until you're finished drinking." Participants who asked for more water were given additional half glasses until they indicated they had had enough, at which point their glass was discarded and they went on to the fantasy measure. Participants drank between three-quarters and one and a half glasses of water. Those in the aroused need condition were not offered water and went directly from the taste test manipulation to the fantasy measure.

Fantasy Measure

For all participants, we measured both relevant and irrelevant fantasies; order was counterbalanced. Relevant fantasies were elicited by having participants fantasize the ending to the scenario: "You're in a restaurant and the waitress brings you a big glass of ice water. You pick up the cup and drink the water. . .." Irrelevant fantasies were elicited by having participants fantasize the ending to the scenario: "Your friend is considering joining a gym, and asks you whether it's a good idea. You think to yourself. . .."

After imagining each scenario and writing down their thoughts and images, participants responded to the same three items used in Study 1 (α's relevant scenario = .80, irrelevant scenario = .78), and a rater who was blind to condition, design, and hypotheses subsequently rated the degree of idealization in the relevant scenario, using a 1 (*worst/not at all idealized version*) to 5 (*best/most idealized version*) scale.

At the conclusion of the study, participants were debriefed. No participant guessed the study's hypothesis or the connection between the taste test and the fantasy scenarios.

RESULTS AND DISCUSSION

A paired-samples *t*-test on the thirst ratings before and after the taste test manipulation showed that all participants increased in thirst, $t(69) = 5.26$, $p < .001$ ($M_{before} = 8.79$, $SD = 3.23$ *versus* $M_{after} = 10.69$, $SD = 2.45$). Participants in the control condition were allowed to drink as much water as they wanted before continuing to the fantasy measure, so they should not have been thirsty anymore, whereas participants in the aroused need condition continued to be thirsty.

We used a mixed-design ANOVA to analyze positivity ratings. The between-subjects factor was need (aroused need *versus* control), and the within-subjects factor was scenario type (relevant *versus* irrelevant). There were no main effects of need, $F(1, 68) = 1.98$, $p = .16$, or scenario type, $F(1, 68) = .41$, $p = .53$, but a marginal need by scenario type interaction effect, $F(1, 68) = 3.42$, $p = .07$. The relevant scenario was fantasized about more positively in the aroused need condition ($M = 3.92$, $SD = 1.00$) than in the control condition ($M = 3.39$, $SD = 0.92$), $t(68) = 2.33$, $p = .02$. However, the irrelevant scenario was fantasized about equally positively in the aroused need ($M = 3.53$, $SD = 0.94$) and control ($M = 3.58$, $SD = 1.05$) conditions, $t(68) = .20$, $p = .84$.

Like in Study 1, to verify that positivity of fantasies about the relevant scenario reflected the generation of particularly idealized images, we computed the correlation between self-reported positivity and rated idealization of the relevant scenario. Again, we found a significant positive correlation, $r(68) = .57$, $p < .001$, which did not differ by condition (aroused need condition participants $r(33) = .54$, $p < .001$; control participants $r(33) = .55$, $p = .001$, $z = 0.06$, $p = .95$).

These results replicate Study 1 in finding that people with a need have more positive fantasies than people without a need. These results also indicate that this effect is specific to the relevant scenarios. We wanted to replicate this finding in Study 3.

STUDY 3: RELATEDNESS

Relatedness, which is similar to affiliation (e.g., Atkinson, Heyns, & Veroff, 1954), is the need to establish close emotional bonds and attachments with people, based on the desire to be emotionally connected to and interpersonally involved in warm relationships (Baumeister & Leary, 1995; Deci & Ryan, 1991). Optimizing relationships with close significant others is particularly important as people age (Carstensen, Isaacowitz, & Charles, 1999), so we tested the effect of the relatedness need by using a sample of older adults.

We aroused the need for relatedness by asking one group of participants to list 12 recent examples of "close contact with others who care about you;" control participants had to list four such examples. Research indicates that listing many (e.g., 12) examples feels relatively difficult, whereas listing few (e.g., four) examples feels relatively easy (Sanna & Schwarz, 2003; Schwarz et al., 1991). These metacognitive experiences of difficulty *versus* ease influence participants' judgments about the listed dimension, so participants who had the difficult experience of listing 12 examples should feel that they actually lack close contact with caring others, arousing the need for relatedness. Similar to Study 2, participants with an aroused need for relatedness should generate more positive fantasies about a relevant scenario than control participants, but this difference should not emerge for fantasies about an irrelevant scenario.

METHODS

Participants

Participants were 25 adults, ages 65 to 90 ($M = 75$ years, $SD = 7.71$; 15 women, 10 men), recruited from senior housing and senior centers in California and New York. Ethnicity was 72% Caucasian or European-American, 12% African or African-American, 4% Hispanic or Latino/a, 4% Asian or Asian-American, and 8% other. Participants were told that the study concerned human relationships across the lifespan and were randomly assigned to an aroused relatedness need ($n = 11$) or control ($n = 14$) condition.

Procedure and Materials

Participants were given the study materials, asked to complete them when they were alone, and to return them via mail ($n = 16$), or they completed the study materials with the help of an experimenter who read the questions and recorded the answers ($n = 9$). There was neither main nor interactive effect of this difference on any of the variables discussed below, p's > .35.

Need Manipulation

Participants were asked to list recent examples of "when you had close contact with people who care about you." They listed, for example, "saw a friend at the [senior] center,"

"had lunch with relatives," and "my son took me to a doctor appointment." Those in the aroused relatedness need condition were asked to list 12 examples, and those in the control condition were asked to list four examples.

Fantasy Measure

Again, we measured both relevant and irrelevant fantasies for all participants. The relevant prompt described contact with a close, caring other (in line with the definition of relatedness), and the irrelevant prompt described contact with strangers (not in line with the definition of relatedness). Specifically, relevant fantasies were elicited by having participants fantasize the ending to the scenario: "You're on your way to the store when you suddenly recognize one of your close friends. You go over to your friend and...." Irrelevant fantasies were elicited by having participants fantasize the ending to the scenario: "You arrive for an appointment in a big office that's full of people. You look around but don't see anyone you know. You sit down to wait and...."

After imagining each scenario and writing down their thoughts and images, participants responded to the three items described in Studies 1 and 2 (α's relevant scenario = .75; irrelevant scenario = .88), and a rater blind to the conditions and hypothesis rated the degree of idealization in the relevant scenario as described in Studies 1 and 2.

RESULTS AND DISCUSSION

We used a mixed-design ANOVA to analyze positivity ratings. The between-subjects factor was need (aroused need *versus* control), and the within-subjects factor was scenario type (relevant *versus* irrelevant). There was no main effect of need, $F < 1$, but a main effect of scenario type, $F(1, 23) = 15.64$, $p = .001$, which was qualified by a marginal need by scenario type interaction effect, $F(1, 23) = 3.27$, $p = .08$. Unlike in Study 2, the relevant scenario was not fantasized about significantly more positively in the aroused need condition ($M = 4.67$, $SD = 0.47$) than in the control condition ($M = 4.31$, $SD = 0.77$), $t(23) = 1.35$, $p = .19$. However, like in Study 2, the irrelevant scenario was fantasized about equally positively in the aroused need ($M = 3.52$, $SD = 1.13$) and control ($M = 3.88$, $SD = 1.27$) conditions, $t(23) = .75$, $p = .46$. The marginal interaction effect was driven by participants with an aroused need reporting that their relevant fantasies were more positive than their irrelevant fantasies, $t(10) = 3.76$, $p = .004$, whereas this was not the case in the control condition, $t(13) = 1.65$, $p = .12$.

Although the pattern of these results replicated Study 2, the lack of a significant difference between aroused need condition participants and control participants regarding fantasies in response to the relevant scenario did not support our hypothesis. One clear contributing factor is the small sample size (n's = 11, 14). Additionally, positivity on the relevant scenario was very high across conditions ($M = 4.47$); almost half of all participants (48%) had the maximum score of 5. This finding is consistent with the idea that relationships with close caring others are particularly important for older adults

(Carstensen et al., 1999), but it also implies that a ceiling effect may have obscured a difference between conditions. To gain additional evidence for the hypothesized difference, we used an ANCOVA to compare participants in the aroused need and control conditions on the relevant scenario, using the irrelevant scenario as a covariate, thus gaining additional power. This analysis revealed the predicted difference, $F(1, 22) = 4.44$, $p < .05$ (aroused need condition estimated marginal $M = 4.73$; control condition estimated marginal $M = 4.26$).

Like in the previous studies, we computed the correlation between self-reported positivity and rated idealization in the relevant scenario. Again, we found a significant positive correlation, $r(22) = .61$, $p = .001$, which did not differ by condition (aroused need condition $r(8) = .76$, $p = .01$; control condition $r(12) = .54$, $p = .05$; $z = 0.79$, $p = .43$). In sum, then, these results replicate Study 2 and demonstrate that psychological and physiological needs prompt more positive fantasies about relevant stimuli. We conducted the next study to build on these findings in three ways, using a fourth need, the need for power.

STUDY 4: POWER

The need for power (or power motive) is characterized by the desire to affect another person's behavior or emotions, or to enhance one's own prestige or reputation (Winter, 1973). Because the need for power is often implicated in political decisions (Winter, 1993), we examined how it would relate to positive fantasies about the future under a relevant political candidate. We modified the materials of Study 4 from the earlier studies in three ways, in order to expand on those results.

First, we asked whether measured needs would show the same relationship to relevant positive fantasies as manipulated needs. We measured the strength of a need, and not just its presence *versus* absence, to see whether the amount of need also plays a role in predicting relevant positive fantasies. Specifically, we had German citizen participants read a brief article highlighting Germany's power in the world and then asked them to indicate the strength of their own need for power at the moment.

Second, we wanted to measure the positivity of fantasies in a way that better matched the relevant stimuli that people encounter in their daily lives. Rather than having participants complete open-ended hypothetical scenarios, we provided them with descriptions of hypothetical political candidates and asked them to imagine the future living under each one. Participants had to indicate how positive and idealized they imagined this future to be.

Third, we wanted to conduct a more stringent test of the specificity of the relationship between needs and positive fantasies. Although the irrelevant and relevant scenarios in Studies 2 and 3 were matched in terms of key variables such as length and the presence of others, it is possible that other differences contributed to the results we found in these studies. Thus, in Study 4, we looked not at the difference in positivity between relevant and irrelevant stimuli but at the difference between relevant stimuli that promised *versus* did not promise need satisfaction. We speculated that the stronger the need, the more that fantasies about relevant stimuli would be sensitive to this distinction (i.e., would be more differentially positive).

METHODS

Participants

Nineteen adults ages 18 to 73 ($M = 41$ years, $SD = 20.90$; 10 female, 7 male, 2 did not indicate) were recruited while waiting at governmental processing offices in a large German city and completed the study in exchange for a lottery ticket. Participants were told that the study concerned the thoughts and preferences of German citizens about a future Chancellor.

Procedure and Materials

Participants first read a brief paragraph describing Germany as one of the world's most powerful countries. They were told, "We are interested in the feelings of German citizens," and to measure their need for power, they were asked, "How powerful do you feel right now?" The response scale ranged from 1 (*not at all*) to 7 (*extremely*). This question was reverse-coded so that higher scores reflected a greater need for power.[3]

Fantasy Measure

To elicit fantasies about the future, we asked participants to read descriptions of four candidates for a future Chancellor position and to imagine the future under each one. Participants read one-paragraph descriptions of four male candidates (order was counterbalanced using a Latin square design). One candidate was depicted as more promising for addressing the need for power, and a second as less promising for doing so; these were the two relevant candidates. A third candidate was depicted as more promising for addressing the need for relatedness, and the final candidate as less promising for doing so; these were the two irrelevant candidates.

For example, the description of the relevant candidate who was described as more promising for need satisfaction read in part, "His main aim is to increase the potency and standing of Germany in the world. He has a long and consistent record of working to improve Germany's economic strength and its status among other nations." The description of the relevant candidate who was described as less promising for need satisfaction read in part, "He is something of a mystery, although political scientists agree that he has the potential to be an outstanding leader. He has stated that one thing he would like to do is to focus on extending the power of Germany in the world. However, because his past activities are inconsistent, it is not at all assured that he will achieve this aim."

The descriptions of the two irrelevant candidates followed the same format. One was described as more promising for satisfying the need for relatedness; this description read in part, "His primary purpose is to concentrate his attention on the

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[3]To verify that this item tapped the need for power, we recruited a separate group of 45 individuals at the same location and had them read the cover story and answer this item as well as the question, "How powerful would you *like* to feel right now?" using the same response scale. Thirty-one (68.9%) reported that they would like to feel more powerful than they currently did; only one individual (2.2%) reported wanting to feel less powerful than he or she currently did. Desired power ($M = 4.50$, $SD = 1.77$) was higher than currently felt power ($M = 2.93$, $SD = 1.42$), $t(44) = 7.40$, $p < .001$. These findings indicate that (low) felt power is a valid indicator of the need for power.

connection between German citizens so that people have more close contact with others who are important to them. Indeed, he has a long and consistent record of working to improve belongingness and relatedness in Germany." The other candidate was described as less promising for satisfying the need for relatedness; this description read in part, "He has advertised that he would like to attend to the relations and the interconnectedness between German citizens. From his point of view it is important that the citizens have stronger connections to each other. . ... But, because of his unpredictable political practices in recent years, it is questionable if he will pursue this promised work."

Dependent Variable: Positivity

Participants were told as they read the description of each candidate, "Please take a moment to imagine what the future would be like under this person's leadership." After each description, participants were asked, "What do you imagine the future will be like under this leader?" They answered on a 1 (*very bad*) to 7 (*very good*) scale.

RESULTS

We hypothesized that the need for power would predict more positive fantasies about the relevant candidate who was highly promising for need satisfaction (power) compared with the relevant candidate who was less promising for need satisfaction, but not more positive fantasies about the parallel irrelevant candidates (relatedness). That is, need state should only predict differentially positive fantasies for relevant candidates, not for candidates in general.

To test this hypothesis, we computed two difference scores reflecting how much more positively participants imagined the future under the candidates who were depicted as more promising *versus* less promising for need satisfaction. These two difference scores were entered as dependent variables in a repeated-measures ANOVA, with need for power as the predictor (it was entered as a covariate because it was measured as a continuous variable). We observed no main effect of need, $F < 1$, a main effect of candidate type, $F(1, 17) = 6.04$, $p = .03$, and a need by candidate type interaction effect, $F(1, 17) = 11.00$, $p = .004$. Parameter estimates showed that the greater participants' need for power, the more they idealized the relevant candidate who was more promising for need satisfaction over the one who was less promising, $b = .42 (.30)$, but the less they idealized the irrelevant candidate over the less promising irrelevant candidate, $b = -.47 (.30)$. That is, as hypothesized, need state predicted more positive fantasies about the future under a candidate who was not only relevant to addressing the need state but also was highly described as highly promising for doing so. Need state did not predict more positive fantasies for a candidate who was described as highly promising for addressing another need.

These results extend the previous studies in three ways. First, a measured need related to more positive fantasies about relevant stimuli, just as manipulated needs had in Studies 1 to 3. This finding suggests that the strength of a need, as well as

its presence *versus* absence, is a predictor of positive fantasies. Second, it seems that these findings have good external validity, because stimuli like those that people encounter in their daily lives (i.e., descriptions of political candidates) elicited differentially positive fantasies, just as the open-ended hypothetical scenarios used in Studies 1–3 had. Finally, Study 4 shows that for prompting the generation of positive fantasies, the promise of addressing a need — operationalized here as how certain it was that a candidate would do so — is also important. In line with their needs for power, participants reported more positive fantasies about the future under a candidate who was said to be more *versus* less promising for addressing the need, but only when that need was relevant to their own current state.

GENERAL DISCUSSION

Four studies shed light on need states as one variable affecting mental travel to a positive future. Across a range of needs (meaning in life, drinking, relatedness, and power), and whether these needs were manipulated (Studies 1–3) or measured (Study 4), people with an aroused need (or with a stronger need) generated more positive fantasies about future scenarios that were relevant to addressing the need, compared with people without this need (or with a weaker need). Studies 2 through 4 showed that this effect is specific: Only relevant scenarios elicited a difference in positive fantasies, and the relevant stimuli elicited more positive fantasies the more they promised need satisfaction.[4] Importantly, as hypothesized and in line with previous research (Oettingen & Mayer, 2002), participants' self-reported positivity of fantasies reflected the degree to which they imagined an idealized, best-case scenario, as indicated by strong correlations between the self-reported positivity and naïve raters' ratings of idealization of the content in Studies 1–3.

Thus, these studies suggest that just as needs influence the perception of relevant stimuli in the physical environment, needs also influence the depiction of relevant stimuli in

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[4]One limitation of the present studies is the sometimes small sample sizes and marginally significant results. To address this limitation, we conducted two meta-analyses combining the data from the studies. First, to test whether induced needs consistently resulted in more positive fantasies about relevant stimuli, we combined the data from Studies 1 to 3 (in which needs were induced) and conducted an ANOVA with independent variables need condition and study number, and dependent variable the positivity of relevant fantasies. There was an effect of condition, $F(1, 174) = 7.53$, $p = .007$, $\eta^2_{partial} = 0.04$, which was not qualified by study number, $F < 1$. Across the various domains of Studies 1–3, the need induction had a similar effect on heightened positivity of fantasies about relevant stimuli ($M_{No\ Need} = 3.67$, $Se = 0.11$, $M_{Need} = 4.10$, $Se = 0.11$).

Second, to test whether needs consistently resulted in more positive fantasies about only relevant and not irrelevant stimuli, we combined the data of Studies 2 and 3 (in which multiple fantasies were measured) and conducted a repeated-measures ANOVA with independent variables fantasy type (within-subjects) and need condition and study (between-subjects). There was a need by fantasy type interaction effect, $F(1, 91) = 5.04$, $p = .03$, $\eta^2_{partial} = 0.05$, which was not qualified by study number, $F < 1$. Across the varied domains of Studies 2 and 3, the need induction heightened the positivity of fantasies about relevant stimuli ($M_{No\ Need} = 3.65$, $SD = .96$, $M_{Need} = 4.10$, $SD = 0.95$), $t(93) = 2.28$, $p = .03$, but did not affect the positivity of fantasies about irrelevant stimuli ($M_{No\ Need} = 3.63$, $SD = 1.12$, $M_{Need} = 3.53$, $SD = 0.98$), $t(94) = .48$, $p = .63$. Moreover, paired-samples t-tests showed that only when the need was aroused were fantasies about relevant stimuli more positive than fantasies about irrelevant stimuli, $t(45) = 3.09$, $p = .003$; this was not the case when the need was not aroused, $t(48) = .08$, $p = .94$.

fantasies. The present results add to a long tradition of research which finds that needs influence the content of fantasies — for instance, induced needs for food and for achievement increased the inclusion in fantasy stories of themes related to eating and achieving, respectively (Atkinson & McClelland, 1948; McClelland et al., 1949). The present studies build on this work, by showing that needs influence not only the content but also the way mental images of need fulfillment are subjectively experienced and objectively depicted (as evaluated by impartial raters).

Consequences of Positive Fantasies for Need Satisfaction

Needs lead to the idealization of relevant stimuli — in this way, positive fantasies may help to ensure that the relevant stimuli are pursued and the need is addressed. William James (1890/James, 1950) laid the groundwork for this idea by proposing, "what holds attention determines action" (p. 444). Positive fantasies, by depicting the relevant stimuli as particularly pleasant, should help these stimuli to hold attention. Recent research lends support to these ideas by pointing out that positive affective states associated with approach motivation (i.e., things that people would like to pursue) reduce the breadth of attention, which helps people to shut out irrelevant stimuli as they approach desired objects (Gable & Harmon-Jones, 2008). Indeed, an examination of event-related brain potentials suggested that positive affect associated with desired objects helps those objects to grab attention (Gable & Harmon-Jones, 2010). These findings imply that positive fantasies about relevant stimuli should guide people's attention toward addressing their needs by pursuing these relevant stimuli.

It is important to point out that positive fantasies may not always work in the service of need satisfaction. Contrary to popular ideas about the motivating power of positive imagery, positive fantasies that depict an idealized version of the future are linked to low effort and success over time. In a series of studies, the self-reported positivity of fantasies about desired futures, such as improving mathematics grades, studying abroad, approaching the object of a crush, recovering from hip-replacement surgery, and losing weight, predicted poor actual achievement of these difficult tasks measured 2 months to 2 years later (Oettingen & Mayer, 2002; Oettingen & Wadden, 1991). More recent work shows that this relationship is causal: Experimentally induced fantasies that depicted a positive, idealized upcoming week resulted in poorer actual success over the week, compared with more negative fantasies about the upcoming week (Kappes & Oettingen, 2011; Study 3). Positive fantasies are also shown to create relaxation rather than the energy to pursue a desired future, as evinced by both physiological and self-report indicators, and to do so particularly when the fantasies are relevant to the participant's current need state (Kappes & Oettingen, 2011).

Combining these findings with the present studies could suggest that positive fantasies about addressing one's needs are *not* beneficial for need satisfaction; such fantasies might keep people from mustering the energy and effort to actually address their needs. Two points are important to consider. First, recent work finds that positive fantasies only dampen effort and success when success demands considerable resources (i.e., relatively much time

or money; Kappes, Sharma, & Oettingen, 2012). Thus, if addressing a need requires relatively few resources — filling a glass from the tap to address the need for drinking or dialing a friend's phone number to address the need for relatedness, for instance — then positive fantasies, by directing attention toward the satisfying stimuli and away from irrelevant ones, should promote effort and success.

Second, fantasies might be used to distract oneself from difficult waiting (Singer, 1975), making delayed need satisfaction more bearable. Perhaps positive fantasies bolster people's confidence that their attention will remain on the relevant stimuli (see, e.g., Gable & Harmon-Jones, 2008); because they will not later forget to attend to their needs, they can feel comfortable waiting. This might be a second way that positive fantasies facilitate the pursuit of need satisfaction.

Future Directions

In the present studies, we observed the positivity of the fantasies that participants generated in response to relevant stimuli. Future work might examine the direction that people's thoughts spontaneously take under conditions of need. For instance, are needy people particularly prone to generate positive fantasies about relevant stimuli, or do they do so only after first encountering (i.e., being prompted by) the relevant stimuli? We know that needy people are particularly likely to notice the relevant stimuli (e.g., relevant words or objects) in the physical environment (e.g., Aarts et al., 2001). By varying their presence *versus* absence, future research could indicate whether these cues must be present to prompt positive fantasies.

It may be the case that some individuals are more or less likely to generate relevant positive fantasies under conditions of need. Langens and Schmalt (2002) found that positive goal imagery was most motivating for individuals low in fear of failure. They suggested that for those high in fear of failure, positive mental imagery may signal that positive outcomes might not occur, inducing negative emotions and attempts at mood repair. If, as we have speculated, needs instigate positive fantasies so that the needs can be mentally addressed, this process may be less effective for individuals high in fear of failure. Perhaps only those relatively low in fear of failure can reap the presumed emotional and behavioral benefits of positive fantasies about need-relevant stimuli. Examining fear of failure or similar constructs as a potential moderator of the relationship between needs and relevant positive fantasies could shed light on this question.

CONCLUSION

Across a range of physiological and psychological needs (meaning in life, drinking, relatedness, and power), the present four studies find that people with an aroused need generate more positive fantasies about relevant stimuli than people without an aroused need. These studies are a first step to an understanding of why and when people, in their fantasies and daydreams, make their future look a certain way. Need states, which signal a deprivation, instigate mental travel to a particularly positive, idealized version of the future in which the deprivation can be satisfied.

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