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Procrastination and counterfactual thinking: Avoiding what might have been

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Abstract

The possible negative consequences of counterfactuals were explored in the current study by examining the relationship between counterfactual direction and trait procrastination, a self-defeating behavioral style. Eighty participants generated counterfactuals in response to two experimental anxiety inductions. Trait procrastination was overall related to avoiding thoughts about how things could have been better (making more downward and relatively fewer upward counterfactuals) in response to the two anxiety-provoking scenarios, suggesting the involvement of a self-enhancement motive (mood repair). Evidence for the involvement of this self-motive in procrastinating behavior also emerged, as procrastination was more related to making more downward counterfactuals for a delay-specific anxiety scenario than for a general anxiety scenario. The pattern of results supports the proposal that downward counterfactuals may be associated with negative behavioral styles such as procrastination, and implicates self-enhancement motives in this relationship. The behavioral and motivational consequences of downward counterfactuals are discussed, and possible connections between downward counterfactuals and other self-defeating behaviors are presented.

Procrastination and counterfactual thinking: Avoiding what might have been

Counterfactual thoughts are mental simulations of possible outcomes that did not happen but can be imagined as having occurred (Sanna, Chang, & Meier, 2001). Often these thoughts occur in response to negative life events prompting reflection about better possible outcomes (upward counterfactuals). Alternatively, some individuals may focus on how things could have been much worse (downward counterfactuals) but were not.

A growing body of research has focused on the affective and behavioral consequences of counterfactual thinking, and the benefits that may derive from differences in counterfactual direction. Although upward counterfactuals may result in negative mood as one ponders what could have occurred to improve an outcome but did not, these thoughts about what might have been can also heighten success-enhancing intentions and behaviors by making salient things that can be done to improve future outcomes (Boninger, Gleicher, & Strathman, 1994; Gleicher, Boninger, Strathman, Armor, & Ahn, 1995; Roese, 1994; Roese & Olson, 1996). In contrast, by focusing on how an outcome could have been worse but was not, downward counterfactuals can serve an affective function and be strategically used to improve mood in response to negative events (Markman, Gavanski, Sherman, & McMullen, 1993; Roese, 1994; Sanna, 1996).

Research on individual differences in counterfactual direction across various situations has implicated possible self-motives involved in the preference for upward or downward counterfactuals, including self-improvement and self-enhancement (Sanna et al., 2001; Sanna, Meier, & Turley Ames, 1998; Sanna, Turley Ames, & Meier, 1999). Upward counterfactuals made in response to negative events can lead to self-improvement through highlighting ways to solve problems, or may serve a self-protective function by bracing one for possible failure (Sanna, 2000; Sanna et al., 2001). Studies comparing the counterfactuals of high and low self-

esteem individuals indicate that people high in self-esteem make more downward counterfactuals in response to negative events or moods (Sanna et al., 1998; Sanna et al., 1999), and that this may reflect self-enhancement strategies, and mood repair in particular (Sanna et al., 1998). For example, acknowledging that one could have done something differently to change an outcome that is significant yet distressing, may threaten the self (Roese & Olson, 1993). Conversely, focusing on how things could have turned out worse but did not can restore a positive sense of self in response to negative events or bad moods by improving one's mood (Sanna et al., 1999). Moreover, this process requires cognitive effort in order to achieve a mood that is incongruent with the initial event (Clark & Isen, 1982; Sanna et al., 1999). According to the self-motive model of counterfactual direction (Sanna, 2000; Sanna et al., 2001), a preference for downward counterfactuals in response to negative events or moods may reflect self-enhancement motives by providing a means to repair negative moods induced by an unpleasant outcome.

Although research has focused primarily on the positive affective and behavioral consequences of counterfactual thinking, the possible negative consequences related to counterfactual thinking has received less attention. It has been suggested that for some individuals, a preference for downward counterfactuals may lead to a trade-off between immediate affective self-enhancement and insights into behaviors that may enhance future outcomes (Boninger et al., 1994; Markman et al., 1993; Roese, 1994; Sanna, 1996). Thus, the chronic generation of self-protective counterfactuals may be dysfunctional for some individuals by decreasing the likelihood that ways to improve their behavior will be identified (Roese, 1994).

The focus of the current study was to examine the possible negative consequences of counterfactual direction by exploring the possible relationships between counterfactual thinking and a self-defeating behavioral style linked to both affect-regulation and self-enhancement

strategies: trait procrastination.

Procrastination has been described as a self-regulation style that involves delay in the start and/or completion of a task (Ferrari & Tice, 2000), and involves not only behavioral self-regulation issues, but also affective and cognitive components (Ferrari, 1991b; Rothblum, Solomon, & Murakami, 1986). A variety of negative outcomes have been linked to procrastination including poor academic performance (Beck, Koons, & Milgrim, 2000; Wesley, 1994), higher stress (Flett, Blankstein, & Martin, 1995; Sirois, Melia-Gordon, & Pychyl, in press; Tice & Baumeister, 1997), increased illness (Sirois et al., in press; Tice & Baumeister, 1997), and higher anxiety when recalling procrastinating behavior (Lay, 1994). Given these troubling consequences it seems surprising that individuals who chronically procrastinate do not learn from their past behavior so that they can improve future outcomes. Instead, it is possible that procrastinators avoid acknowledging what might have been had they acted in a timely manner and thereby miss opportunities to reflect on possible corrective actions.

Several studies indicate that chronic procrastination is related to choices that put immediate affect regulation ahead of the long-term consequences of procrastinating behavior. Procrastinators tend to delay more on tasks viewed as aversive (Milgram, Marshevsky, & Sadeh, 1994; Milgram, Sroloff, & Rosenbaum, 1988) often choosing more pleasurable, fun tasks over more challenging or unpleasant tasks (Blunt & Pychyl, 1998; Ferrari & Dovidio, 2000; Pychyl, Lee, Thibodeau, & Blunt, 2000). Furthermore, when people experience distress, short-term affect regulation accomplished through procrastination and other self-regulatory lapses may take precedence over the long-term implications of impulse control (Tice, Bratslavsky, & Baumeister, 2001).

One of the other possible benefits of valuing short-term mood regulation over the long-

term consequences of failing to start or complete tasks is that it may help protect one's self-concept. One theory of the etiology of procrastination suggests that it is a strategy for protecting self-esteem, because avoiding task completion also means avoiding feedback about one's abilities (Burka & Yuen, 1983). This information may be damaging to one's self worth, whereas without feedback one can maintain beliefs about one's abilities that may be overestimated (Haycock, McCarthy, & Skay, 1998). Accordingly, procrastinators will more frequently acknowledge reasons for their behavior that are less threatening to their self-image than admit to reasons that are more threatening (Milgram et al., 1994). Procrastinators also engage in self-presentation strategies, such as self-handicapping (Ferrari, 1991d), aimed at enhancing their social image (Ferrari, 1992a), and as protection from public disapproval (Ferrari, 1991b). Indeed, trait procrastination is related to low self-esteem (Effert & Ferrari, 1989; Ferrari, 1991a; Ferrari, 1991b, 1994, 2000; Melia-Gordon, Sirois, & Pychyl, 2002; Senecal, Koestner, & Vallerand, 1995; Solomon & Rothblum, 1984), low self-confidence (Beswick, Rothblum, & Mann, 1988), and public self-consciousness (Ferrari, 1991b; Ferrari, 1992a).

In delaying the start or completion of a task, procrastinators can avoid failure and the evaluation of their performance or abilities (Ferrari, Johnson, & McCown, 1995) and thus protect both social and self-esteem (Ferrari, 1991d). However, this short-term gain in self-worth protection may be at the expense of long-term improvements in ability and self-regulatory behavior. For example, Ferrari (1991c) found that procrastinators avoid self-relevant feedback in favor of non-diagnostic information, perhaps because they fear the evaluation of their abilities (Ferrari, 1991a).

Together, this research suggests that procrastination is associated with active attempts to regulate immediate mood regardless of the consequences of this mood regulation (e.g., delay of

tasks, avoidance of feedback), and that these mood regulation attempts may also serve to protect and enhance their self-concept. Given these links between procrastination and self-enhancement, a self-motive proposed to underlie a preference for downward counterfactuals after negative events (Sanna et al., 2001), it is possible that chronic procrastinators may also have a tendency towards making more downward counterfactuals in response to negative events.

In accordance with the self-motives model of counterfactual direction proposed by Sanna et al. (2001), avoiding thoughts about how things could have been better serve self-enhancing motives. It is possible that individuals high in procrastination engage in mood regulation by seeking immediate positive ways to feel good and avoid distress due to negative mood (e.g., Tice et al., 2001). In addition, if the negative outcome is due to procrastination itself, then it is possible that attempts to shift mood may be related to reducing specific threats to self. By focusing on how the outcomes of procrastination are not as negative as they could have been (making downward counterfactuals), rather than on things that could have been done to avoid the negative consequences of procrastination (making upward counterfactuals), self-concept may be protected and positive feelings about oneself can be restored.

The present study

The goal of the current study was to demonstrate the possible negative consequences of downward counterfactuals by examining their relation to procrastination, a behavioral style linked to negative outcomes. In addition, this study explored the possible self-motives underlying this connection by examining how procrastination related to the direction of counterfactuals generated across two hypothetical anxiety provoking situations, one that involved delay and one that did not.

Because one of the motives hypothesized to underlie this tendency was regulation of

negative affect, specifically anxiety, it was necessary to examine these associations after inducing a state of anxiety. Previous counterfactual research that has examined the effects of mood on counterfactual direction has focused on dysphoric affect, especially sadness, and employed a between-subjects comparison of counterfactuals generated after induction of positive and negative moods (e.g., Sanna et al., 1999). Instead, the present research used an anxiety-specific induction procedure in which both counterfactual generation and mood were manipulated within subjects. Rather than inducing mood independent of the counterfactual task, the anxiety induction was accomplished through the reading of the hypothetical counterfactual scenarios¹.

To demonstrate that procrastination was associated with avoiding thoughts about how things could have been better, it was predicted that overall, trait procrastination would be related to a tendency to make more downward counterfactuals and relatively fewer upward counterfactuals in response to the two anxiety provoking scenarios. To examine the extent to which this tendency may be due to self-enhancement motives (i.e., to restore a positive sense of self), and affect regulation in particular (i.e., mood repair in response to a negative event), procrastination-specific self-threat was manipulated by using a scenario that included incidences of delayed action leading to an uncertain and potentially negative outcome. The other scenario described a general situation of uncertainty where delay was not involved, but the outcome was also negative. If mood repair underlies the tendency to avoid thoughts about how things could have been better then procrastination should be related to making more downward counterfactuals overall, that is across both situations. If, however, procrastination is related to the generation of more downward counterfactuals in response to the procrastination scenario only, then this would suggest that perhaps self-enhancement motives are most salient for procrastinators when negative outcomes are related to delay behavior, and further that

counterfactual thinking may be involved in the maintenance of this self-defeating behavior. Each of these hypotheses is contingent on the equivalence of both scenarios in inducing anxiety.

Finally, the effect of trait procrastination on counterfactual direction relative to self-esteem was also examined. Self-esteem is associated with making fewer upward counterfactuals when negative moods are induced (Sanna et al., 1998; Sanna et al., 1999), and global self worth is also negatively related to procrastination (e.g., Ferrari & Tice, 2000). Accounting for any effects due to self-esteem would help clarify the relationship of procrastination to counterfactual direction.

Methods

Participants

The study sample consisted of 81 undergraduate psychology students who responded to the anxiety induction (see data screening section for details). Data from one subject were discarded for failure to complete the counterfactual task. This left a final sample of 80 (57 females, 23 males), with a mean age of 19.5 years ($SD = 1.87$). All students received extra course credit for their participation.

Procedure and measures

Upon arriving at the laboratory, individuals were provided with a cover story that indicated that the study examined how different people react to uncertainty and how this relates to well-being. One to two people were tested in each experimental session. Participants were randomly assigned² to one of the two scenario presentation order conditions (delay then general, general then delay) in this within subjects design.

The experiment was conducted in one three-part session. In the first part, participants completed a self-report questionnaire package that included a baseline assessment of state

anxiety. Questions about background demographic and health information, as well as several personality measures were also included. Only those measures analyzed for the current study are presented here.

Procrastination. Trait procrastination was assessed with Lay's General Procrastination scale (GP; Lay, 1986). This 20-item scale assesses global tendencies towards procrastination across a variety of daily tasks. Items such as "I am continually saying I'll do it tomorrow." are scored on a 5-point Likert-type scale ranging from 1 for *false of me* to 5 for *true of me*. The scale includes 10 reverse-scored items, and the mean of all items yields a single composite score with high values indicating a higher tendency to procrastinate. The GP has demonstrated good internal consistency (Cronbach's alpha = 0.82; Lay, 1986), and good stability with a test-retest reliability of .80 (Ferrari, 1989). The internal consistency for the current sample was very good (Cronbach's alpha = .89). Ferrari (1992b) suggests that the GP is an effective measure of procrastinating behavior across different situations.

State anxiety. Baseline and post-scenario levels of state anxiety were assessed with the State-trait anxiety inventory, form Y-1 (STAI; Spielberger, 1983). This self-report measure is a widely used and well-validated means of assessing the current level of anxiety experienced. It has also been found to be a sensitive indicator of changes in state anxiety, and has been used extensively in assessing levels of experimentally induced anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI S-Anxiety scale consists of 20 items that assess the extent of current feelings of apprehension, tension, nervousness and worry on a 4-point Likert scale ranging from 1 for *not at all* to 4 for *very much so*. Half of the items are reverse scored before summing all items to get a total state anxiety score. The STAI has demonstrated very good internal consistency across a variety of adult samples, with alphas ranging from .86 to .95

(Spielberger et al., 1983).

Self-Esteem. The Rosenberg Self-Esteem Scale (RSES; (Rosenberg, 1965) was used to assess global feelings of self-esteem. The scale consists of 10 items about one's sense of self worth (e.g., "I take a positive view of myself."; "All in all, I am inclined to think of myself as a failure.") each answered on a 4-point Likert scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Half of the items are reverse scored and a total self-esteem score is obtained by summing across the 10 items (Brown & Mankowski, 1993).

Following the completion of the initial questionnaire package, participants were given a short break in order to minimize task demands. This was accomplished by informing the participants that the experimenter needed some time to set up the materials for the next session. The procedure for each of the second and third segments of the study was identical and involved mood induction followed by counterfactual generation and a mood neutralization task. Each participant received the two scenarios, one per session, with the presentation order counterbalanced across the participants to prevent any order effects.

Mood induction. To induce anxiety, participants were instructed to read a scenario describing threatening events leading to an uncertain outcome and vividly imagine the events as if they were happening to them. One scenario described a health-related situation in which taking action to deal with a health problem was delayed several times:

You have just returned from a vacation in Mexico. You suntanned everyday and spent a lot of time outdoors as you usually do when it is sunny out. Some things about the trip went well and some things went poorly. After putting on some cream to help maintain your tan, you realize that there is an odd shaped raised mole on your shoulder that is very sensitive when you touch it. You put some extra cream on it to soothe it and then forget

about it. About a month later you realize that the spot is becoming irritating and has grown in size. You ask a friend if she has ever had this problem. She tells you that she experienced something similar and it turned out to be nothing more than a new mole developing, and that new moles are often itchy. Two weeks later you find you cannot stand the irritation any more and you drop by the health clinic to have it checked out. After asking you some questions about your sun tanning habits, the doctor looks very concerned as she states that she is going to schedule you an appointment with a doctor who knows more about skin problems. When you meet with the specialist one month later he asks if anyone in your family has had cancer. You tell him that both your grandmother and your aunt died from cancer. He does some tests, sends you home and says that you will be called when the test results are in. Several days later you receive a call asking you to come in person to the doctor's to get the test results. When you arrive the doctor greets you with a concerned look.

The health-related theme was chosen because previous research suggests that procrastination is associated with fewer health-protective behaviors and delay in seeking treatment for health problems (Sirois et al., in press). The second scenario depicted a more general situation of uncertainty that described coming home to find fire fighters trying to stop a fire that had just started next to one's house just before midterms.

It is midterm. You are living away from home for the first time. You looked for housing all summer and finally found an affordable house in an ideal location with other roommates. Upon walking home one day from classes, you notice that the air smells like smoke and the sky seems gray. As you get closer to your street you hear the sound of sirens approaching and see a fire truck drive by. You quicken your pace. As you

approach your street you see a crowd gathered at the intersection nearest your house. As you arrive you see the firefighters walking on a steep ladder onto the roof of your house. You gasp and watch in horror as they proceed to take an axe and bash holes in the roof of the house and break all the windows. You notice that your heart is beating faster and your mouth is dry. One of your neighbors approaches you and explains how the firefighters are trying to prevent the fire from spreading to your house. You think about all of your clothing going up in smoke and the new stereo system that you have just bought with the last of your summer earnings. You realize that you don't have insurance on your belongings. There are also your textbooks and notes, and midterm exams are coming up next week. You break out in a cold sweat. One of the firefighters approaches you with a concerned look on his face and asks if you are one of the tenants in the building.

Participants were instructed to read and vividly imagine themselves in the scenario for three minutes, after which the experimenter returned and administered a short questionnaire package that included the STAI to assess scenario-induced changes in anxiety. This package included other short personality questionnaires and a symptom checklist to help take the focus off the mood ratings, because as Sanna et al. (1999) have noted, some studies suggest that moods rated immediately before the task of interest may cause participants to discount their moods as a reason for behavior (Berkowitz & Troccoli, 1990).

Counterfactual thoughts. Following the completion of the post-scenario questionnaires, the participants were given the same scenario previously read and instructed again to vividly imagine the events as if they were happening to them. This time participants were provided with the following counterfactual instruction set similar to that used in previous counterfactual research (Sanna et al., 1999).

When faced with situations such as this, people often have thoughts like “if only” or “at least”. Sometimes these thoughts can be about things that would have made the situation better, and these thoughts are about things that are better than what actually happened; sometimes these thoughts can be about things that would have made the situation worse, and these thoughts are about things that are worse than what actually happened. In the spaces below, please list things that might have been different that would have made the situation either better or worse. Please fill in as many that come to mind, but try to not take more than a couple of minutes on this task.

This task was timed for 5 minutes, at which point the experimenter returned and administered a mood neutralization task that involved reading a happy ending to the scenario to compensate for scenario-induced anxiety. Following a short break, the participants returned and repeated the same procedure for the second scenario.

Results

Manipulation check and data screening

Baseline scores on the STAI ($M = 37.01$, $SD = 10.53$) were comparable to the norms reported for college student samples (males, $M = 36.47$, $SD = 10.02$; females, $M = 38.76$, $SD = 11.95$; Spielberger et al., 1983). The criterion for responsiveness to the anxiety induction was set at greater than 5 percent change from baseline to post scenario STAI score. Because the STAI has a 60 point range of possible scores (from 20 to 80), participants whose STAI scores changed by 3 points or less, or whose post-scenario STAI scores decreased relative to baseline, were considered to be unaffected by the mood manipulation. For each participant response had to occur for both of the scenarios to be included as a responder. From the initial sample of 103 students, 81 were selected as showing response to the anxiety induction and included in

subsequent analyses. Twenty students were not selected as they had 3 points or less change in their state anxiety post scenario scores, and another two students were also excluded because their change scores indicated that they experienced less anxiety after reading the scenarios.

Analyses were conducted to ensure that there were no effects due to presentation order of the two scenarios. Baseline STAI scores were comparable for both order groups ($F(1,79) = .95, ns$), and both order groups had comparable scores on the post delay scenario STAI ($F(1,79) = .01, ns$), and the post general scenario STAI ($F(1,79) = .78, ns$), indicating no order effects. The two scenarios were also analyzed to ensure equality in anxiety induction in order to assess the possible differential motives associated with counterfactual direction. A one sample t -test of the difference between the health STAI change score and the general STAI change score was not significant ($t(1,79) = -.06, ns$) indicating that the two scenarios were equally effective in inducing anxiety.

Counterfactual direction

Participants' counterfactual thoughts were coded as either downward or upward by two judges, one of whom was blind to the study hypothesis. Upward counterfactuals referred to things that would have made the situation better (e.g., "If only I had gone to the doctor sooner") whereas downward counterfactuals referred to things that would have made the situation worse (e.g., "At least I went to the doctor before it really got worse."). The level of agreement on the counterfactual coding was 97.5 percent. Any differences in coding were resolved through discussion.

For this study, the number of upward relative to downward counterfactuals was of main interest rather than the number of each type of counterfactual generated. Although it was expected that the anxiety induction would lead to the generation of more upward counterfactuals

overall³, it was hypothesized that procrastination would be associated with the tendency to make more downward and relatively fewer upward counterfactuals in response to an anxiety provoking event. Similar to other counterfactual research (Roese, 1994; Sanna et al., 1999), an index of relative counterfactual direction was calculated by subtracting the number of downward counterfactuals from the number of upward counterfactual for each scenario. An overall index of counterfactual direction was also calculated from the mean number of upward and downward counterfactuals from the two scenarios. Higher positive values on each of these indices indicate a tendency to make more upward counterfactuals relative to downward counterfactuals. Each of the three counterfactual direction indices became the dependent variables in the regression analyses, with trait procrastination and self-esteem as the independent variables.

Regression analyses

The correlations between the main variables along with descriptive statistics are presented in Table 1. Trait procrastination was negatively related to overall and delay specific counterfactual direction, but not to counterfactual direction for the general scenario. Procrastination scores were also negatively related to self-esteem, which was in turn negatively correlated with the general scenario counterfactual index. To clarify the unique relations of procrastination to counterfactual direction, three separate multiple regressions were then conducted with the overall, delay, and general counterfactual direction indices as the dependent variables, and procrastination and self-esteem entered together into the regression models. Of particular interest were the univariate results for each predictor. Preliminary analyses indicated that the findings for each of the three regressions were not moderated by gender and therefore this factor is not discussed further.

Overall anxiety. Overall, the regression model was significant, $F(2,77) = 4.71, p = .01 (R^2$

= .11). Both procrastination ($\beta = -.29, t = -2.58, p = .01$) and self-esteem ($\beta = -.24, t = -2.21, p = .03$) were significant unique predictors of counterfactual direction. Thus, trait procrastination was associated with a tendency to make more downward counterfactuals and relatively fewer upward counterfactuals overall in response to the anxiety provoking situations. Moreover, this relationship was independent of global self-esteem which separately predicted making more downward counterfactuals overall. This finding supported the first hypothesis that procrastination is related to avoiding thoughts about how things could have been better in response to anxiety.

General anxiety. The overall model of the predictors regressed on counterfactual direction generated in response to the general anxiety scenario was significant overall ($F(2,77) = 4.33, p < .02, R^2 = .10$). However, this was mainly due to a significant main effect of self-esteem on counterfactual direction ($\beta = -.29, t = -2.65, p < .01$). There was also a non-significant trend towards a main effect of procrastination on counterfactual direction ($\beta = -.21, t = -1.85, p = .068$). This suggests that procrastination may be modestly associated with making more downward counterfactuals in response to anxiety experienced from a general, non-delay related situation of uncertainty after controlling for effects due to self-esteem.

Delay-specific anxiety. The overall regression model predicting delay-specific counterfactual direction revealed a non-significant trend ($F(2,77) = 2.57, p = .08, R^2 = .06$) for both variables entered together. However, this trend was mostly due to the main effects of procrastination on counterfactual direction. As expected procrastination uniquely predicted making more downward and relatively fewer upward counterfactuals ($\beta = -.26, t = -2.25, p < .03$), whereas self-esteem did not ($\beta = -.09, t = -.78, ns$). This suggests that the association between procrastination and making more downward counterfactuals and relatively fewer upward counterfactuals⁴ may be related to self-enhancement motives (mood repair) in response

to self-concept threat that is specific to procrastinating behavior.

Procrastinating behavior and counterfactual direction

With a larger sample size, the non-significant trend towards procrastination being associated with fewer upward counterfactuals in the general anxiety scenario may have reached significance. Thus, the possibility that the relation between procrastination and counterfactual direction is due to mood repair in general and not specifically when negative outcomes are associated with procrastinating behavior cannot be completely ruled out. Given that the simple correlation between procrastination and counterfactual direction was apparently larger for the delay-specific anxiety scenario ($r = -.24$) than for the general anxiety scenario ($r = -.14$), it is tempting to conclude that self-enhancement motives are perhaps more salient when the negative outcome is self-relevant. To clarify if the relationship between procrastination and counterfactual direction was indeed stronger in the delay specific scenario than in the general scenario a test of significance was performed.

Following the method outlined by Meng, Rosenthal, & Rubin (1992), a test of the difference in the size of the correlations between procrastination and counterfactual direction for each scenario was conducted using z -scores based on a Fisher r to z transformation. This approach for comparing correlated correlation coefficients is proposed to be an accurate and simple alternative to the traditional Hotelling's t test (1940) without its associated limitations (Meng et al., 1992). The test indicated a significant difference in the size of the correlations for each scenario ($z = 2.10, p < .05$), indicating that procrastination was more related to making more upward counterfactuals when anxiety was delay-specific than when anxiety was more general.

Discussion

The pattern of results from the current study supports the proposal that downward

counterfactuals may be associated with negative behavioral styles such as procrastination. Further, this study presents a preliminary view of the possible self-motive involved in this relationship. Overall, procrastination was associated with making more downward counterfactuals and relatively fewer upward counterfactuals in response to anxiety provoking events. When faced with the anxiety provoking situations, procrastinators tended to focus on how the situation could have been worse but was not (downward counterfactuals) perhaps to avoid distressing thoughts about how things may have been better (upward counterfactuals), and to restore positive mood through the generation of downward counterfactuals. Thus, mood repair in general may be a way for procrastinators to escape or avoid their unpleasant state, a conclusion that is in line with research suggesting that procrastination is linked to avoiding rather than dealing with stressors (Milgram et al., 1994; Sirois & Pychyl, 2002).

Procrastinators were also more likely to make downward counterfactuals when the situation involved delaying seeking medical care for an annoying skin problem. This result was found after controlling for the effects of global self-esteem on counterfactual direction, suggesting that specific rather than global self-threat was involved. One interpretation is that the delay in the medical scenario effectively manipulated a self-relevant threat for the procrastinators that resulted in an attempt to restore a positive sense of self by making more downward counterfactuals. The relevance of this particular type of delay for procrastinators is further evidenced by recent work demonstrating that procrastinators tend to delay seeking medical care for a variety of health problems (Sirois et al., in press). This interpretation is also consistent with the self-motive model of counterfactual direction (Sanna et al., 2001) which proposes that downward counterfactuals can serve a self-enhancement function. Further, self-enhancement, the search for favorable information about the self, can occur through repairing, maintaining or

protecting one's self concept (Sedikides & Strube, 1997). After reading about the possible negative consequences of failing to act in a timely manner, individuals high in trait procrastination may have restored a positive sense of self by focusing on how things could have been worse ("At least I went to the doctor before it really got worse") but were not. That procrastination was more related to counterfactual direction in the delay-specific than in the general anxiety scenario further suggests that downward counterfactuals may play a role in the maintenance of procrastinating behavior.

Ironically, the mood-regulating function of downward counterfactuals may be potentially dysfunctional for procrastinators if, as some researchers have suggested, the preference for downward counterfactuals comes at the expense of upward counterfactuals (Boninger et al., 1994; Markman et al., 1993; Roese, 1994; Sanna, 1996). This preference may lessen the potential for recognition of ways to correct future behavior (i.e., not delaying and taking timely action to deal with a problem). Rather than be admonished by the consequences of their behavior, procrastinators may focus on how outcomes could have been worse but were not, and are therefore able to preserve a positive sense of self.

In addition to the affective benefits of downward counterfactuals, engaging in downward counterfactuals may also have motivational implications for procrastinators. Recent work by McMullen and Markman (2000) suggest that thinking about how things could have been worse may differentially influence motivation to change behavior depending on the focus of the mental simulation. Across three studies, affective assimilation following downward counterfactuals (focusing on the worse than reality possibility) not only evoked negative affect, but served as a wake-up call that could motivate behavior change to avoid the possible worse outcome. Conversely, affective contrast of downward counterfactuals (focusing on the reality and

not the worse possibility) yielded positive affect and a Pangloss effect – complacency and diminished motivation to change behavior because potential problems are glossed over.

According to McMullen and Markman's (2000) counterfactual motivational model, the findings of the current study along with research demonstrating that procrastination is associated with mood regulating trade-offs (Blunt & Pychyl, 2000; Tice et al., 2001) suggest that a preference for downward counterfactuals may contribute to a lack of motivation to change procrastinating behavior. For example, if a negative outcome occurs because an important task was delayed, focusing on how things were not as bad as they could have been not only makes the procrastinator feel better about the negative outcome, but also engenders a sense of satisfaction and complacency that may result in less thought about how to act in a more timely manner in the future. By not engaging in affective assimilation of the possibility of worse outcomes, procrastinators may not receive the "wake-up call" that their behavior needs to be changed. This trade-off of immediate affective benefits for loss of preparative insights for future behavior and decreased motivation to change may, in the case of procrastinators, perpetuate the very self-regulation difficulties that characterize these individuals.

Replication of these findings across different situations of delay and non-delay along with an assessment of counterfactual focus is needed to clarify the conclusions suggested by these results and to further delineate the contributions of self-motives to counterfactual trade-offs for procrastinators. For example, it is likely that self-presentational and motivational processes interconnect in the genesis of counterfactuals (Roese & Olson, 1993). Given the proclivity of procrastinators for strategic self-presentation (Ferrari, 1991b, 1991d; Ferrari, 1992a), a fruitful line of inquiry may be to investigate whether the tendency to make more downward counterfactuals is enhanced when social evaluation of procrastinating behavior is anticipated.

Limitations and implications

One limitation of the current research is that hypothetical scenarios rather than real life events were used to generate the counterfactual responses. This could lead to the participants responding in ways that they might not normally respond. However, as Kasmatis and Wells (1995) have argued, if the artificiality of the scenarios did influence responses this way, then the pattern of results demonstrating self-enhancement strategies would not have been obtained. (i.e., individuals who procrastinate would not have engaged in relatively more downward counterfactuals for the delay scenario if their self-concept was not threatened). However, other studies that have examined individual differences and counterfactual direction using recalled experiences (Markman et al., 1993; Roese, 1994), and performance (Sanna, 1996) have found similar patterns of results, suggesting that the current findings may mirror those found in real life situations.

The association between counterfactual thinking and procrastination suggested by the current study may be specific to anxiety and not to other negative mood states. For example, Curtis (1989) found anxiety was related to a variety of self-defeating behaviors, which can include procrastinating behavior. Moreover, Baumeister and Scher (1988) propose that anxiety is linked to tradeoffs, behaviors where short-term benefits are chosen at the risk of long-term costs. Procrastination can be viewed as a type of trade-off (Lay & Silverman, 1996), as can a preference for downward counterfactuals if opportunities to reflect on corrective actions for the future are diminished (Boninger et al., 1994; Markman et al., 1993; Roese, 1994; Sanna, 1996). Thus, the trade-off reflected in the preference of procrastinators for downward counterfactuals may be a response that is unique to anxiety that does not occur when other negative emotions such as depressive affect are experienced. Distinguishing the role of anxiety versus other negative

emotions in counterfactual trade-offs is an interesting area for future research.

A notable contribution of the current study is that it is one of the first to demonstrate a relationship between counterfactual thinking and a negative behavior pattern, procrastination. Several studies suggest that a propensity towards making upward counterfactuals may be linked to greater distress and rumination following a traumatic event (Davis & Lehman, 1995; Davis, Lehman, Wortman, Silver, & Thompson, 1995). In contrast, investigations of the negative correlates of downward counterfactuals have been neglected, perhaps because the positive affective consequences of downward counterfactuals have until recently been viewed as less troublesome than the negative affective consequences of their upward counterparts. However, from a behavioral and motivational perspective, the consequence of engaging in thoughts that serve to improve mood and protect self-concept is that the individual is rewarded for any associated self-regulatory lapses (e.g., Tice et al., 2001). This in turn may encourage and maintain the negative behavior pattern, as well as diminish motivation to change behavior (McMullen & Markman, 2000).

It is possible that other negative behavior styles associated with self-enhancing motives and anxiety regulation may also be related to preferring downward counterfactuals in response to negative outcomes. For example, self-handicapping which has been linked to procrastination (Ferrari, 1992a), may also be related to a preference for downward counterfactuals. Like procrastinators, self-handicappers are concerned with self-presentation (Tice & Baumeister, 1990), engage in self-protective strategies (Jones & Berglas, 1978), and report anxiety in response to their own negative behaviors (Thompson & Richardson, 2001). After strategically placing obstacles in the way of successful performance so that poor performance is attributed to external rather than internal causes, it is possible that self-handicappers may also engage in

downward counterfactuals to cope with any residual affective disturbance or threat to self from their poor performance (“I could have done a lot worse, considering the circumstances”).

As in most scenario studies, the current study does not clarify all of the issues regarding how downward counterfactuals may be related to negative behaviors, but instead offers a starting point from which more programmatic research may emerge (see Roese & Olson, 1995). For example, Sanna (2000) has proposed a conceptual framework for situating individual differences in counterfactual direction that also integrates the preferred focus (assimilation or contrast) and the time of the mental simulation (prefactual or counterfactual). Following this model, questions regarding the counterfactual strategies and the underlying self-motives of procrastinators could be further addressed by examining the types of prefactuals preferred as well as the affective and motivational consequences. Although the current findings suggest that affective contrast of downward counterfactuals may occur following procrastinating behavior and may decrease motivation to change behavior, assessing affect following counterfactual generation as well as the intentions to take action on future behaviors would provide a more direct test of this conclusion.

Further, the role of upward and downward prefactuals and their focus for procrastinators is unclear. One possibility is that procrastinators may assimilate upward prefactuals, imaging themselves as having completed their tasks and therefore become complacent about taking concrete action. Given that procrastination has been linked to wishful thinking, especially when the task was unpleasant (Sigall, Kruglanski, & Fyock, 2000), this possibility seems reasonable. However, procrastinators could also be assimilating downward prefactuals about an impending task thereby fearing that the worse will transpire and accordingly delaying the task. This perspective is in accordance with recent research that found that greater procrastination during

job-seeking over a six month period was associated with increases in hopeless feelings about successfully finding a job during that period (Senecal & Guay, 2000). Both possibilities have motivational implications that, in addition to a preference for downward counterfactuals, could provide insight into the prefactual and counterfactual strategies of procrastinators. Similar to other studies of individual differences in counterfactual thinking (Sanna, 1996), these issues could be addressed by examining the prefactuals of procrastinators in response to an actual impending task and then eliciting counterfactual responses to subsequent performance and procrastination.

Overall, the current study offers a preliminary glimpse of one of the negative outcomes that may be associated with downward counterfactuals, and presents suggestive evidence about how downward counterfactual trade-offs may be linked to self-defeating behavior styles such as procrastination. In addition, this study contributes to a growing understanding of the role of individual differences in counterfactual thinking (Kasimatis & Wells, 1995; Roese & Olson, 1993; Sanna, 1996; Sanna, 2000). Future investigations are needed to confirm the current findings, and to explore if the relationships suggested here extend to other negative states and behavior styles such as self-handicapping, where the functional aspects of downward counterfactuals (e.g., affective self-enhancement) may become dysfunctional if they are used to reward and maintain self-defeating behavior.

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Foot notes

¹ By using the scenario to both induce mood and solicit counterfactuals it was felt that this would more accurately reflect the circumstances in which counterfactuals are made in natural settings. That is, a negative event occurs that gives rise to mood changes, which then may elicit counterfactual thoughts about the event. Other researchers have used retrospective accounts of experienced negative events to achieve a similar aim. Use of the scenarios rather than actual events allowed for greater control over the negative emotion experienced (anxiety), as well as for a comparison of reactions across two types of anxiety provoking events.

² Preliminary analysis indicated a chance finding that the baseline STAI scores were not equal between the two presentation order groups. It was decided therefore to run several more participants to equate the baseline STAI scores.

³ An examination of the mean number of counterfactuals generated by participants for each scenario supported this assertion. More upward counterfactuals were generated across both scenarios ($M = 3.57$, $SD = 1.53$) than downward counterfactuals ($M = 2.34$, $SD = 1.38$). This pattern was preserved across each of the general and delay-specific scenarios with more upward counterfactuals ($M = 3.35$, $SD = 1.92$; $M = 3.80$, $SD = 1.66$) generated than downward counterfactuals ($M = 2.58$, $SD = 1.52$; $M = 2.11$, 1.76) for each scenario respectively.

⁴ The counterfactual direction index provides a measure of relative counterfactual direction (upward to downward counterfactuals) that implies that making more of one type of counterfactual means necessarily making fewer of the other type. Additional analyses were conducted to examine which type of counterfactual was influencing the direction of counterfactuals made by procrastinators. After controlling for self-esteem, results from the regression analyses for each of the mean number counterfactual indices produced a similar

pattern of main effects to those obtained for the counterfactual direction indices. The analyses indicated that the associations of procrastination with counterfactual direction were due mainly to making more downward counterfactuals for the delay-specific scenario ($\beta = .23, t = 2.01, p < .05$) and overall ($\beta = .20, t = 1.80, p = .07$).

Table 1. Zero-order correlations between procrastination, self-esteem, and the counterfactual direction indices

Variables	1	2	3	4	5
1. Procrastination	---				
2. Self-esteem	-.23*	---			
3. Overall CFT index	-.23*	-.18	---		
4. Delay CFT index	-.24*	-.03	.78**	---	
5. General CFT index	-.14	-.25*	.82**	.29*	---
<i>M</i>	3.37	3.10	1.24	1.71	.76
<i>SD</i>	.64	.65	1.86	2.21	2.41

Note: $N = 80$, CFT = counterfactual thoughts

* $p < .05$

** $p < .01$