Emotion

An Expectancy-Value Model of Emotion Regulation: Implications for Motivation, Emotional Experience, and Decision Making

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According to expectancy-value models of self-regulation, people are motivated to act in ways they expect to be useful to them. For instance, people are motivated to run when they believe running is useful, even when they have nothing to run away from. Similarly, we propose an expectancy-value model of emotion regulation, according to which people are motivated to emote in ways they expect to be useful to them, regardless of immediate contextual demands. For instance, people may be motivated to get angry when they believe anger is useful, even when there is nothing to be angry about. In 5 studies, we demonstrate that leading people to expect an emotion to be useful increased their motivation to experience that emotion (Studies 1–5), led them to up-regulate the experience of that emotion (Studies 3–4), and led to emotion-consistent behavior (Study 4). Our hypotheses were supported when we manipulated the expected value of anxiety (Study 1) and anger (Studies 2–5), both consciously (Studies 1–4) and unconsciously (Study 5). We discuss the theoretical and pragmatic implications of the proposed model.

Keywords: emotion regulation, expectancies, self-regulation, decision making

According to expectancy-value models of self-regulation (e.g., Atkinson, 1957; Rotter, 1954), people are motivated to act in ways they expect to be useful to them. For example, people may be motivated to run when chased by a predator, if they expect running to make them escape the predator. Even when people have nothing to run away from, they may be motivated to run if they expect running to be useful (e.g., to promote cognitive performance). It is the expected usefulness of an action, whether intuitive or not, that motivates people to perform it. Building on these ideas, we propose an expectancy-value model of emotion regulation, according to which people are motivated to emote in ways they expect to be useful to them. For example, people may be motivated to get angry when preparing for a fight if they expect anger to make them fight better. Moreover, even when people have nothing to be angry about, they may be motivated to get angry if they expect anger to be useful (e.g., to promote cognitive performance). Once motivated to get angry, people might actively try to increase their anger. We suggest that it is the expected value of an emotion, whether intuitive or not, that motivates people to experience it.

In what follows, we briefly describe expectancy-value models of self-regulation and apply them to the emotion domain. We then distinguish between goals and emotion-outcome expectancies as determinants of emotional preferences. Although there is evidence that goals can influence what people want to feel, to our knowledge there is no evidence to date showing that the expected usefulness of emotions can influence what people want to feel. Therefore, this investigation tested the effects of emotion-outcome expectancies on emotional preferences, emotion regulation, and decision-making behavior.

Expectancy-Value Models of Self-Regulation

Expectancy-value models of self-regulation (e.g., Atkinson, 1957; Feather, 1982; Rotter, 1954) propose that the motivation to perform an action depends on the expectancy that the action would lead to an incentive and the personal value of that incentive. People are motivated to perform actions that they expect would yield desirable outcomes. Behavior-outcome expectancies (i.e., the expected outcome of a behavior) can directly influence the motivation to perform the behavior (e.g., Fishbein & Ajzen, 1975). Expectancies, therefore, initiate and direct self-regulation (see Roese & Sherman, 2007).

We propose an expectancy-value model of emotion regulation. We argue that the motivation to experience an emotion may depend on the expectation that the emotion would lead to a desired incentive. Accordingly, we hypothesize that emotion-outcome expectancies (i.e., the expected outcome of an emotion) can directly influence the motivation to experience the emotion, even in the absence of emotion-related appraisals or goals. For example, people who believe that anger is useful may be more motivated to increase their anger and more likely to do so, even in a context that bears little relevance to anger-related appraisals or goals.

Goals Versus Emotion-Outcome Expectancies as Causal Factors in Emotion Regulation

According to instrumental approaches to emotion regulation (e.g., Bonanno, 2001; Parrott, 1993; Tamir, 2009; Thompson, 2011), people may be motivated to experience emotions that are consistent with their goals. For instance, if anger promotes successful confrontation (e.g., Frijda, 1986), people who pursue a confrontation goal may be motivated to feel angry in order to be more effective in pursuing their goal. A body of empirical evidence supports this prediction. For instance, people who were led to collaborate with others wanted to decrease their anger (Tamir & Ford, 2012a; Tamir, Ford, & Gilliam, 2013), whereas people who were led to confront others (e.g., in computer games or in social interactions) wanted to increase their anger (Tamir & Ford, 2012a; Tamir, Mitchell, & Gross, 2008).

Although there is growing evidence that goals can influence what people want to feel, the mechanism that underlies such effects remains unclear. One possibility is that goals directly modulate the desirability of emotions. According to evaluative readiness models (e.g., Ferguson & Bargh, 2004; Ferguson & Wojnowicz, 2011), goals can automatically lead people to evaluate goal-relevant objects more positively than goal-irrelevant objects. Because emotions are associated with specific goals, manipulating goals may automatically increase the desirability of associated emotions. For instance, leading people to confront others may increase their motivation to get angry because anger is relevant to confrontation.

Another possibility, however, is that goals influence the desirability of emotions because they serve as standards for evaluating the utility of emotions. According to expectancy-value models (e.g., Atkinson, 1957; Feather, 1982; Rotter, 1954), people want to regulate in a manner that optimizes effective goal pursuit (for a review, see Roese & Sherman, 2007). Therefore, people should be motivated to experience emotions that they expect would help them achieve their goals. For example, leading people to confront may increase their motivation to get angry because people expect anger to promote confrontation.

Both evaluative readiness and expectancy-value models lead to the prediction that goals influence what people want to feel. According to evaluative readiness models, a goal should increase the desirability of an emotion, to the extent that the emotion is positively associated with the goal. According to expectancy-value models, a goal should increase the desirability of an emotion, to the extent that the emotion is expected to promote goal achievement. Consistent with the prediction of both models, people who were led to confront were more motivated to experience anger (Tamir & Ford, 2012a; Tamir et al., 2008). People who were led to confront also expected anger to be more useful, and such expectancies were positively correlated with the motivation to experience anger (Tamir & Ford, 2012a). This correlational evidence, however, is consistent with both models, because evaluative readiness can foster positive expectations about goal-relevant emotions. In this investigation, we tested the validity of the expectancy-value account of emotion regulation.

Expectancy-value models predict that emotion-outcome expectancies directly influence what people want to feel, regardless of the goals they pursue. If people expect an emotion to be useful for an upcoming task, they might be motivated to increase the experience of that emotion, even if they know nothing about the task or what it requires. To establish the validity of the expectancy-value model, therefore, it is necessary to test the causal effects of emotion-outcome expectancies, independent of emotion-relevant goals.

In this investigation, therefore, we tested three related hypotheses. First, we hypothesized that the expected usefulness of an emotion would motivate people to experience that emotion, even if it is unpleasant. Second, if outcome expectancies shape self-regulation (Roese & Sherman, 2007), emotion-outcome expectancies should shape emotion regulation. Therefore, we hypothesized that the expected usefulness of an emotion would lead people to increase the experience of that emotion. Third, because emotions can influence subsequent behavior, we hypothesized that emotion-outcome expectancies would have downstream effects on behavior, such that the expected usefulness of an emotion would result in emotion-congruent behavior.

An Overview of the Current Studies

We conducted five studies to test our hypotheses. According to Ajzen (2012), people can form expectancies by inferring them from information provided by trusted others. Therefore, to manipulate emotion-outcome expectancies in Studies 1–4, we provided participants with information from trusted others that implied the usefulness or harmfulness of emotional experiences. To ensure that emotional preferences were not driven by hedonic considerations, we manipulated the expected usefulness of emotions that are unpleasant to experience (i.e., anxiety in Study 1; anger in Studies 2–5).

In all studies, we manipulated the expected usefulness of an emotion and assessed what people subsequently wanted to feel, by measuring preferences for emotion-inducing activities (e.g., Erber, Wegner, & Therriault, 1996; Tamir et al., 2008; Tamir & Ford, 2012a). Building on expectancy-value models, in Study 3, we further tested whether emotion-outcome expectancies influence emotional preferences only when the expected outcome is of personal value. We predicted that people who were led to expect an emotion to be useful would be more motivated than others to experience it.

Next, we tested the effects of emotion-outcome expectancies on emotion regulation and experience (Studies 3–4) and on subsequent decision-making behavior (Study 4). We predicted that people who were led to expect an emotion to be useful would actively increase the experience of that emotion, and consequently experience it more intensely than others. We also expected emotion-outcome expectancies to modulate subsequent behavior in an emotion-consistent manner.

Finally, in Study 5 we tested whether the expected usefulness of emotions can operate outside of conscious awareness, by using an implicit manipulation of expected usefulness. We predicted that although participants would not be aware of the manipulation, those led to expect an emotion to be useful would be more motivated than others to experience it.

Study 1

Participants in Study 1 were told they would complete a financial task and be rewarded for good performance. Presumably to

help them prepare for the task, participants received bogus information from prior participants that suggested that anxiety may be useful (or not) for performance in the task. To assess emotional preferences, participants read bogus headlines of newspaper articles and indicated their preferences to read each one before the financial task (Erber et al., 1996). To ensure that preferences for anxiety-inducing headlines reflect preferences for anxiety per se, rather than increased arousal or interest, participants also rated preferences for excitement-inducing headlines (which were equally arousing and interesting) and neutral headlines. We expected participants who learned that anxiety might be useful (vs. not) to be more motivated to experience anxiety before the financial task.

Method

Participants. Participants were 69 American adults (30% female, M_{age} = 28.99), who participated in the study online.[1] Participants received 60 cents for their participation.

Procedure. The study was conducted online using Amazon's Mechanical Turk (http:/www.mturk.com). Participants read that the study examines the potential link between financial decision making and media exposure. They read that they would complete a financial task and be rewarded for good performance. Prior to completing the financial task they would read an article that was recently published online. To help them prepare for the task, they could read brief tips that would be selected at random from prior participants who performed well on the financial task. Next, participants read three bogus tips. The first tip was identical across conditions (i.e., "In tasks of this sort, it is important to read the instructions carefully and stay very focused. Don't let your mind wander"). Participants who were randomly assigned to the anxiety = useful condition read two more tips, pointing to the potential usefulness of anxiety (e.g., "It is important to be careful and keep in mind that things can go wrong. I felt a bit anxious and it helped me avoid impulsive decisions"). Participants in the control condition read two more tips that pointed to the potential usefulness of being motivated (e.g., "It is important to be focused and to keep in mind the different pieces of information. I felt motivated and it helped me make good decisions"). To ensure that participants processed the tips, without feeling pressured to follow them, participants read that we needed their help in identifying tips that should be retained or omitted. Therefore, they should select two (of the three) tips that seem sensible to them and explain why in their own words.

Participants were then told that before completing the financial task they would read a brief online article, and they rated their preferences for articles to read (see Emotional Preferences Measure in the Materials section). Participants rated their current emotional experiences. All participants then read a brief neutral article about the nature of water, and completed a brief financial task in which they were asked to pick between certain (e.g., 4 cents) and uncertain (e.g., flip a coin to get 10 cents for heads or 0 cents for tails) gains. Participants were then asked to provide their own tips for future participants, and rated how useful and how credible they found the tips from prior participants. Finally, participants were presented with the headlines they rated earlier and rated how anxious, excited, and interested they expected to feel

after reading the corresponding articles. Participants provided demographic information and were thanked for their participation.

Materials

Concurrent emotion ratings. Participants rated their current emotional experiences (0 = *not at all*; 6 = *extremely*). To assess anxiety, we averaged across ratings of *anxious* and *nervous* (α = .97). To assess excitement, we averaged across ratings of *excited* and *cheerful* (α = .80).

Emotional preferences measure. Participants rated the extent to which they wanted to read (1 = *do not want to read at all*; 6 = *want to read very much*) articles that corresponded to six headlines, presented in a random order. Two headlines were anxiety-inducing (i.e., "Your computer as your worst enemy: Increased cyber attacks," "On the verge of bankruptcy: How to train your wallet"), two headlines were excitement-inducing (i.e., "Biggest amusement park ever to be built in Virginia," "Free tuition: Philanthropist plans to offer free college tuition to those who need it"), and two headlines were neutral (i.e., "Not all extended warranties are created equal," "Skype aims to translate your voice"). These headlines were preselected based on a pilot study, in which participants (N = 48) indicated that they expected the articles that corresponded to the anxiety-inducing headlines to induce more anxiety than the excitement-inducing and neutral headlines (Ms = 3.33, 1.67, and 2.17, respectively), ds > .50, ps < .005, and the excitement-inducing headlines to induce more excitement than the anxiety-inducing and neutral headlines (Ms = 4.41, 2.17, and 1.43, respectively), ds > .74, ps < .001.

Results

To test whether the expectancy manipulation influenced what people wanted to feel, we conducted a repeated-measures ANOVA, in which Emotion (anxiety, neutral, excitement) was a within-subject factor, and expectancy condition (anxiety = useful, control) and gender were between-subjects factors. As predicted, we found a significant Emotion × Condition interaction, $F(2, 66) = 4.84, p = .009, \eta^2 = .07$. As shown in Figure 1, participants who were led to expect anxiety to be useful showed significantly stronger preferences for anxiety-inducing articles to read before the financial task, $F(1, 66) = 4.75, p = .033, \eta^2 = .07$, but did not differ in preferences for excitement-inducing or neutral articles, $Fs < 1$. No other effects were significant, $Fs < 1.4$.

To test whether the expectancy manipulation influenced spontaneous emotional experiences, we ran one-way ANOVAs, with condition as a between-subjects factor and concurrent anxiety or excitement as the predicted variables. None of the effects were significant, $Fs < 1$. When current anxiety and excitement were entered as covariates in the analysis, the effects remained significant and were not qualified by current emotions.

Finally, we tested whether participants expected the headlines to induce the target emotions. As anticipated, participants expected

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[1] Because prescreening by age was not possible, 10 additional participants who were over 50 years old (>3 *SD*s from the mean age) were omitted from the analyses. Two additional participants were omitted due to unreliable responses, as identified using the Instructional Manipulation Check (Oppenheimer, Meyvis, & Davidenko, 2009).
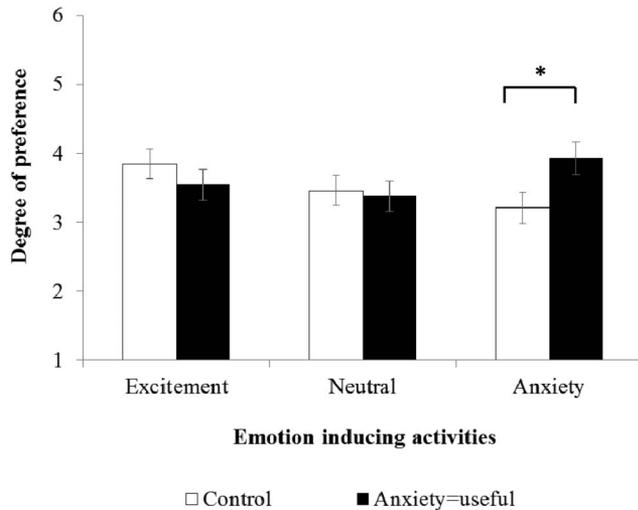
Figure 1. Preferences for excitement-inducing, neutral, and anxiety-inducing headlines as a function of expectancy condition (Study 1). Error bars reflect $+/-1$ standard error of the mean.

the anxiety-inducing headlines to induce more anxiety ($M = 3.24$) than the excitement-inducing ($M = 1.70$) or the neural ($M = 1.98$) headlines, $ds > 1.26$, $ps < .001$. Also as anticipated, participants expected the excitement-inducing headlines to induce more excitement ($M = 3.33$) than the anxiety-inducing ($M = 2.21$) or the neural ($M = 2.44$) headlines, $ds > .89$, $ps < .001$. Headlines did not differ in how interesting their corresponding articles were expected to be, $F = 2.98$. None of these effects were qualified by expectancy condition, $Fs < 1$.[2]

Discussion

Participants who were led to believe that anxiety (vs. motivation) might be useful for performance in an upcoming financial task showed stronger preferences for anxiety-inducing articles to read before the task. By including both anxiety- and excitement-inducing headlines, we were able to show that participants were motivated to experience anxiety rather than greater arousal, more generally. Furthermore, by assessing current emotions following the expectancy manipulation, we were able to show that manipulating emotion-outcome expectancies influenced the motivation to experience emotions, rather than the direct experience of these emotions.

Study 2

Study 2 had several goals. First, we tested whether the findings in Study 1 generalize to a different unpleasant emotion—namely, anger. Second, we tested whether outcome expectancies can shape emotional preferences even when the context is entirely novel. Third, to further establish the validity of our findings, we assessed emotional preferences by measuring preferences for three distinct emotion-inducing activities. Participants in Study 2 were told they would complete a novel task that assesses their professional potential. They were led to expect that either anger, calmness, or neither may be useful for the task. We expected participants who were led to expect that anger might be useful to show relatively

stronger preferences for anger-inducing activities, compared to other participants.

Method

Participants. Participants were 66 American undergraduate students at Boston College (50% female, $M_{age} = 19.71$ years), who received \$10 for their participation.[3]

Procedure. The study was conducted in the laboratory. Participants were told the study tested the effects of memory on potential professional success and that they would complete a computerized task designed to assess their professional potential. They were told that before completing the task some participants would be asked to recall a past event whereas others would perform a task unrelated to memory, such as listening to music or watching films. To motivate participants, they were told that a good score on the task would qualify them for a monetary reward. Participants provided demographic information and rated their current emotions.

Participants read a bogus introduction that provided general information about the validity and importance of the professional aptitude task. Next, as in Study 1, they were told they could read tips from prior participants who previously scored in the top fifth percentile. Participants read five bogus tips. Two tips did not mention emotional experiences and were identical across conditions. Three additional tips varied by condition. Participants in the anger = useful condition read tips that implied the usefulness of anger (e.g., "The task reminded me of a game I used to play on the computers in school when I was younger. It was kind of infuriating, because it wasn't easy and a bit frustrating at times. Right when I thought I was going to reach the goal another obstacle would appear. I was able to react quickly though and I ended up with a really good score"). Participants in the calmness = useful condition read tips that implied the usefulness of calmness (e.g., "The task reminded me of a game I used to play on the computers in school when I was younger. I could have gotten annoyed because it wasn't easy and it got frustrating at times. Right when I thought I was going to reach the goal another obstacle would appear. I kept my cool though, and ended up with a pretty good score"). Finally, participants in the control condition read tips that did not refer to emotions ("The task reminded me of a game I used to play on the computers in school when I was younger. I could have lost my concentration, though, because it wasn't easy and it got tricky at times. I ended up with a pretty good score").

Participants rated their preferences for memories to recall, music to listen to, and film clips to watch (see Materials section) before completing the professional aptitude task, and rated their current emotional experiences. At this point, the professional aptitude task presumably malfunctioned and the experimenter told the participants they would not be able to complete the task. Participants rated the credibility of the tips they received earlier and were probed for suspicion.

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[2] Only two participants did not find the tips from prior participants credible, and results remained significant when they were excluded from the analysis. None of the participants was able to guess the true purpose of the study.

[3] The samples of the studies reported in this paper did not overlap with each other.

Materials

Concurrent emotion ratings. Participants rated their current emotional experiences (0 = *not at all*; 8 = *extremely*). To assess anger, we averaged across ratings of *angry* and *irritated* (αs = .63 and .56, pre- and postmanipulation, respectively). To assess happiness, we averaged across ratings of *happy* and *pleasant* (αs = .76 both pre- and postmanipulation, respectively). To assess calmness, we averaged across ratings of *calm* and *relaxed* (α = .73 and .70, pre- and postmanipulation, respectively).

Emotional preferences measures. Participants rated the extent to which they would like to listen to music clips, recall events from their past, and watch film clips (0 = *not at all*; 8 = *extremely*). First, participants listened to six music clips, each 20-seconds long, including two anger-inducing clips (i.e., "Inquisition" and "Refuse/Resist" by Apocalyptica), two happiness-inducing clips (i.e., "The Opening Theme" from the soundtrack of *The Triplets de Belleville*, and "Dreamoz" by Jay Hannah), and two neutral clips (i.e., "Tree Fingers" by Radiohead, and "First Thing" by Four Tet).[4] Second, participants rated the extent to which they would like to recall six events, varying by emotion (i.e., angry, happy, calm) and by content (i.e., related to school, unrelated to school). Finally, participants read nine bogus descriptions of three anger-inducing film scenes (e.g., racial injustice), three happiness-inducing scenes (e.g., amusing adventures of American school boys in England), and three neutral scenes (e.g., a young women working at a bakery).[5] To assess emotional preferences, we averaged across preferences for activities of the same type that target the same emotion (e.g., the three anger-inducing music clips). Reliabilities were acceptable (mean αs = .63, .75. and .71, for music, memories, and films, respectively).

Results

To test whether the expectancy manipulation influenced what people wanted to feel, we conducted a repeated-measures ANOVA, in which Activity (music, memories, films) and Emotion (happy, neutral, angry) were two within-subject factors, and Expectancy Condition (anger = useful; control, calmness = useful) and gender were between-subjects factors. As in Study 1, we found a significant Emotion × Condition interaction, $F(4, 61) = 5.02$, $p = .001$, $\eta^2 = .14$. As shown in Figure 2, participants who were led to expect anger to be useful expressed significantly stronger preferences for anger than participants in the two other conditions, $ds > .78$, $ps < .023$, and weaker preferences for calmness than participants in the calmness = useful condition, $d = .91$, $p = .005$, but not the control condition, $d = .58$, $p = .07$. Participants in the control condition and the calmness = useful condition did not differ in their preferences, $ds < .33$. $ps > .29$.

This interaction qualified a main effect for Emotion, $F(2, 63) = 74.41$, $p < .001$, $\eta^2 = .55$, such that on average, participants preferred happiness-inducing activities to neutral and anger-inducing ones ($Ms = 3.99, 2.03,$ and 2.54, respectively). We also found a main effect for Activity, $F(2, 63) = 22.52$, $p < .001$, $\eta^2 = .27$, such that on average, participants preferred listening to music than watching films or recalling events ($Ms = 3.37, 2.67,$ and 2.52, respectively). There was a significant Emotion × Activity interaction, $F(4, 61) = 8.98$, $p < .001$, $\eta^2 = .13$, such that preferences for neutral music were higher than preferences for neutral films or memories ($Ms = 3.21, 1.53,$ and 1.36, respectively). Finally, we
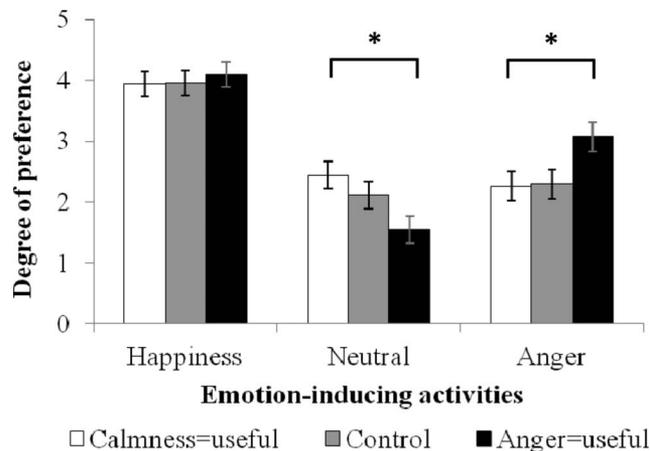

Figure 2. Preferences for happiness-, neutral, and anger-inducing activities as a function of expectancy condition (Study 2). Error bars reflect +/−1 standard error of the mean.

found a significant Emotion × Gender interaction, $F(2, 63) = 5.94$, $p = .003$, $\eta^2 = .09$, such that females showed stronger preferences for happiness-inducing activities than males ($Ms = 4.35$ and 3.63, respectively). This pattern was most pronounced in preferences for music, as indicated by a significant Emotion × Activity × Gender interaction, $F(4, 61) = 2.44$, $p = .048$, $\eta^2 = .04$. No other effects were significant, $Fs < 1.8$.

To test whether the expectancy manipulation influenced spontaneous emotional experiences, we ran a series of one-way ANOVAs, with condition as a between-subjects factor and the experience of anger, happiness, and calmness following the manipulation as the predicted variables. None of the effects were significant, $Fs < 2.48$. In addition, our effects remained unchanged when current emotions, as assessed either before or after the manipulation, were included as covariates in the analysis.[6]

Discussion

Study 2 replicated the findings in Study 1 and generalized the effects to another unpleasant emotion—namely, anger. Partici-

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[4] A pilot study ($N = 10$) confirmed that participants found the angry music more anger-inducing than the neutral and happy music, $t(9)s > 2.92$, $p < .02$ ($Ms = 3.05, 0.50, 0.00$, respectively). Participants found the happy music more happiness-inducing than the neutral and angry music, $t(9)s > 3.28$, $p < .02$ ($Ms = 4.55, 2.35, 1.55$, respectively). Participants found the neutral music more calm than the happy and angry music, $t(9)s > 2.30$, $p < .05$ ($Ms = 4.95, 3.10, 2.75$, respectively). Finally, participants found the angry and happy music equally arousing, $t(9) < 1$, and more arousing than the neutral music, $t(9)s > 3.90$, $ps < .005$.

[5] A pilot study ($N = 37$) confirmed that participants expected to feel angrier upon viewing the angry scenes than the neutral and happy scenes, $t(36)s > 14.40$, $ps < .001$ ($Ms = 3.60, 1.13,$ and 1.05, respectively). Participants expected to feel happier upon viewing the happy scenes than the neutral and angry scenes, $t(36)s > 13.41$, $ps < .001$ ($Ms = 3.68, 1.53,$ and 1.16, respectively). Finally, participants expected to feel calmer upon viewing the neutral scenes than the happy and angry scenes, $t(36)s > 2.17$, $ps < .004$ ($Ms = 3.00, 2.44,$ and 1.82, respectively).

[6] Six participants did not find the testimonials credible, but results remained unchanged when they were excluded from the analyses. None of the participants were able to guess the true purpose of the study.

pants who were led to expect anger to be useful (vs. harmful or irrelevant) for performance in an upcoming task showed stronger preferences for anger-inducing activities. Such patterns were found even though the anticipated task was unfamiliar to participants, and generally unrelated to anger. Participants who were led to expect calmness to be useful showed the same emotional preferences as participants in the control condition, possibly because, in general, people tend to believe that anger is harmful (see Tamir & Ford, 2012b) and that calmness is useful in unfamiliar tasks (Erber et al., 1996).

Study 3

Study 3 was designed to test three complementary hypotheses. First, in Studies 1–2, we demonstrated that the expected usefulness of emotions influenced emotional preferences. However, we did not test whether such preferences shape emotion regulation and subsequent emotional experiences. To test this in Study 3, after participants indicated their preferences for emotion-inducing activities, they engaged in their preferred activities and rated their subsequent emotional experiences. We expected participants who were led to expect anger to be useful (vs. not) to be more likely to select anger-inducing activities and to feel angrier, as a result of engaging in them.

Second, according to expectancy-value models, people want to engage in actions that they expect would yield certain incentives, to the extent that these incentives are of personal value (e.g., Fishbein & Ajzen, 1975). For instance, people may expect running to lead to weight loss, but they would be motivated to run only if they want to lose weight. In the emotion domain, this implies that emotion-outcome expectancies should influence what people want to feel only when the expected outcomes are of personal value. In Studies 1–2, expected outcomes were personally relevant, because participants expected to be rewarded for good performance. In Study 3, we sought to test whether the expectation that anger would be useful for an upcoming task would increase preferences for anger only among participants for whom doing well on the task was personally valuable.

To test this, participants in Study 3 were randomly assigned to one of three conditions. In one condition (anger = useful/task = relevant), participants were led to expect anger to be useful for performance in a task they then needed to perform. In a second condition (anger = useful/task = irrelevant), participants were led to expect anger to be useful for performance in a task, which they did not need to perform. In a third condition (anger = irrelevant/task = relevant), participants were led to expect anger to be irrelevant for a task they needed to perform. We predicted that participants who were led to expect anger to be useful (vs. irrelevant) for an upcoming task would be motivated to increase their anger only if they expected the task to be personally relevant.

Finally, to provide further support for an expectancy-value model, in Study 3 we tested whether the expectancy manipulation influenced how well prepared participants felt for the task at hand. People who expect anger to be useful to them should feel better prepared for the task the angrier they feel. To test this, after they engaged in their selected emotion-inducing activities, participants in Study 3, who expected to perform the aptitude task (i.e., those in the task = relevant conditions) indicated how prepared for it they felt. We expected participants in the anger = useful/task =

relevant condition to feel better prepared the angrier they felt and participants in the anger = irrelevant/task = relevant condition to feel less prepared the angrier they felt.

Method

Participants. Participants were 69 American undergraduate students at Boston College (61% female, mean age = 19.19 years), who received $20 for their participation.

Procedure. The procedure was similar to the one used in Study 2, except for several changes. All participants read the same introductory paragraphs about the professional aptitude task, except that the task was described as including a face-to-face negotiation. Participants were randomly assigned to one of three conditions. Participants in the anger = useful/task = irrelevant condition and those in the anger = useful/task irrelevant condition read tips that implied the potential usefulness of anger. Participants in the anger = irrelevant/task = relevant condition read tips that did not mention the usefulness of anger. All participants read six tips, two of which were identical across conditions and did not mention emotions, and four that varied by condition. After reading the tips, participants in the task = relevant conditions were told they would soon proceed to perform the aptitude task. Participants in the anger = useful/task = irrelevant condition were told that their negotiation partner did not show up and so they would not be able to perform the aptitude task. They were told that instead of the professional business task they would complete an alternate task (i.e., providing pilot ratings of drawings).

At this point, all participants completed a demographic form and rated their concurrent emotions. They then rated their preferences for music to listen to and memories to recall (see Materials section) and listed their top music selections. All participants listened to the top three music clips they had selected. After listening to the music, participants rated their concurrent emotional experiences and how prepared they felt for the upcoming task (0 = *not at all*, 8 = *a great deal*). Participants underwent a funnel debriefing interview and were probed for suspicion.

Materials

Concurrent emotion ratings. Participants rated the same items as in Study 2 for anger (αs = .87 and .86, pre- and postinduction, respectively) and happiness (α = .87 and .86, pre- and postinduction, respectively). These items were interspersed among other items that assessed a variety of subjective states (e.g., interested, alert, confused).

Emotional preference measures. Participants rated the extent to which they wanted to listen to the same music clips and recall the same past events that were included in Study 2 (0 = *not at all*; 8 = *extremely*). We averaged across preferences for activities of the same type that targeted the same emotion (mean αs = .60 and .70, for music and memories, respectively).

Results

Expected usefulness and emotional preferences. To test whether people varied in what they wanted to feel as a function of the expectancy manipulation and task relevance, we conducted a repeated-measures ANOVA, with Activity (music, memories) and

Emotion (angry, neutral, happy) as two within-subject factors, and Condition (anger = useful/task = relevant, anger = irrelevant/task = relevant, and anger = useful/task = irrelevant) and gender as between-subjects factors. As predicted, we found a significant Emotion × Condition interaction, $F(4, 64) = 3.74$, $p = .007$, $\eta^2 = .11$. As shown in Figure 3, participants in the anger = useful/task = relevant condition showed significantly stronger preferences for anger-inducing activities, compared to participants in the other conditions, $ds > .76$, $ps < .031$. Participants in the anger = useful/task = irrelevant and anger = irrelevant/task = relevant conditions did not differ from each other in preferences for anger, $d = .19$, $p = .57$. To test whether these preferences depended on concurrent emotional experiences, we repeated the above analyses with premusic anger and happiness as covariates. The Emotion × Condition interaction remained unchanged, $F(4, 64) = 3.37$, $p = .012$.

As in prior studies, we found a main effect for Emotion, $F(2, 66) = 46.26$, $p < .001$, $\eta^2 = .42$, such that on average, participants preferred happiness-inducing activities to anger-inducing and neutral ones ($Ms = 3.24$, 2.36, and 1.52, respectively). There was a significant Emotion x Activity interaction, $F(2, 66) = 8.93$, $p < .001$, $\eta^2 = .42$, such that preferences for neutral music were higher than preferences for neutral memories ($Ms = 1.91$ and 1.13, respectively). Finally, we found a significant Emotion × Gender interaction, $F(2, 66) = 3.57$, $p = .031$, $\eta^2 = .05$, such that, as in Studies 1–2, females showed stronger preferences than males for happiness-inducing activities ($Ms = 3.51$ and 2.97, respectively), but did not differ in preferences for neutral or anger-inducing activities. No other effects were significant, $Fs < 1.6$.

Expected usefulness and emotion regulation. To test whether our manipulation shaped emotion regulation, we ran a repeated-measures ANOVA, with Time (pre- and postinduction) and Emotion (anger, happiness) as two within-subject factors and Condition as a between-subjects factor. This interaction yielded a main effect for Time, $F(1, 67) = 4.64$, $p = .04$, $\eta^2 = .07$, such that

Figure 3. Preferences for happiness-, neutral, and anger-inducing activities as a function of expectancy condition and task relevance (Study 3). Error bars reflect +/−1 standard error of the mean.

emotions were more intense on average before than after the regulation ($Ms = 3.22$ and 3.03, respectively), and a main effect for Emotion, $F(1, 67) = 95.18$, $p < .001$, $\eta^2 = .59$, such that, on average, people reported feeling more happiness than anger ($Ms = 4.62$ and 1.62, respectively). There was a significant Emotion × Condition interaction, $F(2, 66) = 7.62$, $p = .001$, $\eta^2 = .19$, such that people in the anger = useful/task = relevant condition reported less happiness and more anger, on average.

Most importantly, these effects were qualified by an Emotion × Condition × Time interaction, $F(2, 66) = 3.07$, $p = .053$, $\eta^2 = .09$. Tests of simple effects supported our predictions, indicating that although participants in the different conditions did not vary in emotional experiences before listening to music, $Fs < 2.61$, after listening to music they differed significantly in the experience of both anger, $F(2, 66) = 10.15$, $p < .001$, $\eta^2 = .24$, and happiness, $F(2, 66) = 6.09$, $p = .004$, $\eta^2 = .16$. Compared to other participants, participants in the anger = useful/task = relevant condition experienced significantly more anger, $ds > 1.97$, $ps < .001$, and significantly less happiness, $ds > 1.32$, $ps < .009$, after listening to the music (see Figure 4). Participants in the anger = useful/task = irrelevant condition did not differ in their emotional experiences from those in the anger = irrelevant/task = relevant condition, $ds < .27$, $ps > .57$.

We expected participants who were led to expect anger to be useful for a personally relevant task to be more motivated than others to experience anger, which would lead to the up-regulation of anger. Therefore, we tested whether preferences for anger mediated the link between the expectancy manipulation and the change in anger experience. When entered into linear regressions, Condition (1 = anger = useful/task = relevant, 0 = other conditions) was a significant predictor of preferences for anger, $t(61) = 2.80$, $p = .007$, and change in anger experience (i.e., the difference between pre- and postinduction anger), $t(61) = 2.57$, $p = .013$. When both condition and preferences for anger were entered as simultaneous predictors of change in anger experience, preferences for anger remained significant $t(61) = 2.30$, $p = .025$, whereas condition did not, $t < 1.82$. The mediation path was significant when assessed with bootstrapping methods, 95% CI = [.042, .692]. This demonstrates that the manipulation of the expected usefulness of anger influenced how angry people wanted to feel, which in turn, was linked to how angry they became.

Expected usefulness and perceived readiness. If our expectancy manipulation was successful, participants who were led to expect anger to be useful should feel better prepared for the task, the angrier they feel. To test this hypothesis, we predicted how well prepared for the task participants reported feeling in a simple linear regression, with Condition (0 = anger = irrelevant/task = relevant, 1 = anger = useful/task = relevant), mean-centered postinduction anger experience, and their interaction term as simultaneous predictors. As expected, we found a significant Condition × Anger interaction, $t(41) = 2.13$, $p = .039$. Other effects were not significant, $t(41)s < 1.73$. As shown in Figure 5, participants in the anger = irrelevant condition felt less prepared for the task the angrier they felt, but this was not the case for participants in the anger = useful condition. Although simple effects did not reach significance, the association between anger experience and feeling prepared was negative in the anger = irrelevant condition,
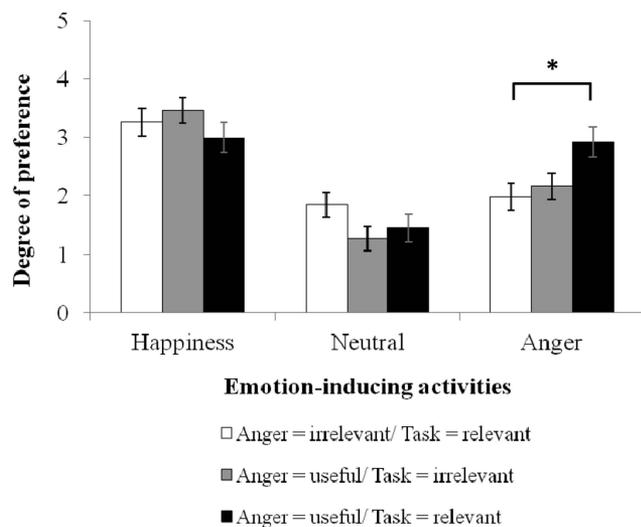
$r = -.36$, $p = .10$, but positive in the anger = useful condition, $r = .28$, $p = .19$.[7]

Discussion

The findings of Study 3 extend those of Studies 1–2 in important ways. First, the findings support our second hypothesis, according to which emotion-outcome expectancies shape emotion regulation and experience. As in Studies 1–2, leading participants to expect anger to be useful changed the extent to which they wanted to experience anger and the emotion-inducing activities they selected. The more anger-inducing the activities they selected, the angrier they became when engaging in them.

Second, the findings further support the assumptions of an expectancy-value model, by showing that the expected usefulness of anger influenced preferences for anger only when the consequences of doing so were personally relevant. Whereas participants in the anger = useful/task = relevant condition showed stronger preferences for anger, participants in the anger = useful/task = irrelevant condition did not. This suggests that expecting an
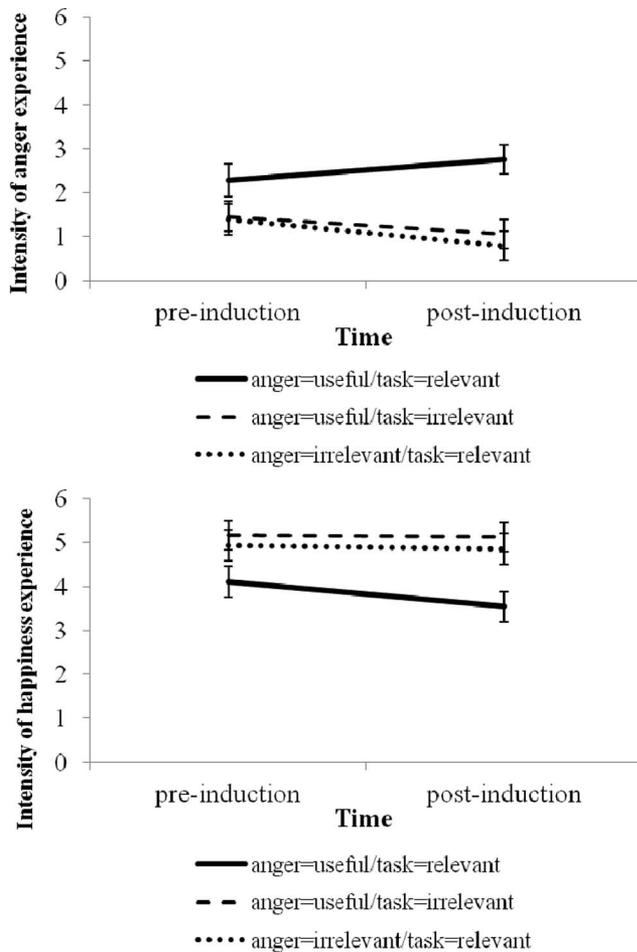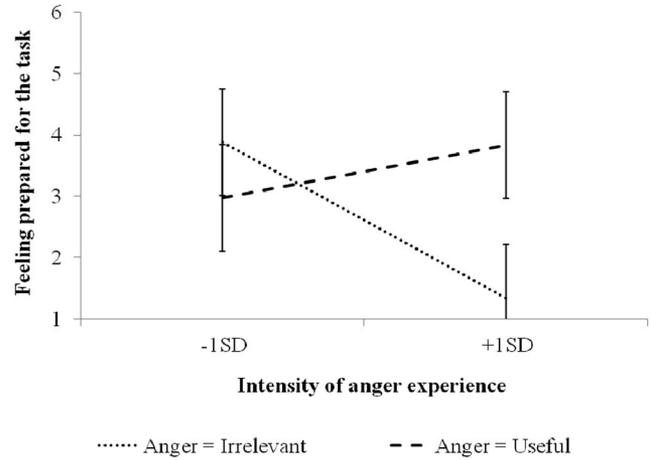

Figure 5. Expected means of perceived preparation for the upcoming task as a function of postinduction anger experience ($+/-1$ *SD* from the mean) and expectancy condition (Study 3). Error bars reflect $+/-1$ standard error of the predicted values.

emotion to be useful does not automatically lead to expectancy-consistent emotional preferences. People may be motivated to experience an emotion they expect to be useful, only if they personally stand to gain from doing so.

Finally, as further evidence for an expectancy-value model of emotion regulation, participants felt better prepared for the aptitude task the more intensely they experienced the emotion they expected to be useful to them. Because anger is both socially inappropriate and potentially harmful in social interactions (e.g., Fischer, Manstead, & Rodriguez Mosquera, 1999), it is likely that by default participants felt less prepared for the task the angrier they felt. This is what we found for participants in the anger = irrelevant condition. However, when people had reasons to expect anger to be useful to them, the experience of anger no longer served as an indication of poor preparation for the task.

Study 4

Studies 1–3 demonstrated that the expected usefulness of emotions influences the motivation to experience them, and Study 3 demonstrated that the motivation to experience emotions shapes the regulation of these emotions. In Study 4, we tested whether the expected usefulness of emotions can also shape subsequent behavior. To do so in Study 4, we manipulated the expected usefulness of anger, asked participants to select emotion-inducing activities, and then to engage in the activities they selected. As in Study 3, we expected participants who were led to expect anger to be useful to select more anger-inducing activities and experience more intense anger upon engaging in such activities.

In addition, however, we tested whether participants who were led to expect anger to be useful would show more anger-consistent behavior. Anger increases risk-taking (e.g., Lerner & Keltner, 2001; Loewenstein & Lerner, 2003) and decreases prosocial be-

Figure 4. Intensity of anger (top) and happiness (bottom) experiences pre and post self-selected emotion induction as a function of expectancy condition and task relevance (Study 3). Error bars reflect $+/-1$ standard error of the mean.

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[7] When probed for suspicion, five participants were suspicious of the manipulation, but the results remained unchanged when they were excluded from the analyses.

havior (e.g., Van Kleef, De Dreu, & Manstead, 2004). Therefore, to test whether emotion-outcome expectancies have downstream effects on behavior, after they engaged in the emotion-inducing activities they selected, participants in Study 4 completed a gambling task that reflects risk-taking behavior (i.e., The Columbia Card Task; Figner, Mackinlay, Wilkening, & Weber, 2009). They also completed a hypothetical version of the dictator game, which reflects prosocial tendencies (Kahneman, Knetsch, & Thaler, 1986). To confirm that any biases in performance do not result from difficulties in understanding or computing probabilities, participants also completed a task that assesses understanding of probabilities (i.e., the Berlin Numeracy Test; Cokely, Galesic, Schulz, Ghazal, & Garcia-Retamero, 2012). We expected participants who were led to expect anger to be useful (vs. not) to lose more money on the risk-sensitive gambling task (despite being as good as other participants in computing probabilities) and to be less prosocial.

Method

Participants. Participants were 63 American undergraduate students at Boston College (52% female, mean age = 19.25 years). Participants received $10 for their participation and were awarded additional payment (ranging from $0 to $10) based on their performance in the gambling task, as described below.[8]

Procedure. Participants were told the study examined the impact of freedom of choice on performance. They were told they would pick music to listen to from a random selection and then be assigned to either a condition where they listen to their chosen music or to a condition in which they would listen to music they did not choose, then all participants would complete a task that assesses their professional potential. Participants were randomly assigned to either an anger = useful or an anger = irrelevant condition and read tips similar to those used in Study 3, except that they included references to tasks that participants actually completed later in the session (e.g., "a card task").

Participants provided demographic information and rated their concurrent emotions. They then listened to 20-s excerpts of the same music clips included in Study 2 and picked three clips to listen to before completing the aptitude task. All participants were told they had been assigned to listen to the music of their choosing, and listened to their selected music clips. Immediately after listening to the music, participants completed what they believed to be the "professional aptitude task," which included the Columbia Card Task, the Prosocial Task, and the Berlin Numeracy Task (see Materials section below). They then rated their concurrent emotions and completed a manipulation check. Finally, they rated the credibility of the tips they received earlier and were probed for suspicion.

Materials

Manipulation check. Participants rated the potential usefulness of various mental states, including *anger* and *irritation* (α = .73), for performance in the professional aptitude task, using a scale of 0 (= *not at all*) to 8 (= *extremely*).

Concurrent emotion ratings. Participants rated the same items as in Study 2 for anger (αs = .69 and .68, pre- and postmusic, respectively) and happiness (αs = .83 and .87, pre- and postmusic, respectively), which were interspersed among other unrelated items.

Columbia Card Task (CCT). To assess risk-taking behavior, we used the hot version of the Columbia Card Task (Figner et al., 2009). At the beginning of each trial, 32 cards are presented face down. Within a given trial, cards can be turned over as long as gain cards are encountered. Turning a gain card adds a prespecified gain amount to the trial payoff, and the player can voluntarily stop the trial at any point and claim the payoff. Once a loss card is encountered, however, the trial ends with a prespecified loss. On each trial, the number of hidden loss cards, the amount of gain per gain card, the amount of loss, and the current trial number are displayed on the top of the screen. The task is organized in a full factorial within-subject design, varying in the number of loss cards in the array (1 or 3), the amount of gain per gain card (10 or 30 points), and the amount of loss (250 or 750 points). In total, the task included 24 trials, organized in three blocks of the 2 × 2 × 2 factorial combination. The total score was computed by summing the total points gained across trials. For actual payoff, participants received 10 cents per point, for the amount they earned on three randomly selected trials.

Prosocial task. To assess prosocial judgments, participants answered three open-ended questions that described hypothetical variations of the dictator game (Kahneman et al., 1986), in which people receive some financial allocation and consider splitting it with another person. The questions were as follows: (1) "You got $10 to divide between yourself and a stranger. You are anonymous and the stranger has no say about the distribution. How many dollars will you give the stranger?" (2) "You got a bonus of $100 for getting a new client. How much would you be willing to share with your secretary, who did not receive a bonus, but helped you get the client?" and (3) "You and your two partners decide that each would put an anonymous envelope with a sum of money (between $50 and $500 each) toward a Christmas bonus for the 10 employees in the firm. How much will you put down?" To create a prosocial score responses to these questions were z-scored and averaged (α = .65).

Berlin Numeracy Test. The Berlin Numeracy Test (Cokely et al., 2012) assesses knowledge of probability and statistical computation. The test is interactive and includes questions on probability that increase or decrease in difficulty, as a function of performance. In the present sample, participants answered between 2 and 3 questions. Task scores ranged from 1 to 4, representing quartiles of risk literacy, as compared to college educated individuals.

Results

Manipulation check. A univariate ANOVA with Condition (anger = useful, control), Gender, and their interaction as predictors of the usefulness of anger confirmed that the effect of condition was significant, $F(3, 60) = 9.66$, $p = .003$. Participants in the anger = useful condition expected anger to be significantly more useful to performance ($M = 1.72$) than other participants ($M = .76$). No other effects were significant, $Fs < 1$.

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[8] One participant failed to complete the study due to a technical failure and was omitted from the analysis.

Expected usefulness and emotional preferences. To test whether the expectancy manipulation influenced what participants wanted to feel, we ran a univariate ANOVA, with Condition (anger = useful, control), gender and their interaction as predictors of the number of anger-inducing music clips selected. As expected, the effect of condition was significant, $F(3, 62) = 8.51$, $p = .005$. Participants in the anger = useful condition selected significantly more angry clips to listen to ($M = 1.13$) compared to other participants ($M = .58$). No other effects were significant, $Fs < 1$. This effect persisted when concurrent anger was included as a covariate in the analysis, $F(4, 61) = 9.89$, $p = .003$.

Expected usefulness and emotional experiences. To test whether our manipulation led to the regulation of emotional experiences, we ran a repeated-measures ANOVA, with Time (pre- and postmusic) and Emotion (anger, happiness) as within-subject factors and Condition and Gender as between-subjects factors. As predicted, we found a significant Emotion × Condition × Time interaction, $F(1, 57) = 4.36$, $p = .041$, $\eta^2 = .07$ (see Figure 6). Follow-up tests of simple effects confirmed that, compared to other participants, participants in the anger = useful condition became significantly angrier, $F(1, 57) = 7.47$, $p = .008$, $\eta^2 = .12$, and less happy, $F(1, 57) = 5.39$, $p = .024$, $\eta^2 = .09$, after listening to the music they selected. Participants did not differ in their emotional experiences before listening to the music, $Fs < 2.56$.

This interaction qualified a main effect of Emotion, $F(1, 57) = 124.08$, $p < .001$, $\eta^2 = .69$, such that people reported feeling more

Figure 6. Intensity of anger (top) and happiness (bottom) experience pre and post self-selected emotion induction as a function of expectancy condition (Study 4). Error bars reflect +/−1 standard error of the mean.

happy than angry ($Ms = 4.60$ and 1.74, respectively). It also qualified a significant Emotion × Condition interaction, $F(1, 57) = 5.928$, $p = .018$, $\eta^2 = .09$, such that across time points, participants in the anger = useful condition felt more anger and less happiness ($Ms = 1.99$ and 4.23, respectively) than those in the control condition ($Ms = 1.49$ and 4.98, respectively). There was also a significant Timing × Emotion interaction, $F(1, 57) = 6.13$, $p = .016$, $\eta^2 = .10$, such that across conditions, ratings of anger increased after listening to the music ($Ms = 1.57$ and 1.91, before and after listening to the music, respectively) whereas ratings of happiness decreased ($Ms = 4.80$ and 4.41, respectively). No other effects were significant, $Fs < 2.62$.

Expected usefulness and decision-making behavior. We expected participants who were led to expect anger to be useful to ultimately behave in a more anger-consistent manner. To test this hypothesis, condition and gender were entered as predictors of total payoff in the CCT in a univariate ANOVA. As expected, condition was a significant predictor of performance, $F(1, 62) = 4.15$, $p = .046$, such that participants in the anger = useful condition performed significantly worse than others ($Ms = -3198$ vs. -2160). To test whether results on the CCT were related to impaired probability computation skills, we tested whether our manipulation influenced performance on the Berlin Numeracy Task. A one-way ANOVA confirmed that it did not, $F < 1$.

Next, we tested whether the effects on the CCT were mediated by anger experience. When entered into separate linear regressions, Condition (1 = anger = useful, 0 = control) was a significant predictor of performance on the CCT, $t(61) = 2.05$, $s\beta = -.25$, $p = .045$, and of postmusic anger experience, $t(61) = 2.43$, $s\beta = .30$, $p = .018$, and anger experience was a significant predictor of performance on the CCT, $t(61) = 3.19$, $s\beta = -.38$, $p = .002$. When both condition and anger experience were entered as simultaneous predictors of performance, anger experience remained significant, $t(61) = 2.72$, $s\beta = -.34$, $p = .009$, whereas condition did not, $t < 1.12$. The mediation path was significant when assessed with bootstrapping methods, 95% CI = $[-954.66, -86.78]$. This demonstrates that the expectancy manipulation influenced emotion experience, which in turn, was associated with behavior.

We similarly tested whether our manipulation influenced prosocial judgments. To this end, condition and gender were entered as predictors of prosocial scores in a univariate ANOVA. As expected, condition was a significant predictor of prosocial judgments, $F(1, 62) = 5.44$, $p = .023$, such that participants in the anger = useful condition made significantly less prosocial judgments, compared to others ($Ms = -.21$ and $.21$, respectively). There was also an effect of gender, $F(1, 62) = 8.90$, $p = .004$, such that in our sample males were more prosocial than females ($Ms = .27$ and $-.27$, respectively). Next, we tested whether such effects were mediated by anger experience. When entered into separate linear regressions, Condition (1 = anger = useful, 0 = control) was a significant predictor of prosocial tendencies, $t(62) = 2.07$, $s\beta = -.26$, $p = .042$, as was anger experience, $t(62) = 2.11$, $s\beta = -.26$, $p = .039$. However, when both condition and anger experience were entered as simultaneous predictors, neither condition, $t(62) = 1.54$, $s\beta = -.20$, $p = .13$, nor anger experience, $t(62) = 1.58$, $s\beta = -.20$, $p = .12$, remained significant. The
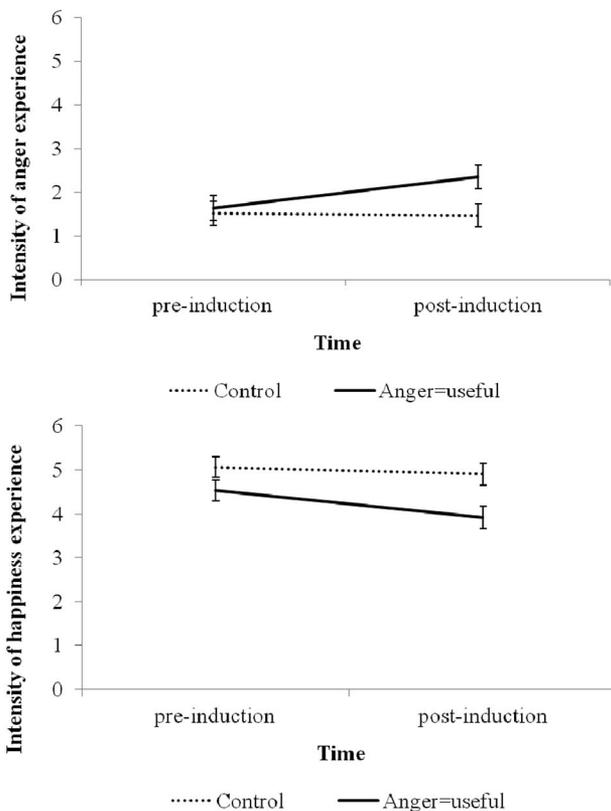
mediation path was not significant when assessed with bootstrapping methods, 95% CI = [–.28, .004].[9]

Discussion

The results of Study 4 replicated those of Studies 1–3, and demonstrated the downstream effects of expected usefulness of anger on decision-making behavior. Compared to participants in the control condition, participants who were led to expect anger to be useful behaved in a more anger-consistent manner, by taking greater financial risks and losing more money in a gambling task and by allocating smaller sums of money to others in hypothetical dictator game scenarios. It is interesting to note that whereas anger experience fully mediated the effect of expectancy on risk-taking, it did not mediate the effect on prosocial judgments, suggesting that there may be more than one mechanism by which the expected usefulness of emotions influences subsequent behavior.

Study 5

Expectancies are associations between a concept (e.g., running) and an attribute (e.g., healthy), which can form both at the conscious and the unconscious levels (Roese & Sherman, 2007). In Studies 1–4, we manipulated such associations indirectly by offering participants bogus input from peers. In Study 5, we manipulated such associations indirectly, by implicitly pairing emotion words with words that index high or low utility. In one condition, anger words (e.g., *fury*) were associated with high utility words (e.g., *helpful*). To test whether possible effects are due to the pairing of anger with high utility or to priming utility or anger per se, we included two additional conditions. In one condition, anger words were associated with low utility words (e.g., *harmful*), and in another condition, calmness words (e.g., *calm*) were associated with high utility words. Because priming effects can be relatively short in duration, and because preferences for activities in Studies 1–4 were not qualified by the type of activity rated, we used a shorter measure of emotional preferences in Study 5, focusing on preferences for emotion-inducing music. We expected participants in the anger = useful priming condition to show stronger preferences than other participants for anger-inducing music.

Method

Participants.   Participants were 60 American undergraduate students at Boston College (48.3% female, mean age = 19.37 years), who received $10 for their participation.

Procedure.   Participants were given a similar cover story as in Studies 2–3. Participants were assigned to one of three priming conditions and completed an implicit expectancy manipulation task (see Materials section). Participants indicated their preferences for music to listen to before the professional aptitude task and rated their concurrent emotions. Finally, participants were told the program was malfunctioning and they would not be able to complete the task. To confirm that learning took place outside of conscious awareness, participants were asked to recall as many word pairs as possible from the priming manipulation and then underwent a funnel debriefing procedure.

Materials

Implicit expectancy manipulation task.   The task was a modified version of that used by Meier, Wilkowski, and Robinson (2008). In the task, a word in white font (i.e., the prime) was presented at random on one of four quadrants of a black computer screen (i.e., upper-left, upper-right, lower-left, lower-right). Participants were asked to move their mouse cursor to the location of the word and press the left mouse button. Once participants pressed the left button, a new word appeared in green font (i.e., the target) for 1,250 ms in the same location and participants were asked to memorize it for a later memory test. Participants were randomly assigned to one of three conditions that varied by the prime-target combinations (see Table 1). Primes included 20 neutral words (e.g., *combine*, *card*, *nine*, *lesson*) that were identical across conditions and 20 additional words that varied by condition. In the anger = useful and anger = harmful conditions these prime words were anger-related (e.g., *rage*, *animosity*, *fury*, *wrath*), whereas in the calmness = useful condition these words were calmness-related (e.g., *calm*, *serenity*, *collected*, *quiet*). Targets included a different set of 20 neutral words (e.g., *enter*, *nation*, *avenue*) that were identical across conditions and 20 additional words that varied by condition. In the anger = useful and calmness = useful conditions these target words were related to usefulness (e.g., *good*, *effective*, *helpful*) and in the anger = harmful condition these target words were related to harm (e.g., *bad*, *damage*, *harmful*). Each word was presented six times.

Indicators of emotional preferences.   Participants rated the extent to which they wanted to listen to the angry and happy music clips that were included in Studies 2–4 (0 = *not at all*; 8 = *extremely*).

Concurrent emotion ratings.   Participants rated their current emotional experiences (0 = *not at all*; 8 = *extremely*), using the same items as in Studies 2–4 for anger (αs = .82) and happiness (αs = .73).

Results

To test whether the implicit manipulation of expectancies influenced what people wanted to feel, we ran a repeated-measures ANOVA, with Emotion (anger, happiness) as a within-subject factor, and Condition (anger = useful, anger = harmful, calmness = useful) and Gender as between-subjects factors. Consistent with our prediction, we found a significant Emotion × Condition interaction, $F(2, 57) = 3.29$, $p = .045$, $\eta^2 = .11$. As shown in Figure 7, participants in the anger = useful condition tended to express stronger preferences for anger-inducing music and weaker preferences for happiness-inducing music compared to participants in the other conditions. Follow-up tests of simple effects indicated that whereas participants in the anger = harmful and calmness = useful conditions reported significantly stronger preferences for happiness- than anger-inducing activities, $F(1, 54) > 7.40$, $ps < .01$, this was not the case for participants in the anger = useful condition, $F < 1.20$. Other tests of simple effects were not significant, $ds < .83$, $p > .099$.

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[9] When probed for suspicion, four participants were suspicious of the tips, but the results remained unchanged when they were excluded from the analyses.

Table 1

Frequencies of Prime and Target Stimulus Types by Implicit Priming Condition (Study 5)

Condition	Prime type	Target type	Number of trails
Anger = Useful	Anger	Useful	110
	Anger	Neutral	10
	Neutral	Useful	75
	Neutral	Neutral	45
Calmness = Useful	Calmness	Useful	110
	Calmness	Neutral	10
	Neutral	Useful	75
	Neutral	Neutral	45
Anger = Harmful	Anger	Harmful	110
	Anger	Neutral	10
	Neutral	Harmful	75
	Neutral	Neutral	45

This interaction qualified a main effect for Emotion, $F(2, 57) = 70.77$, $p < .001$, $\eta^2 = .47$, such that on average, participants preferred to listen to happiness-inducing music than to anger-inducing music (Ms = 3.19 and 1.53, respectively). We also found a significant Emotion × Gender interaction, $F(1, 59) = 6.35$, $p = .015$, $\eta^2 = .11$, such that on average females had stronger preferences for happy music than males (Ms = 3.39 and 2.97, respectively) and males had stronger preferences for angry music than females (Ms = 1.94 and 1.12, respectively).

As expected, conditions did not differ in their spontaneous experiences of anger or happiness following the manipulation, Fs < 1.18, indicating that the expectancy manipulation did not influence spontaneous emotional reactions and concurrent emotions did not drive our effects. The Emotion × Condition interaction reported above remained significant when concurrent emotions were included in the analysis.

Finally, participants were unaware of the contingencies in the implicit priming task. When asked to recall the word pairs that were presented in the task, the proportion of target pairs that was recalled was substantially lower than chance (3% in the anger = useful condition, 5% in the anger = harmful condition, and 9% in the calmness = useful condition). None of the participants expressed suspicion and none were able to guess the true purpose of the study.

Discussion

The findings of Study 5 demonstrate that the expected usefulness of anger can influence emotional preferences even when primed outside of conscious awareness. By including an anger = harmful condition, we demonstrated that the effect was not due to priming the concept of anger per se. By including a calmness = useful condition, we demonstrated that the effect was not due to priming the concept of usefulness per se. Instead, stronger preferences for anger were found only among participants who were primed with an association between anger and usefulness, in particular. Such effects were found even though participants were unaware of the associations that were primed. These findings also rule out the unlikely possibility that our prior effects reflected demand characteristics.

General Discussion

What people want to feel shapes the course of emotion regulation, and emotion regulation can shape emotional experiences and behavior. If a person does not want to feel angry, they will engage in activities that decrease anger, but a person who wishes to feel angry might act in ways that increase anger, and experience more anger, as a consequence. What people want to feel can thus influence not only how people feel, but how they subsequently behave. This investigation proposes and tests a causal model of what people want to feel. Building on expectancy-value models, we showed that the expected usefulness of emotions determined the extent to which people wanted to experience these emotions. This was the case even when the goal people pursued had little to do with the target emotion, even when people were entirely unfamiliar with the upcoming task, and even when people were consciously unaware of these expectancies. Thus, similar to the way people regulate their behavior, people may anticipate the likely outcomes of their emotions and seek out emotional experiences that they expect would be useful to them.

In five studies, we motivated participants to increase an unpleasant emotion simply by making them believe that it may be useful to them. This effect occurred when we manipulated the expected usefulness of anxiety (Study 1) and anger (Studies 2–5). The expected usefulness of anger influenced the emotion-inducing activities people selected and how angry and happy they felt upon engaging in these activities (Studies 3–4). These findings show that the expected usefulness of anger does not change the spontaneous experience of anger, but alters anger experience through active regulation. We further demonstrated that the expected usefulness of anger has downstream effects on anger-consistent behavior (Study 4), such that people who were led to expect anger to be useful lost more money in a gambling task and reported they would give less to others. Finally, we demonstrated that the expected usefulness of anger can motivate people to increase their level of anger even when it is activated outside of conscious awareness (Study 5). Taken together, these findings provide strong support for the validity of the expectancy-value model of emotion regulation.
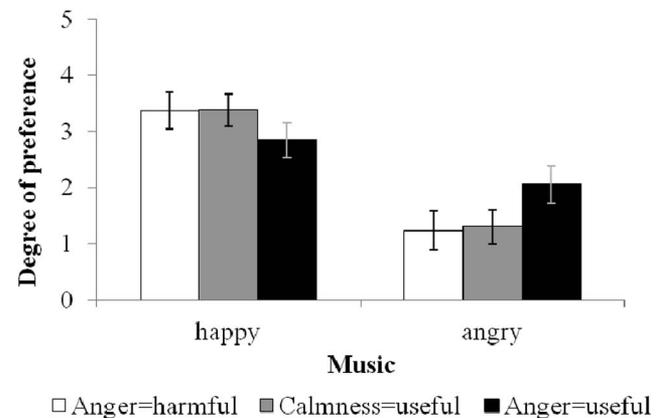

Figure 7. Preferences for happiness- and anger-inducing music as a function of implicit expectancy condition (Study 5). Error bars reflect +/−1 standard error of the mean.

Theoretical Implications

Our investigation shows that emotion-outcome expectancies can influence what people want to feel. Although what people wanted to feel was influenced by hedonic considerations, it was also influenced by the expected value of emotions. Our findings further demonstrate that the expected usefulness of emotions can be manipulated relatively easily, even when they contradict normative beliefs (i.e., anger is harmful and socially inappropriate; Fischer et al., 1999). Indeed, such expectancies may not require conscious awareness. The proposed model, therefore, can potentially inform the understanding of both adaptive and maladaptive emotion regulation. To the extent that people expect anxiety or anger to be useful in particular contexts, they might find themselves trying to increase or sustain such feelings, without necessarily knowing why.

Our findings also highlight the importance of emotional preferences in emotion regulation. What people want to feel shapes how people regulate their emotions and how they feel and behave, as a consequence (see also Tamir & Ford, 2012a). Although people may not always succeed in changing their emotions in the direction they desire, our findings show that by shaping what people want, emotion-outcome expectancies can set the course of emotion regulation. To the extent that people are able to regulate their emotions, emotion-outcome expectancies can ultimately shape subsequent emotional experiences.

This investigation has implications for research on emotion regulation, more generally. In particular, we join several lines of research that ground theory and practice in emotion regulation within the broader field of self-regulation (e.g., Webb, Schweiger Gallo, Miles, Gollwitzer, & Sheeran, 2012). Although emotion differs from behavior in many ways, it is likely that some principles and mechanisms that underlie self-regulation also underlie emotion regulation. One challenge for emotion regulation researchers, therefore, involves identifying mechanisms that are common to the regulation of emotion and behavior and detecting the unique challenges in applying these mechanisms to the emotion domain. Another important challenge involves identifying how and why the regulation of emotion differs from the regulation of behavior.

Finally, this investigation sheds some light on our understanding of emotion, more broadly. The current investigation demonstrates that emotions are not always automatic reactions to emotion-eliciting events. Instead, much like behavior, emotions can be cultivated at will in either relevant or irrelevant contexts, to optimize expected utility. From this perspective, deciding to go running and trying to get worked up may not be that different from each other.

Pragmatic Implications

Our research carries pragmatic implications. First, if expectancies influence what people want to feel, perhaps one way to promote adaptive emotion regulation is by educating people about the likely outcomes of various emotions. This could potentially motivate people to increase emotions that are likely to be adaptive or decrease those that are likely to be maladaptive in specific contexts. For example, if people expect anger to be harmful in interpersonal conflicts, they might be motivated to decrease their anger, which may result in less intense anger toward others.

Second, to the extent that emotion-outcome expectancies shape emotion regulation, cultivating more adaptive expectancies could ultimately promote more adaptive behavior. For example, leading people to expect anger to be harmful in interpersonal conflicts might eventually promote prosocial behavior toward others. In group contexts, the expectation that anger might be harmful could lead to less support of aggressive policies. It was recently demonstrated that using emotion regulation to decrease anger in a political context increased support of peaceful political action (Halperin, Porat, Tamir, & Gross, 2013). The current research suggests that whether or not people engage in such regulation outside the laboratory may depend on how useful they expect anger to be in the political context.

Future Directions

Future research should test the generalizability of the expectancy-value model of emotion regulation and its implications outside the laboratory. For example, are expectancies regarding the usefulness of different emotions equally malleable? If not, what are the factors that determine the ease with which expected usefulness of various emotions can be manipulated? Might some people learn certain expectancies more easily than others? Might there be ways of cultivating emotion-outcome expectancies that are more efficient than others and less resistant to change?

Another fascinating question involves the effect of emotion-outcome expectancies on behavior. Whereas the effects of the expected usefulness of anger on risk taking were mediated by anger experience, this was not the case for prosocial judgments. Instead, both the expected usefulness of anger and the subsequent experience of anger influenced prosocial judgments. This finding raises the possibility that emotion-outcome expectancies may have some influence on behavior that is not mediated by emotion experience. This possibility could be directly tested in future research.

Conclusion

People often feel that they are slaves to emotions that rise and fall as a function of emotion-eliciting events. When they recruit emotion regulation, it is typically in an attempt to decrease emotions is response to such events. This investigation demonstrates that there is much more to emotion regulation than that. People can strategically turn their emotions up or down when they expect that doing so would benefit them. What we want to feel, therefore, and how we regulate our emotions may crucially depend on what we expect emotions to do for us.

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