Implicit theories moderate the relation of positive future fantasies to academic outcomes

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ABSTRACT

We hypothesized and observed that the degree to which students endorsed entity theories – the view that intelligence is fixed rather than malleable – attenuated the affective benefits and exacerbated the achievement drawbacks of positive fantasies in the academic domain. Positive fantasies only predicted low anger and anxiety for schoolchildren who did not strongly endorse entity theories (Study 1), and positive fantasies only predicted poor final school grades for vocational students who *did* strongly endorse entity theories (Study 2). An experiment indicated that for university students with stronger entity theories, positive fantasies demanded relatively little attention (Study 3), suggesting that positive fantasies obscure the opportunity for the preemptive self-regulation which promotes successful performance.

1. Introduction

Students may use fantasies about upcoming academic experiences to help them anticipate and perhaps prepare for the future. For example, starting a new school program, students might imagine receiving and responding to their first feedback from teachers. A student who fantasizes about her first test being returned with a large *A*+ scrawled on the front might imagine her elated feelings, the fun of telling friends and family, and the excitement of going out for a celebratory dinner. Such idealized visions of the future have benefits for immediate affect (Eller, 1999; Jallo, Bourguignon, Taylor, & Utz, 2008), but drawbacks for actual achievement over time (Oettingen & Mayer, 2002; Oettingen & Wadden, 1991). In the present research, we propose that these benefits and drawbacks depend on the way that people interpret and use their fantasies. Specifically, as a moderator of the relationship between positive fantasies and academic outcomes, we considered the way that students understand ability, as defined by their implicit theories of intelligence (Dweck, 1999).

Fantasies refer to the thoughts and mental images about the future that freely occur in the mind's eye. As described by Klinger (1990, 1996), who called them daydreams, fantasies pertain to currently important wishes in one's life, including desirable future outcomes as well as the processes of working toward these out-

comes. In fantasies that are experienced as very positive, people envision a masterful, perfect future performance without picturing potential setbacks or questioning the smooth attainment of the desired future (Oettingen & Mayer, 2002). On the other hand, people may also imagine the setbacks that could prevent a desired future, and may question whether a desired future can actually be achieved. By doing so, people generate fantasies that are experienced as relatively less positive (Oettingen & Mayer, 2002). It is important to note that fantasies, as used here, differ from what Lewin (1926) and Mahler (1933) called "Zauberdenken" (i.e., thoughts depicting actions and events that violate known natural laws); common usage of the word "fantasy" may connote such scenarios. However, as Taylor, Pham, Rivkin, and Armor (1998) pointed out, "Even an entertaining fantasy about acquiring great wealth typically begins with an unexpected inheritance or winning a lottery rather than with a large cloud opening up and dumping the money in the front yard or some other impossible event" (p. 430). Although people can generate fantasies about any topic, the present research concerns fantasies that depict performances. Fantasies that depict performances, which may be highly positive or less positive, portray (explicitly or implicitly) the individual's future capability. As outlined in more detail below, this capability can be interpreted as something that is fixed or as something that can be developed over time.

People use fantasies to anticipate affective consequences of future events (Gilbert & Wilson, 2007), and when the future is depicted as positive, this depiction can have immediate affective benefits. Imagining the successful pursuit and achievement of one's wishes has been shown to reduce feelings of anxiety and negative affect.

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For instance, images of successful performance were effective at decreasing the symptoms of competitive anxiety in rugby players (Mellalieu, Hanton, & Thomas, 2009), and simulations that depicted a smooth, logical, and confident process of arriving at a hospital on time to give birth were linked to reduced anxiety and stress about the delivery process (Brown, MacLeod, Tata, & Goddard, 2002). Indeed, specific cognitive strategies like guided imagery actively employ imagery of positive futures as a means of decreasing stress and anxiety (e.g., Eller, 1999; Jallo, Bourguignon, Taylor, & Utz, 2008). However, we expected the affective benefits of positive fantasies not to apply equally to all people.

Instead, we suggest that the relationship between positive fantasies and concurrent affect may depend on the meaning people ascribe to the images depicted in their fantasies. One variable known to affect the way in which people give meaning to their experiences is their implicit theories of ability (see Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999; Molden & Dweck, 2006). Specifically, the extent to which person attributes, like academic ability, are considered to be stable, uncontrollable traits (*entity theories*) rather than changeable, controllable qualities (*incremental theories*), influences people's aims and pursuits in the achievement setting. There is evidence that implicit theories shape the interpretation of past (e.g., attributions for failure, Hong, Chiu, Dweck, Lin, & Wan, 1999) and present (e.g., current task; Stone, 1998) experiences, but research to date has not asked whether such theories color how individuals interpret images of the future, and whether a diverging interpretation of fantasies about the future might affect subsequent affective outcomes.

We hypothesized that the degree to which people endorse an entity theory, and thus believe in the fixedness of ability (Dweck & Leggett, 1988), should change the meaning of their fantasies about the future. The more individuals endorse strong entity theories, the more a fantasized capability is something that they either possess or lack, rather than something that can be worked toward. There are several reasons why for these individuals, positive fantasies about desired future performances might not have the typical affective benefits. First, for people with high entity beliefs, positive fantasies about a future performance should mean that one has demonstrated an existing capability, and thus it is not an actual achievement; it is simply an expression of what one already knows to have been achieved in the past. More importantly, fantasizing about an idealized performance might scare high entity theorists, as they fear they may, in fact, not possess the capability to perform in such an idealized way. An example would be students who, when faced with a challenging exam, use positive fantasies of receiving an A or of easily and competently preparing the materials in order to counteract their feelings of anxiety and anger (e.g., Pekrun, Goetz, Titz, & Perry, 2002). For students with strong entity beliefs, such fantasies depict the idealized expression of an existing capability that they hope to possess but may fear they do not. Thus, for them the affective benefits of imagining future success may be promptly undermined by the immediate fear that they actually do not. Accordingly, positive fantasies should have little power to neutralize feelings of anxiety and anger in school. Finally, findings suggest that for individuals with strong entity theories, feedback indicative of improvement over time may actually create rather than ameliorate anxiety, because such change violates their core belief in a stable self (Plaks & Stecher, 2007). Thus, positive fantasies about the future bearing the possibility of a change from the present may yield higher rather than lower anxiety for students with strong entity beliefs. For these three reasons, positive fantasies about desired future performances should not attenuate negative feelings like anxiety and anger in individuals who endorse strong entity theories.

On the other hand, students with weak entity theories can interpret positive fantasies about successful future performances as representing a capability that can be worked toward rather than a capability that is fixed. Thus, when individuals endorse weak entity theories, the affective benefits of positive fantasies should not be undermined by the fear that one does not possess the idealized capability, as it can always be developed by future effort. For weak entity theorists, positive fantasies about future success should present an undisturbed affective boon that counteracts anxiety and anger, depicting the possibility of a future that is different from the present. In addition, positive fantasies about successfully performing in the future should not be linked to fears that the self may not be stable, as change over time does not violate the core belief in a changeable self. Accordingly, it should be people with weaker entity theories who show the typical pattern of positive fantasies yielding concurrently lower levels of negative feelings like anxiety and anger.

It is important to note that these hypotheses rest on differences in the *interpretation* of the fantasized future rather than on differences in the content of the fantasized future. For example, previous research has examined the content of fantasized futures in terms of whether it pertains to process or outcome (Taylor, Pham, Rivkin, & Armor, 1998). Anxiety is lower when students mentally simulate the process for doing well on an upcoming exam (sitting down, opening the book, starting to read) than when they mentally simulate the outcome of doing well on the exam (getting a good grade; Pham & Taylor, 1999). Because individuals with stronger entity beliefs do not conceptualize ability as something that can be worked toward and developed, one might suspect that these individuals would generate fantasies about outcomes rather than processes more readily than individuals with weaker entity beliefs. However, even if this is the case, it should not account for the moderating role of entity theories. Whether people fantasize about an idealized future outcome (e.g., a high test grade) or an idealized process of reaching that outcome (e.g., smooth and effective studying), these fantasies represent positive futures, which can still be interpreted in different ways. For example, students with relatively strong entity beliefs should interpret fantasies of receiving an A or of easily and competently preparing an assignment as representing a capability that they might or might not possess and hence might or might not demonstrate in the future. For these students, the positive fantasies should have little power to neutralize feelings of anxiety and anger in school. However, students with weaker entity beliefs could interpret the same fantasies as representing a capability that can be worked toward, and for these students, such positive fantasies should provide an affective boon that counteracts anxiety and anger.

Furthermore, we propose that entity beliefs should moderate the relationship between positive fantasies and feelings of anger and anxiety regardless of students' expectations of academic success Even when people have high expectations of successfully attaining a fantasized positive future, if they strongly endorse an entity theory, then this attainment will be a demonstration of a fixed capability rather than the result of striving for improvement. Thus, regardless of the depiction of future outcomes versus processes and regardless of expectations of success, entity theories should attenuate the relationship between positive fantasies and low anger and anxiety, such that this relationship might only be present for students with weaker entity theories. These ideas are tested in Study 1 with a sample of middle-school students.

2. Study 1: Positive fantasies, implicit theories, and achievement emotions

2.1. Method

2.1.1. Participants and procedure

Fifth and sixth grade students from two schools in a large city in Germany participated in this study about their thoughts and be-

liefs about German class. They received a small gift for their participation. Analyses below are based on 174 students (54.6% girls; age M = 11.69 years, SD = .62) who obtained written permission from their parents to participate in the study and completed all of the measures described below. We guaranteed students' anonymity and informed them that participation was voluntary. Students completed the questionnaire in their classrooms during one class period with trained research assistants.

2.1.2. Materials

2.1.2.1. Implicit theories of ability.
To assess their beliefs in a fixed versus malleable ability, students responded to three items: "Your intelligence is something about you that you can't change very much", "You can learn new things, but you can't really change your basic intelligence", and "You have a certain amount of intelligence and you really can't do much to change it" (Hong, Chiu, Dweck, Lin, & Wan, 1999; German translation Spinath & Schöne, 2003). Students were asked to indicate their degree of agreement with each item on a 1 (*strongly disagree*) to 6 (*strongly agree*) scale. We summed the three items so that the higher the students' scores, the stronger their entity theories, or the more they believed that intelligence is fixed (α = .69).

2.1.2.2. Measuring school-related expectations.
To measure students' expectations they responded to one item, "How well do you expect to do in German class this year?" on a 1 (*not at all well*) to 7 (*very well)* scale.

2.1.2.3. Measuring school-related fantasies.
To assess school-related fantasies, we adopted a semi-projective procedure similar to the one used by Oettingen and Mayer (2002, Study 3). Specifically, students were given two incomplete school-related scenarios that they were to fantasize to completion by writing down their thoughts and images. The first scenario was intended to elicit fantasies about a future outcome: "You took a math test and the teacher returns the test to you. You look at the grade and..." The second scenario was intended to elicit fantasies about the process of reaching a future outcome: "The day after tomorrow you're writing an essay on the book you've been reading in German class. Between classes you overhear your classmates talking about how they've prepared so far. You think about how prepared you are and..." Each scenario was read aloud by a researcher, and participants were given three minutes to write their response. After writing each response, participants were instructed to turn to the next page and respond to two questions, "How positive were your thoughts and images?" and "How negative were your thoughts and images?" The response scales ranged from 1 (*not at all positive/negative*) to 5 (*very positive/negative*) and were illustrated with neutral, smiling, or frowning faces to help students understand the scales. Positivity and negativity ratings from both scenarios were strongly inversely correlated, r = −.70, p < .001, and were thus combined to form a fantasy index by subtracting the negativity scales from the positivity scales (arriving at an index ranging from −8 to +8).

2.1.2.4. Dependent variable: Achievement emotions.
To measure anger and anxiety in the domain of German class we adapted two four-item emotion scales concerning students' feelings towards classroom learning (i.e., as opposed to test taking or homework) from the Achievement Emotions Questionnaire (AEQ; Pekrun, Goetz, & Perry, 2005). Students rated the items on 1 (*strongly disagree*) to 5 (*strongly agree*) scales. The items measuring anger were as follows: "I get so angry during German class that I'd like to leave", "I am angry during German class", "I'm aggravated that German class is so hard", and "Because I'm angry I get restless in German class". The items measuring anxiety were as follows: "I'm worried that German class is too difficult for me", "Because I'm so nervous about German class, I

would rather not go to school", "Thinking about German class makes me queasy", and "When I think about German class I feel anxious." The four anger-related items were summed to form an anger scale (α = .70), and the four anxiety-related items were summed to form an anxiety scale (α = .67).

2.2. Results

Students generally endorsed weaker rather than stronger entity theories (M = 7.83, SD = 3.81). Their expectations of success were moderate (M = 4.63, SD = 1.41) and were not significantly correlated with implicit theories or fantasies, rs < .04. Fantasies were generally more positive than negative (M = 2.30, SD = 3.22). Positivity of fantasies was not significantly correlated with implicit theories, r = .10, p = .18. Anger and anxiety were positively correlated, r = .65, p < .001.

To test our hypotheses that implicit theories would moderate the relationship between positivity of fantasies and anger and anxiety, and that this moderation would be present over and above differences in expectations of success, we used linear regression analyses (separately predicting anger and anxiety) with implicit theories, expectations, and positivity of fantasies as predictors entered in the first step, and the interaction of implicit theories by positivity of fantasies in the second step. We had also tested higher-order interactions with expectations of success; however, as none of the effects approached significance, these terms were omitted from the final model.

The predicted implicit theories by positivity of fantasies interaction effect emerged for both anger, $t(169)$ = 2.58, p = .01, R^2 change = 2.8%, and anxiety, $t(169)$ = 3.10, p = .002, R^2 change = 4.1%. As depicted in Fig. 1a and b, the interaction effects indicated that entity theories attenuated the predictive relation between positive fantasies and low anger and anxiety. For students with the weaker entity theories in the sample (1 SD below the mean value of implicit theories), positivity of fantasies predicted lower anger, b = −.43 (.09), p < .001, and this was still true for students with average entity theories, b = −.26 (.07), p < .001. However, for students with the stronger entity theories in the sample (1 SD above the mean), positivity of fantasies was unrelated to anger, b = −.08 (.10), p = .40. Likewise, positivity of fantasies predicted low anxiety for students with weaker entity theories, b = −.38 (.08), p < .001, and average entity theories, b = −.20 (.06), p = .001, but not for students with stronger entity theories, b = −.02 (.08), p = .81.

As outlined above, we hypothesized that this pattern of results would emerge because entity theories would shape the interpretation of the fantasies, rather than leading to the generation of fantasies of different content. To assess whether participants' fantasies differed in the depiction of future outcomes versus processes, we had a rater[2] who was blind to study design and hypotheses code participants' written responses (those of five participants, 2.9% of the sample, were illegible) to the two hypothetical scenarios on a scale labeled 1 (*emphasized future outcomes*), 2 (*balanced between future outcomes and the processes of working toward them*), and 3 (*emphasized the processes of working toward future outcomes*). As expected given that the two scenarios differently prompted descriptions of outcomes versus process, reliability across the two scenarios was low (r = .04). We analyzed the ratings using a repeated-measures ANOVA with implicit theories entered as a covariate. There was an effect of scenario topic, $F(1, 166)$ = 212.19, p < .001, η^2 = .56, reflecting that fantasies about having a test returned emphasized outcome (M = 1.15), and fantasies about preparing an essay emphasized processes (M = 2.76).

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[2] Two raters coded a sample of 25 participants. As their ratings were strongly correlated, $r(73)$ = .67, p < .001, one rater coded the data from Study 1 and the second coded the data from Study 2.
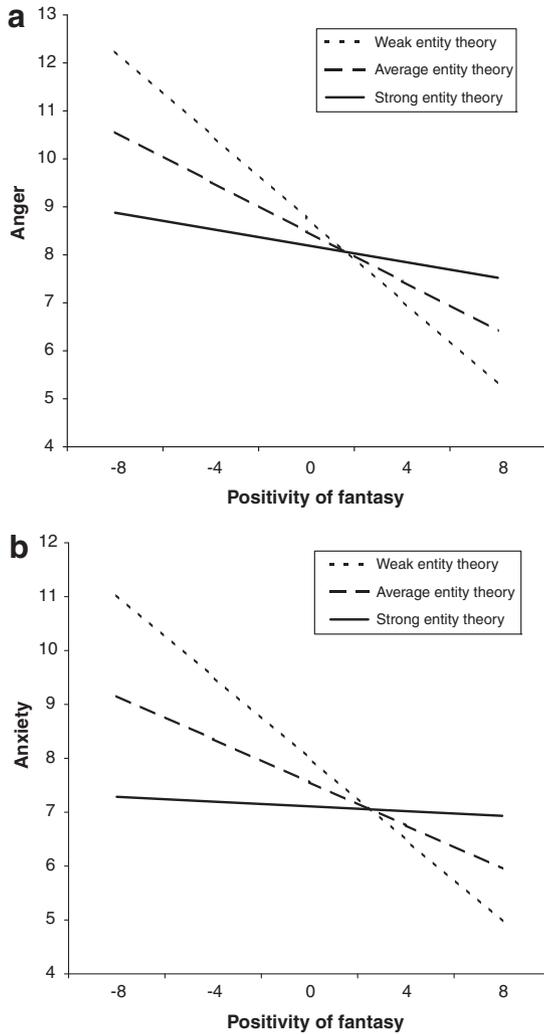
Fig. 1. (a and b) Predicted anger, (a) and anxiety, (b) experienced during German class in Study 1, adjusting for expectations.

There was also an interaction effect, $F(1, 166) = 7.34$, $p = .01$, $\eta^2 = .04$, which indicated that although entity theories were unrelated to outcome versus process emphasis when fantasizing about having a test returned, $b = .004$ (.01), $p = .67$, stronger entity theories predicted slightly less emphasis on process versus outcome when fantasizing about preparing an essay, $b = -.04$ (.01), $p = .003$. However, repeating the regression analyses above with the two ratings of outcome versus process emphasis included as covariates did not change the pattern of results – entity theories still attenuated the relation between positive fantasies and low anger and anxiety – or the significance levels. Moreover, when added to the regression models, outcome versus process emphasis was not related to feelings of anger or anxiety, $ts(161) < 1.40$, $ps > .15$. That is, the predictive relation of entity beliefs and positive fantasies for feelings of anger and anxiety is not explained by differential generation of fantasies about outcomes versus processes.

2.3. Discussion

Study 1 illustrates the moderating effect of implicit theories on the relation between fantasies and achievement emotions. As hypothesized, those students with the stronger entity theories in the sample did not show the typical pattern of positivity of fantasies predicting lower levels of anger and anxiety. For those who believe ability is fixed rather than malleable, idealized visions of competence depict something that is or is not possessed, rather than something that can be worked toward. It appears that such positive fantasies are less affectively beneficial for these individuals than for those with weaker entity beliefs.

These findings were present over and above differences in students' expectations of success. Moreover, the findings were obtained regardless of whether students fantasized about academic outcomes versus the process of working toward those outcomes. Students reported fantasies about future outcomes or processes, in line with the scenarios we provided, and did so largely independently of the strength of their entity beliefs. It was the positivity of the fantasies, rather than the depiction of outcomes versus processes, which predicted low anger and anxiety for students with weaker entity beliefs.

Implicit theories moderated the well-established affective benefits of positive fantasies. Thus, we next asked whether implicit theories might also moderate the achievement drawbacks associated with such fantasies. Despite their positive affective influence, fantasies are found to offer a poor foundation for action. In order to make plans to prevent or overcome setbacks and obstacles – plans that in turn make achievement more likely (Gollwitzer, 1999; Pham & Taylor, 1999) – one must first imagine that these setbacks and obstacles could be encountered. Positive fantasies which omit images of future setbacks obscure the opportunity for such planning, and leave people relatively unprepared to handle setbacks when they occur (Spencer & Norem, 1996). Indeed, a series of studies showed that positive fantasies predict poor achievement over time.[3] In one typical study, college students who positively fantasized about an upcoming exam achieved lower grades on the final exam, even adjusting for their midterm exam grades (Oettingen & Mayer, 2002, Study 3). Similar findings have emerged in other life domains (e.g., getting a job after college, entering a romantic relationship, recovering from hip-replacement surgery, losing weight; Oettingen & Mayer, 2002; Oettingen & Wadden, 1991), and when positive fantasies are induced rather than measured (Kappes & Oettingen, 2011), suggesting that positive fantasies generally have drawbacks for actual achievement.

We hypothesized that these achievement drawbacks might be exacerbated by entity beliefs. Setbacks (i.e., experiences of negative feedback or unsatisfactory performance), which are an inevitable part of academic experiences, are especially problematic in light of strong entity beliefs. For individuals with such beliefs, setbacks are interpreted as failure, because setbacks are seen as diagnostic information of lacking ability that no amount of effort can combat (Dweck, 1999; Dweck & Leggett, 1988). Accordingly, setbacks are addressed by aiming to minimize the value of failure (e.g., effort withdrawal, task disengagement; Elliott & Dweck, 1988; Rhodewalt, 1994) or to manage its negative emotional impact (Dweck, 1999; Nussbaum & Dweck, 2008) rather than determining how to improve and redoubling effort, as is the case for individuals with weaker entity theories. Because setbacks are inherently problematic for them, students with stronger entity theories might be particularly susceptible to the low achievement associated with positive fantasies that leave people unprepared for setbacks. By

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[3] This relationship between positive fantasies and achievement is different from that found for another form of positive thinking, expectancy judgments of the likelihood that future events will occur (Bandura, 1977a; Bandura, 1997b; Oettingen & Wadden, 1991; Reed, Kemeny, Taylor, & Visscher, 1999; Scheier & Carver, 1992). Expectations of success predict achievement and success because, unlike fantasies, these *beliefs* are based on a person's past performance and thus represent a good foundation for action. Indeed, research has shown that fantasies and expectations have an opposite relation to achievement: Positive expectations are associated with enhanced motivation and successful performance (e.g., Bandura, 1977a; Bandura, 1997b; Mischel, 1973), while positive fantasies are associated with dampened motivation and poor performance (e.g., Oettingen & Mayer, 2002; Spencer & Norem, 1996).

failing to imagine future setbacks, these students do not have the chance to use preemptive self-regulation. When they inevitably encounter actual setbacks, their striving should be derailed, translating into poor academic achievement over time. On the other hand, less positive fantasies, which incorporate images of future setbacks, should allow those with stronger entity theories to engage in preemptive self-regulation, enabling them to better handle setbacks in reality, and translating into successful academic achievement.

In contrast, positive fantasies might play a relatively unimportant role in predicting the academic achievement of individuals with weaker entity theories. For these individuals, setbacks are not interpreted as failure, but merely as opportunities for learning and improving (Dweck, 1999; Dweck & Leggett, 1988). Because setbacks do not inherently derail the striving of such individuals, preemptive self-regulation should be relatively irrelevant. For those with weaker entity theories, whether or not they fantasize about future setbacks should play a relatively small role in predicting academic achievement.

Study 2 tests these ideas with a sample of adult students. We hypothesized that for those students with stronger entity theories, positive fantasies would be associated with low school grades over time, whereas for those students with weaker entity theories, positive fantasies might not predict low grades. Just as in Study 1, we expected these relationships to be present over and above differences in expectations of success, and not to be due to differential generation of fantasies about outcomes versus processes.

3. Study 2: Positive fantasies, implicit theories, and academic achievement

3.1. Method

3.1.1. Participants and procedure

Data were collected as part of a larger study with female students in a business skills program at a non-profit vocational education school in New York City. Women who are currently unemployed or working in low-paying jobs attend classes in keyboarding, computer skills, business writing, business math, and office procedures 5 days a week for 4.5 months, and are issued grades based on coursework and final exams. Analyses below are based on 84 women who completed this program, completed the measures described below, and agreed to release their grades and attendance records. Their mean age was 34 years (SD = 11.99, ranging from 17 to 62). The ethnicity of the sample was 42% African or African American, 19% Hispanic or Latina, 23% Caucasian or European American, 2% Asian or Asian American, 6% other minority, and 8% did not indicate. We guaranteed students' anonymity and informed them that participation was voluntary. Students completed the questionnaire in groups in their classrooms during the first week of school.

3.1.2. Materials
3.1.2.1. Implicit theories of ability. The same three items (Hong, Chiu, Dweck, Lin, & Wan, 1999) from Study 1 were summed to make an entity theory index (α = .88).

3.1.2.2. Measuring school-related expectations. We first asked participants, "How well do you want to do as a student in the Business Skills Program?" The response scale ranged from D to A+.[4] To mea-

sure expectations, participants were then asked, "How likely is it that you will achieve the grade you marked above?" The response scale ranged from 1 (likely) to 5 (very likely); the low endpoint was labeled this way following the results of pilot testing.

3.1.2.3. Measuring school-related fantasies. To assess school-related fantasies, participants were given three scenarios similar to the ones in Study 1, but with content tailored to the experience of adult rather than middle-school students.

One scenario was intended to elicit fantasies about a future outcome: "You took your first test as a Business Skills Program student, and your teacher graded them last night. Now you're sitting in class, the teacher walks in and starts to hand the tests back. She puts your test in front of you..." The other two scenarios were intended to elicit fantasies about the processes of reaching future outcomes: "Your teacher for Business Writing assigned the first big paper a week ago, and it's due next week. Today in class he is talking to everyone about how they are doing with working on their papers. You think about how your paper is going so far..." and "You see an old friend, who mentions that students sometimes have a hard time balancing being in school with their social and family life. She asks, "Have you had any problems with your family or friends?" You think to yourself..." We had included the latter scenario because pilot testing indicated that an important determinant of reaching a successful outcome in the school program was being able to balance school with other demands. As in Study 1, each scenario was read aloud by a researcher, and students were given three minutes to write before being instructed to turn to the next page and respond to two questions, "How positive were your thoughts and images?" and "How negative were your thoughts and images?" The response scales ranged from 1 (not at all positive/negative) to 5 (very positive/negative). As in Study 1, positivity and negativity ratings on the three scenarios were strongly inversely correlated, r = −.86, p < .001, and were thus combined to form an overall fantasies index by subtracting the negativity scales from the positivity scales (arriving at an index with a possible range of -12 to 12).

3.1.2.4. Dependent variable: Academic achievement. We obtained participants' final grade point averages (GPAs) from the school administration at the conclusion of the business skills program, four and a half months after the measurement of implicit theories, expectations, and fantasies. GPA was on the scale of 0 (F) to 4 (A).

3.2. Results

Even more so than in Study 1, students endorsed weak rather than strong entity theories (M = 5.99, SD = 3.96), and fantasies were more positive than negative (ranged from −7 to 12; M = 6.36, SD = 5.04). As in Study 1, expectations of success were high (M = 4.01, SD = 1.15) and were not significantly correlated with implicit theories or fantasies, rs < .15, ps > .19, and positivity of fantasies was not significantly correlated with implicit theories, r = −.14, p > .20.

To test our hypotheses that implicit theories would moderate the relationship between positivity of fantasies and GPA, and that this moderation would be present over and above differences in expectations of success, we used linear regression analyses with implicit theories, expectations, and positivity of fantasies as predictors entered in the first step, and the interaction of implicit theories by positivity of fantasies in the second step. As in Study 1, we had also tested higher-order interactions with expectations of success, but as none of the effects approached significance, these terms were omitted from the final model. To adjust for the

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[4] Adding this indicator of students' standards for successful academic achievement to the analysis predicting final GPA did not change the pattern of results, and the positive fantasies by implicit theories interaction effect remained significant, $\chi^2(1)$ = 3.77, p = .05.
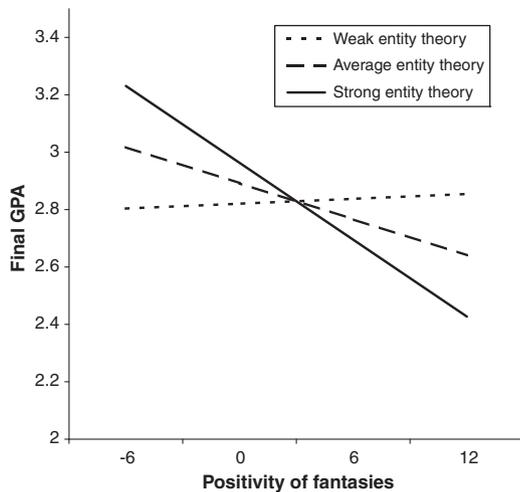
Fig. 2. Predicted final GPA in Study 2 as a function of implicit theories and school-related fantasies, adjusting for expectations.

skewed distributions of implicit theories and positive fantasies, we estimated the model using robust standard errors[5] (Huber, 1967).

Again, we found the predicted interaction between positive fantasies and implicit theories, $\chi^2(1) = 3.96$, $p < .05$. As depicted in Fig. 2, the interaction effect indicated that entity theories exacerbated the predictive relation between positive fantasies and poor achievement. For students with the stronger entity theories in the sample (1 *SD* above the mean value of implicit theories), positivity of fantasies predicted a lower GPA, $b = -.05$ (.02), $p = .002$, and this still tended to be true for students with average entity theories, $b = -.02$ (.01), $p = .06$. However, for students with the weaker entity theories in the sample (1 *SD* below the mean), positivity of fantasies was unrelated to GPA, $b = .002$ (.02), $p = .91$.

As in Study 1, we had a rater who was blind to study design and hypotheses code participants' written responses (those of two participants, 2.4% of the sample, were illegible) to the three hypothetical scenarios on a scale labeled 1 (*emphasized future outcomes*), 2 (*balanced between future outcomes and the processes of working toward them*), and 3 (*emphasized the processes of working toward future outcomes*). Again, since the three scenarios differently prompted descriptions of outcomes versus process, reliability across the scenarios was low ($\alpha = .07$), and we analyzed the rater's coding using a repeated-measures ANOVA with implicit theories entered as a covariate. There was an effect of scenario topic, $F(2, 158) = 65.94$, $p < .001$, $\eta^2 = .46$, but no effect of implicit theories or interaction, Fs < 1. Fantasies about having a test returned emphasized outcomes ($M = 1.37$), and fantasies about preparing an assigned essay ($M = 2.85$) and about a friend asking whether it was hard to balance school and personal life ($M = 2.83$) emphasized processes, and the emphasis on outcomes versus processes did not depend on the strength of participants' entity beliefs.

4.1. Discussion

Study 2 sheds light on the moderating effect of implicit theories for the predictive relation between positive fantasies and academic

performance. As expected, entity theories exacerbated the achievement drawbacks associated with positive fantasies about mastering academic tasks. It was only those students with the stronger or average entity theories in the sample who showed the typical pattern of positive fantasies at the beginning of the school term predicting lower achievement at the end of the school term. As in Study 1, students fantasized about future outcomes and processes in line with the scenario prompts they were given, and this did not differ in those with stronger versus weaker entity beliefs. Again, the predictive relation of entity beliefs and positive fantasies was present regardless of students' expectations of success.

Studies 1 and 2 pertained to the fantasies that participants reported experiencing. To amass causal evidence for a differential effect of positive fantasies depending on entity theories, we next conducted an experiment. We first measured entity theories, and then, building on the framework outlined above, in one group of participants we induced very positive fantasies, which we operationalized as fantasies that depicted a positive aspect of a desired future outcome. In a second group of participants we induced less positive fantasies, which we operationalized as fantasies that depicted a setback that could prevent this desired future outcome from being attained.

In Study 2, we hypothesized and observed that for students with stronger entity beliefs, more positive fantasies predicted poorer academic achievement. On the other hand, this relationship may also be interpreted in light of less positive fantasies predicting higher academic achievement. Previous research found that less positive fantasies are those which question whether a desired future will be attained, or imagine setbacks that could stand in the way (Oettingen & Mayer, 2002). We had speculated that fantasized setbacks instigate preemptive self-regulatory efforts that facilitate constructive responses to subsequent actual setbacks. This preemptive self-regulation should be particularly important for those with stronger entity beliefs, who are particularly unlikely to deal with the occurrence of actual setbacks in a productive way (see e.g., Dweck, 1999; Elliott & Dweck, 1988; Nussbaum & Dweck, 2008; Rhodewalt, 1994). If these individuals are able to preemptively self-regulate in response to fantasized setbacks, then they should be better able to deal with actual setbacks, and might not suffer performance decrements over time. Accordingly, the degree to which fantasies that depict setbacks demand self-regulatory attention should differ depending on entity beliefs. For individuals with stronger entity beliefs, such fantasies – if they set off preemptive self-regulation – should demand more attention than fantasies that do not depict setbacks. However, for individuals with weaker entity beliefs, such fantasies need not set off preemptive self-regulation, and should not necessarily demand more attention than fantasies that do not depict setbacks.

Study 3 tests these ideas with a sample of university students. As dependent variable, we used a flankers task, which requires participants to quickly and accurately identify a stimulus that is flanked, or surrounded, by other stimuli that are either congruent or incongruent. Summarizing research on this paradigm, Eriksen (1995, p. 112) said: "...the flankers task can be used as a diagnostic of attentional intensity." That is, performance on the flanker task suffers when there are competing demands on participants' attention; performance can be used to infer how much attention is demanded by concurrent thoughts or activities (in this case, induced fantasies). We expected that for students with stronger entity theories, less positive fantasies (i.e., fantasies depicting a setback) would demand more attention than very positive fantasies, whereas for students with weaker entity theories, this difference might not be observed. Just as in Studies 1 and 2, we predicted that these effects would emerge over and above participants' expectations of successfully attaining the desired future.

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[5] Analyses were conduced using SPSS Generalized Linear Model with robust standard errors. This analysis reports regression coefficients divided by their standard errors as a chi-square statistic with one degree of freedom.

5. Study 3: Positive fantasies, implicit theories, and attention

5.1. Method

5.1.1. Participants and procedure

Participants were 45 American undergraduate students (68.9% women; age M = 19.69 years, SD = 1.66) recruited to participate in a study concerning how daydreams relate to attention and concentration. They received credit toward fulfillment of a course requirement in return for participating. Participants were randomly assigned to a very positive (n = 24) or less positive (n = 21) fantasy condition.

5.2.1. Materials

5.2.1.1. Implicit theories of ability.
Implicit theories were measured as part of a larger preliminary study session one week prior to the induction of positive fantasies. The same three items used in Studies 1 and 2 (Hong, Chiu, Dweck, Lin, & Wan, 1999) were summed to make an entity theory index (α = .87).

5.2.1.2. Measuring achievement expectations.
Participants were asked to name their currently most important wish or goal related to their academic life. For example, participants named "getting into graduate school," "fulfilling major requirements," or "raising my GPA." To measure students' expectations, as in Studies 1 and 2, they responded to one item, "How likely is it that you will achieve your wish or goal?" on a 1 (*not at all likely*) to 7 (*extremely likely*) scale.

5.2.1.3. Manipulating achievement fantasies.
Participants were given the following cover story:

We all have wishes about our future and things that we would like to have happen, and thoughts and concerns that occupy our minds throughout the day. Often in our lives, we daydream while doing something else at the same time. We are interested in how these daydreams relate to our attention and concentration. Therefore, we want you to do a concentration task while daydreaming about something that is important to you.

The specific type of daydreams that participants were told to generate while doing the flankers task differed by condition. In the very positive fantasy condition, participants were told to think about the best possible outcome of the academic wish or goal they had named, and to list one aspect associated with this outcome. For example, participants named "happy parents," "getting to study abroad," or "feeling proud." In the less positive fantasy condition, participants were told to think about setbacks or obstacles that could prevent them from fulfilling their academic wish or goal, and to list one associated aspect. For example, participants named "bad luck," "health problems," or "the teacher's style." Participants in both conditions were told to think about the aspect they had identified in vivid detail and to allow the events and experiences associated with the aspect to play out in the mind's eye.

5.2.1.4. Dependent variable: Attention demanded.
At the same time that they were generating very positive or less positive fantasies, participants had to complete a flankers task (overview by Eriksen, 1995). Fast and accurate performance on the flankers task, and particularly on the incongruent trials, demands attention. Thus, response time on the incongruent trials is an indirect indicator of the amount of attention that was demanded by the generated fantasies: slower response times suggest that fantasies demanded relatively much attention, and faster response times suggest that fantasies demanded relatively little attention.

Specifically, participants were told that they would see 3 digits on the screen and were instructed to press as accurately and quickly

as they could a key labeled *E* if the middle digit was even and a key labeled *O* if the middle digit was odd. On each trial, a fixation cross was presented at the place where the digit string would appear, and remained for 400 ms. The screen was black for 600 ms, and then a string of 3 digits (font size 30, Lucida Console) appeared for 165 ms. There were 48 congruent trials, on which the center digit was congruent with the flanking digits (i.e., an even number flanked by even numbers, or an odd number flanked by odd numbers) and 48 incongruent trials, on which the center digit was incongruent with the flanking digits (i.e., an even number flanked by odd numbers, or an odd number flanked by even numbers). Response time on the incongruent trials was our dependent variable, and response time on the congruent trials was included as a covariate.

After participants pushed a response key, there was a 100 ms pause before the next trial. An aversive buzz tone followed incorrect responses, which pre-testing indicated was effective at motivating people to avoid mistakes. Every 10 trials, the reminder "Go on thinking about your aspect!" appeared on the screen for 1000 ms. Participants completed an initial practice block of the flanker task before the fantasy manipulation to ensure that they understood the task. Participants were debriefed at the conclusion of the session, and those who indicated that they had not tried to respond about the numbers quickly and accurately (n = 5) or had not tried to generate fantasies (n = 3) were excluded from analyses, yielding a sample of 45 participants as described above.

5.3. Results

Participants generally endorsed moderate entity theories (M = 8.64, SD = 2.96). Their expectations of success were moderate (M = 4.91, SD = 1.41) and like in the previous studies were not correlated with implicit theories, r = −.18, p = .23.

To test our hypotheses that implicit theories would moderate the relationship between the manipulated positive fantasies and response time on the incongruent trials of the flankers task, and that this moderation would be present over and above differences in expectations of success, we used linear regression analyses with mean response time on the congruent trials of the flankers task, expectations, implicit theories, and fantasy condition as predictors entered in the first step, and the interaction of implicit theories by fantasy condition in the second step.

We found the predicted interaction effect between fantasy condition and implicit theories, t(39) = 2.03, p = .05. As depicted in Fig. 3, the interaction effect indicated that the degree to which less positive fantasies (i.e., fantasies depicting a setback) demanded more attention than very positive fantasies depended on entity theories. For students with stronger entity theories (1 SD above the mean value of implicit theories), less positive fantasies resulted in slower response times than very positive fantasies, b = 42.72 (16.92), p = .02. However, this was not true for students with average entity theories, b = 16.19 (11.34), p = .16, or with weak (1 SD below the mean) entity theories, b = −10.34 (17.70), p = .56.

5.4. Discussion

Study 3 showed that implicit theories moderate the attention demanded by fantasizing about very positive futures versus futures entailing setbacks. Strong entity theories mean that actual setbacks are seen as failure which effort cannot overcome. Thus, setbacks require effective self-regulation to ensure that they do not derail effective striving. When students with relatively strong entity theories had to fantasize about a less positive future that entailed setbacks, this should have instigated preemptive self-regulation, and such fantasies demanded more attention than fantasizing about a very positive future free from setbacks. On the other hand, for students with relatively weak entity theories, preemptive self-
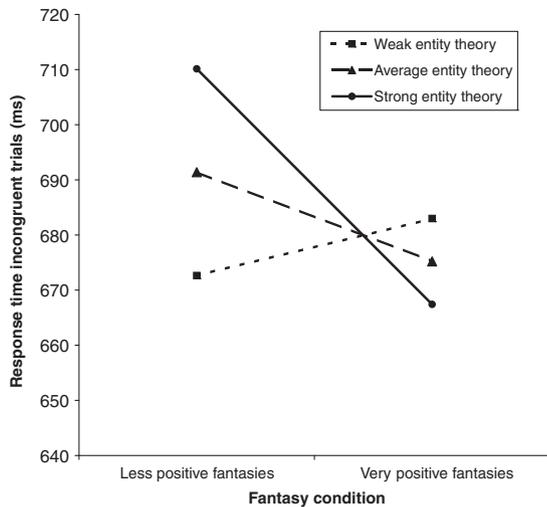
Fig. 3. Predicted response time (ms) on incongruent flankers trials in Study 3, adjusting for expectations and response time on congruent trials.

regulation is less important, because they naturally respond to setbacks productively by determining how to improve and by intensifying effort (Elliott & Dweck, 1988; Rhodewalt, 1994). For these students, fantasized setbacks did not demand more attention than a fantasized positive future.

It is important to note that the relation of entity theories and positive fantasies predicting attention (Fig. 3) mirrors the pattern of these variables predicting school grades (Fig. 2). For students with stronger entity beliefs, fantasized setbacks demanded more attention than a fantasized very positive future (Study 3), and the less positive fantasies that presumably depicted such setbacks predicted better academic achievement over time (Study 2). Fantasies were induced rather than measured in Study 3, lending credence to a differential causal effect of positive fantasies depending on entity theories. Finally, just as in Studies 1 and 2, these findings were present over and above differences in students' expectations of success.

6. General discussion

In three studies we examined implicit theories as a moderator influencing the relation of positive fantasies to academic outcomes. We found that the positivity of students' fantasies about academic situations was differently related to their concurrent affect, their achievement over time, and the demands on their attention, depending on the degree to which the students believed that intelligence is fixed rather than malleable. Specifically, Study 1 found that those who more strongly endorsed entity theories could not reap the immediate affective benefits of positive fantasies about future academic success. For these students, presumably because they interpret an idealized future of competence as something that is or is not possessed, rather than as something that can be worked toward, positive fantasies did not predict concurrent low anger and anxiety during school.

Study 2 found that entity theories exacerbated the predictive relation of positive fantasies to poor achievement over time. Only for those adult students with stronger entity theories, and not for the ones with weaker entity theories, did positive fantasies predict lower grades over the course of a four-and-a-half-month-long vocational school program. It is these students with stronger entity beliefs for whom setbacks are particularly problematic, and it was these students for whom fantasies that omitted images of future

setbacks predicted low grades over time. Presumably, fantasizing setbacks allows for the preemptive self-regulation that would promote success for those with stronger entity beliefs.

Lending credence to this supposition, Study 3 showed that it was only those students with stronger entity beliefs for whom the induction of fantasies about a future setback demanded more attention than the induction of fantasies about a very positive future. For students with weaker entity beliefs, the attentional demands of induced less positive versus very positive fantasies did not differ, just as less positive versus very positive fantasies had not predicted differences in grades for these students in Study 2. The results of Study 3 are especially interesting in light of findings suggesting that following setback (i.e., negative feedback), entity theorists allocate attention toward self-critical rumination rather than to learning the relevant material, which should hamper their achievement over time (Mangels, Butterfield, Lamb, Good, & Dweck, 2006). Study 3 showed similar attention demands in response to fantasized rather than actual setbacks; fantasizing setbacks should have allowed for preemptive self-regulation that would allow these students to respond more productively to the actual setbacks they encounter. Speaking to the pervasiveness of the moderating influence of implicit theories for positive fantasies, we found the hypothesized implicit theory by positive fantasies interaction effect in samples of middle school (Study 1), university (Study 3), and vocational (Study 2) students.

It is noteworthy that students' implicit theories moderated the link between fantasies and academic outcomes irrespective of their expectations of success. Past research examining implicit theories has shown high expectations to initially buffer entity theorists from the negative emotional and motivational responses associated with their core beliefs (Elliott & Dweck, 1988; Hong et al., 1999). Moreover, Langens and Schmalt (2002) found that individuals high in fear of failure with positive daydreams showed negative affect and motivational decrements, presumably because of chronic low expectations. The findings reported here, however, suggest that because of the way they interpret and use their fantasies about the future, students with strong entity theories suffer the achievement drawbacks of positive fantasies without reaping the affective benefits, regardless of whether they have high or low expectations.

Content analysis in Studies 1 and 2 indicated that entity theories did not generally influence whether participants fantasized about future outcomes versus processes. Rather, participants generated fantasies about outcomes in response to prompts about outcomes (e.g., having a test returned), and generated fantasies about processes in response to prompts about processes (e.g., preparing an essay; balancing being in school with personal life). Across these prompts, it was the degree to which fantasies depicted an idealized future that predicted emotional responses and grades in school.

These studies suggest that weak versus strong entity theories call for different types of fantasies in order to bolster affect and promote achievement. Individuals with weak entity theories may be able to use positive fantasies to their advantage, garnering affective benefits without suffering achievement drawbacks. From this perspective, these studies underscore the importance of promoting or teaching a malleable rather than stable theory of intelligence, a strategy which has proven successful at enhancing students' performance (Aronson, Fried, & Good, 2002; Good, Aronson, & Inzlicht, 2003) and motivation (Blackwell, Trzesniewski, & Dweck, 2007). On the other hand, our results also suggest a way to elevate achievement for students who believe intelligence is fixed. For these students, fantasizing future setbacks – although demanding of immediate attention – predicted higher grades over time. Thus, when it is not feasible or not possible to change students' implicit theories, guiding their fantasies toward future setbacks might be an effective strategy for advancing academic achievement.

Previous research has shown that implicit theories shape the interpretation of past (e.g., attributions for failure, Hong, Chiu, Dweck, Lin, & Wan, 1999) and present (e.g., current task; Stone, 1998) experiences; the current studies lend insight into how implicit theories also color the way students interpret and use fantasies about the future. However, important questions remain. One such question involves the generality of the relationships reported. Future analyses might ask whether the same relationships are present in domains other than academic achievement; for example, by investigating the moderating effects of implicit theories of personality (Chiu, Hong, & Dweck, 1997) on the relation between fantasies about self-improvement and actual self-improvement. Our hypotheses in the present line of work were built around the idea that fantasies depict content that is relevant to a person's capability in a given domain. Thus, fantasies which do not depict the individual (e.g., fantasies about the resolution of a global crisis in which one does not play a role) or which depict situations that do not require much capability (e.g., fantasies about crossing the street to purchase French fries at McDonald's) might not have the same relation to implicit theories as well as to emotion and achievement as is outlined in the present studies. Future research might address this question by systematically varying the individual's role in the fantasized future or the level of capability required for success. Moreover, although all three studies reported here measured entity beliefs, future research examining the moderating influence of implicit theories should benefit from methods that induce implicit theories; for example, by having participants read convincing texts about the stability or malleability of intelligence (e.g., Nussbaum & Dweck, 2008).

7. Conclusion

In sum, shaped by core theories about the nature of human intelligence, students' free fantasies about the future influence their emotions and achievement. The present research suggests that these relationships depend on the way students understand the fixedness of capability – those who hold stronger entity theories suffer the achievement drawbacks of positive fantasies without enjoying the affective benefits. These tendencies, we argue, have important implications for understanding students' experiences in the classroom and shed light on key issues regarding the mechanisms by which positive fantasies influence emotional and motivational outcomes.

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