

Business or Pleasure? Utilitarian Versus Hedonic Considerations in Emotion Regulation

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It is widely accepted that emotions have utilitarian as well as hedonic consequences. Nevertheless, it is typically assumed that individuals regulate emotions to obtain hedonic, rather than utilitarian, benefits. In this study, the authors tested whether individuals represent the utility of pleasant and unpleasant emotions and whether they would be motivated to experience unpleasant emotions if they believed they could be useful. First, findings revealed that participants explicitly viewed approach emotions (e.g., excitement) as useful for obtaining rewards, but viewed avoidance emotions (e.g., worry) as useful for avoiding threats. Second, this pattern was replicated in implicit representations of emotional utility, which were dissociated from explicit ones. Third, implicit, but not explicit, representations of emotional utility predicted motives for emotion regulation. When anticipating a threatening task, participants who viewed emotions such as worry and fear as useful for avoiding threats preferred to engage in activities that were likely to increase worry and fear (vs. excitement) before the task. These findings demonstrate that utilitarian considerations play an important, if underappreciated, role in emotion regulation.

Keywords: emotion regulation, utility, hedonism, implicit processes

There is a general consensus that regardless of how they feel, emotions can offer a variety of utilitarian benefits (e.g., Clore, 1994; Frijda, 1994; Keltner & Gross, 1999; Levenson, 1999; Parrott, 2002). Nevertheless, research on emotion regulation has focused primarily on hedonic considerations (for similar arguments, see Erber & Erber, 2000). In other words, it is generally assumed that individuals regulate their emotions to increase pleasure or decrease pain (e.g., Larsen, 2000). Indeed, evidence to suggest otherwise is relatively limited (Parrott, 1993). The present investigation sought to demonstrate that utilitarian considerations do, in fact, play a role in emotion regulation.

In the sections below, we review some of the basic assumptions of research in self-regulation, according to which (a) individuals have explicit mental representations of utility, (b) individuals have implicit mental representations of utility that can be dissociated from explicit ones, and (c) mental representations of utility can motivate self-regulation, such that individuals may seek to engage in experiences that they believe are useful, even if they are unpleasant to experience. We then describe the present investigation, which tested whether these assumptions can be applied to the self-regulation of emotion.

Considerations of Utility in Self-Regulation

Individuals are often motivated to experience pleasure and avoid pain. They also seek to maximize desirable outcomes in the long term. Unfortunately, short-term pleasure and long-term utility do not always coincide. Research in self-regulation, therefore, is predicated on the assumption that it is sometimes necessary to forego immediate pleasure to maximize long-term utility (Barkley, 2004; Baumeister, 1998; Mischel, Shoda, & Rodriguez, 1989). For instance, an individual may be motivated to study all night for a difficult exam (i.e., forego short-term pleasure) to get a good grade on a test (i.e., obtain long-term utility). Such utilitarian considerations have been highlighted, for instance, in research on delay of gratification (Mischel et al., 1989), ego depletion (Baumeister, 2001), and attentional control (Rueda, Posner, & Rothbart, 2004).

What propels individuals to forego immediate pleasure? One of the basic prerequisites of utility-driven self-regulation involves a priori representations of expected outcomes. For example, to be motivated to study all night for a difficult exam, individuals must first know that doing so would increase their chances of getting a good grade. Many models of self-regulation highlight the role of perceived utility (e.g., Brunstein, 1993; Carver & Scheier, 1998; Mischel, Cantor, & Feldman, 1996). According to expectancy-value models, in particular, the likelihood of a behavior depends on a priori perceptions of its expected consequences (Fishbein & Ajzen, 1975).

Whereas the role of utility considerations has been well established in research on self-regulation in general, it has not been extensively explored in the particular subdomain of emotion regulation. This investigation, therefore, was designed to empirically test whether utility considerations play a role in emotion regula-

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tion. In other words, might individuals be motivated to experience even unpleasant emotions (e.g., worry or fear) if they expect such emotions to be useful in a given context? To examine this question, we began by testing whether individuals have explicit representations of the utility of emotions.

Explicit Versus Implicit Mental Representations of Utility

Utility-driven self-regulation is driven by mental representations of utility. Such mental representations, however, may or may not be accessible to conscious awareness. Individuals can learn about utility through explicit learning (e.g., hearing from one's parents that studying hard leads to better grades) or implicit learning (e.g., consistently getting better grades after studying hard for exams). Self-regulation, therefore, can be driven by explicit or implicit representations of utility (Ajzen & Fishbein, 2000).

Whereas explicit representations involve knowledge or beliefs and likely develop as a result of reflective operations, implicit representations involve implicit associations and develop as a result of repeated learning of contingencies (Strack & Deutsch, 2004). Explicit and implicit representations, therefore, do not necessarily reflect the same underlying construct (e.g., Devine, 1989; Dovidio, Kawakami, & Gaertner, 2002; Greenwald & Banaji, 1995; Wilson, Lindsey, & Schooler, 2000). In other words, individuals may sometimes seek to forego immediate pleasure to maximize utility that is represented either explicitly or implicitly.

In addition to testing explicit representations of emotional utility, therefore, this investigation tested whether individuals also have implicit representations of emotional utility. Furthermore, we sought to examine the predictive validity of both explicit and implicit representations of emotional utility. In other words, we sought to test whether individuals would be motivated to experience emotions if they mentally represented such emotions as useful at either an explicit or implicit level. Although emotions can offer a variety of utilitarian benefits (e.g., improve social communication and prepare the body for action), in this investigation we focused on the motivational utility of emotion.

Motivational Utility of Emotions and Emotion Regulation

Emotions are linked to two underlying motivational systems, one concerning approach and another concerning avoidance (Cacioppo, Gardner, & Berntson, 1999; Carver, 2001; Higgins, 1987; Lang, 1995; Watson, Wiese, Vaidya, & Tellegen, 1999). There is general agreement that emotions such as excitement or elation (i.e., approach emotions) are linked to an active approach system, whereas emotions such as worry or fear (i.e., avoidance emotions) are linked to an active avoidance system (Carver, 2001; Lang, 1995; Watson et al., 1999). Emotions such as sadness or calmness, on the other hand, may be linked to inactive motivational systems, although there is some debate over which emotions reflect inactive approach versus avoidance (see Carver, 2001).

More important in the present context, emotions can promote successful goal pursuits (e.g., Frijda, 1988; Panksepp, 1982). For instance, emotions can direct attention toward potentially threatening or rewarding information (Oatley & Johnson-Laird, 1987), instigate physiological responses that promote approach or avoidance behaviors (Frijda, 1988; Panksepp, 1982), and signal the effectiveness with which people are pursuing their goals (Carver,

2001). In particular, emotions such as excitement can promote the successful pursuit of rewards, and emotions such as worry and fear can promote the successful avoidance of threats. Emotions such as calmness or sadness, however, may not be involved in the active pursuit of approach or avoidance goals (Carver, 2001).¹

From a utilitarian perspective, therefore, it may be useful to increase approach emotions (e.g., excitement) when anticipating a rewarding situation and increase avoidance emotions (e.g., worry) when anticipating a threatening situation. We sought to assess whether individuals have explicit or implicit representations of this emotional utility. Consistent with the theoretical framework described above, we expected individuals to represent approach emotions as useful for approaching rewards and avoidance emotions as useful for avoiding threats.

Increasing excitement in anticipation of reward is consistent with both hedonic and utilitarian considerations, because excitement is both pleasant and useful. However, increasing worry in anticipation of threat is consistent with utilitarian considerations but inconsistent with hedonic ones because worry is useful but certainly not pleasant to experience. To contrast hedonic and utilitarian motives, we focused on emotion regulation in anticipation of a threatening situation. In particular, we sought to test whether explicit or implicit representations of emotional utility would predict motives for emotion regulation in anticipation of threat. If emotion regulation can be driven by utilitarian considerations even when they contradict hedonic ones, individuals who mentally represent worry and fear as useful for avoiding threats may be motivated to increase such emotions when anticipating a threatening situation. The present investigation directly tested this hypothesis.

The Present Investigation

This investigation was designed to address a set of novel questions. First, do individuals have explicit mental representations of the motivational utility of emotions? To address this question, participants rated the extent to which they believed that they should experience a specific emotion to successfully pursue either approach goals (e.g., get a good grade) or avoidance goals (e.g., avoid failure). We selected emotions to reflect the active and inactive poles of the approach and avoidance motivational systems, consistent with the dimensional scheme proposed by Carver (2001). We expected participants to endorse approach emotions (e.g., excitement) when considering approach goals and avoidance emotions (e.g., worry) when considering avoidance goals. Such a pattern would show that individuals acknowledge the context-specific utility of certain pleasant and unpleasant emotions.

Second, do individuals have implicit representations of the motivational utility of emotions? To address this question, we assessed the strength of the associative links between goals, emotions, and utility. Lexical decision tasks have been used to assess

¹ Although excitement is a pleasant emotion and worry is an unpleasant emotion, the link between emotion and motivation is not necessarily based on valence. In fact, some unpleasant emotions appear to be associated with approach, rather than avoidance, motivation (Carver, 2004; Harmon-Jones, 2003). In this investigation, excitement and worry were chosen to serve as prominent, but not exclusive, examples of emotions associated with approach and avoidance motivation.

associative links between constructs (Wentura, 2000) and have been successfully used with both single and double primes (e.g., Gawronski, Deutsch, & Seidel, 2005). Therefore, we used a modified version of the lexical decision task in which participants were first presented with a motivational context (e.g., “My goal is to avoid failure”). This goal prime was followed by an emotion prime (e.g., *worried*), which was followed by a target that reflected either high (e.g., *useful*) or low (e.g., *futile*) utility. We measured the speed with which individuals identified targets as words, under the assumption that faster responses reflect stronger associative links.

We expected individuals to view approach emotions (e.g., excitement) as useful in relation to an approach goal and avoidance emotions (e.g., worry) as useful in relation to an avoidance goal. Support for this prediction would be provided in a significant Goal \times Emotion Category \times Utility Target interaction, such that individuals are faster to respond to high-utility terms and slower to respond to low-utility terms when approach emotions follow approach goals and when avoidance emotions follow avoidance goals. We did not necessarily expect explicit and implicit representations of utility to be positively correlated (e.g., Dovidio et al., 2002; Rydell & McConnell, 2006). Dissociation between explicit and implicit scores would suggest that utilitarian considerations in emotion regulation can operate without conscious awareness.

Third, do mental representations of emotional utility predict emotion regulation, even when they contradict hedonic ones? To contrast hedonic and utilitarian motives, we assessed emotion regulation in anticipation of a potential threat. In particular, participants were falsely led to believe that they would complete an intelligence test in front of peers. In other words, we combined two tasks that have been used to induce threat in prior research: intelligence tests (e.g., Stucke & Sporer, 2002) and public speaking (e.g., Mansell, Clark, Ehlers, & Chen, 1999). We then assessed motives for emotion regulation.

One method used to demonstrate the operation of regulatory (vs. reactive) processes involves asking participants to rate their preferences for activities that vary in emotional consequences (e.g., Erber, Wegner, & Theriault, 1996). This method also emulates emotion regulation in daily life (e.g., Parkinson & Totterdell, 1999). To assess motives for emotion regulation in the present context, therefore, we asked participants to rate their preferences to engage in emotion-inducing activities (i.e., recalling past events and watching films) before the threatening task. Participants rated two different types of activities that tend to have emotion-consistent influences and are used to regulate emotions in daily life (e.g., Josephson, Singer, & Salovey, 1996). To verify that emotion regulation preferences were not driven by concurrent feelings, we measured participants' emotions after hearing about the anticipated threatening task (see Erber et al., 1996). We expected individuals who perceived emotions such as worry and fear to be useful for avoiding threats to prefer to engage in activities that are likely to increase worry and fear before they encounter a threatening context.

Method

Participants

Participants were 50 undergraduate students (25 women and 25 men; mean age = 20.64) who were paid \$8 for their participation.

Materials

Explicit emotional utility survey. Participants rated their agreement (1 = *strongly disagree*, 5 = *strongly agree*) with statements describing how they should feel to optimize the pursuit of specific goals (e.g., “In order to get a good grade on a paper, I should feel excited”). Participants were instructed to consider how they *should* feel to achieve a specific goal rather than how they *would* likely feel in that situation. The survey included eight avoidance goals (e.g., *prevent a disaster* or *avoid making a mistake*) and eight approach goals (e.g., *be successful* or *get a good grade*). Following Carver (2001), *worried*, *scared*, and *nervous* were chosen to reflect active avoidance; *excited*, *elated*, and *enthusiastic* were chosen to reflect active approach; *calm*, *relaxed*, and *peaceful* were chosen to reflect inactive avoidance; and *sad*, *gloomy*, and *depressed* were chosen to reflect inactive approach. Each of the 16 contexts was paired with one emotion, chosen at random, that reflects each of the four motivational dimensions, resulting in 64 items (e.g., “In order to get a good grade on a paper, I should feel excited”; “In order to prevent a disaster, I should feel worried”). The items were presented in a randomized order.

Ratings of situations that reflect the same motivational context were then averaged to create goal (i.e., approach or avoidance) \times emotion category (i.e., active avoidance, active approach, inactive avoidance, or inactive approach) utility scores. We computed explicit utility scores for each participant by averaging ratings for each Goal \times Emotion Category combination. For instance, an explicit worry-avoidance score reflects the extent to which individuals indicated that avoidance emotions (e.g., worry) should be experienced to obtain avoidance goals.

Implicit emotional utility task. Participants completed a lexical decision task in which each trial was composed of three sequential elements. First, a goal statement was presented in the center of the screen for 4 s, and participants were instructed to do their best to imagine themselves pursuing the goal. Second, immediately following the goal statement an emotion adjective was presented for 1 s at the center of the screen. Participants were instructed to attend to it without making a response. Third, a string of letters was presented in the middle of the screen, and participants were asked to hit the 1 key if the string was a word and the 9 key if it was not. The task included four avoidance goals (e.g., “My goal is to avoid failures”) and four approach goals (e.g., “My goal is to win”). Emotion primes included two active avoidance emotions (i.e., nervous or worried) and two active approach emotions (e.g., excited or elated). Targets included 16 low-utility words (e.g., *risky* or *disruptive*), 16 high-utility words (e.g., *helpful* or *essential*), and 32 nonwords (e.g., *moniph* or *corfert*). High- and low-utility words were equated for frequency, and all words were equated for length ($F < 2.0$). Each goal statement was paired with one active approach emotion and one active avoidance emotion. These context-emotion pairs were then paired with one high-utility word, one low-utility word, and two nonwords, resulting in 64 trials (e.g., “My goal is to avoid failures,” followed by *worried* followed by *helpful*). Context-emotion-utility pairings were randomized at the trial level, and trials were presented in a randomized order specific to the participant.

Preferences for emotion-inducing activities. To assess motives for emotion regulation after the anticipation of a threatening task, participants were asked to rate their preferences for two types

of emotion-inducing activities. First, participants indicated the extent to which they preferred to recall specific events from their past (e.g., “an event in which you were worried, concerning family”). Events varied as a function of emotion (i.e., worry, excitement, calmness, or sadness) and content (i.e., family, school, or friends). Ratings were averaged separately for each emotion across content domains (mean $\alpha = .63$). Second, participants read four bogus descriptions of scenes from films (e.g., “Town members are getting ready for a big annual celebration. Everyone is working together to prepare a big dance and a wonderful feast”) and rated the extent to which they preferred watching each scene before the threatening task (i.e., the anticipated intelligence test). These bogus film clips varied systematically by emotional content (i.e., worrisome, exciting, calm, or sad). All preference ratings (i.e., preferences to recall an event or watch a particular film) were made on a scale ranging from 1 (*not at all*) to 5 (*extremely*).

Online emotions. Participants rated their online feelings (1 = *not at all*; 5 = *extremely*). Consistent with Carver (2001), we averaged ratings of *excited* and *enthusiastic* to assess online excitement ($\alpha = .84$), *nervous* and *anxious* to assess online worry ($\alpha = .72$), *calm* and *relaxed* to assess online calmness ($\alpha = .60$), and *sad* and *depressed* to assess online sadness ($\alpha = .80$).

Procedure

The different elements in the procedure were presented in an order designed to minimize potential carry-over effects, consistent with the recommendations of Robinson and Neighbors (2006). In general, we first assessed motives for emotion regulation and then measured mental representations of utility, starting with implicit representations and followed by explicit representations. Specifically, participants were told that this was a study on memory, media, and intelligence. They completed an informed consent form and provided demographic information. To anticipate a potentially threatening task, participants were told that later in the session they would solve items from intelligence tests before a group of peers. Participants rated their online emotions and then indicated their preferences for activities to be performed before completion of the anticipated intelligence test. To examine participants' appraisals of the anticipated intelligence task, participants were then asked to rate how difficult they expected the task to be and how important it was for them to do well on the task. Following a 10-min break, participants completed the implicit utility task, followed by the explicit utility survey. Participants underwent a funnel debriefing procedure (Bargh & Chartrand, 2000) and were thanked for their participation.

Results

Explicit Representations of Emotional Utility

We expected individuals to perceive approach emotions as useful for pursuing approach goals and avoidance emotions as useful for pursuing avoidance goals, despite being unpleasant to experience. To test this hypothesis, we ran a repeated measures analysis of variance (ANOVA) in which utility ratings were predicted from two within-subject factors: goal (approach or avoidance) and emotion category (active avoidance, active approach, inactive avoidance, or inactive approach).² The repeated measures

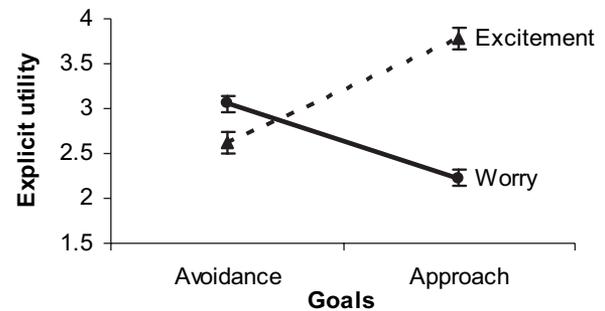


Figure 1. Mean explicit utility of approach emotions (e.g., excitement) and avoidance emotions (e.g., worry) in the context of approach and avoidance goals.

ANOVA yielded two main effects. First, there was a main effect for goal, $F(1, 49) = 30.65, p < .001$, such that participants were more likely to say that they should feel emotions when pursuing approach ($M = 2.51$) versus avoidance ($M = 2.34$) goals. Second, there was a main effect for emotion category, $F(3, 147) = 128.00, p < .001$, so that participants were more likely to say that they should feel active approach ($M = 3.28$) and inactive avoidance ($M = 3.20$) emotions in comparison to active avoidance ($M = 2.64$) and inactive approach ($M = 1.24$) emotions, which are generally less pleasant to experience.

More important, there was a significant Goal \times Emotion Category interaction, $F(3, 147) = 188.84, p < .001$. As shown in Figure 1, representations of emotional utility depended on the motivational context under consideration. Participants indicated that they should feel active approach emotions (e.g., excitement) to obtain approach, but not avoidance, goals. On the other hand, participants indicated that they should feel active avoidance emotions (e.g., worry) to obtain avoidance, but not approach, goals. Endorsement of inactive approach emotions (e.g., sadness) was low in both approach ($M = 1.22$) and avoidance ($M = 1.27$) contexts. On the other hand, endorsement of inactive avoidance emotions (e.g., calmness) was high in both approach ($M = 3.48$) and avoidance ($M = 3.10$) contexts, possibly reflecting hedonic preferences. These comparisons were confirmed in follow-up t tests, $t_s(49) > 2.1, p_s < .05$. Consistent with our hypotheses, the findings demonstrate that such explicit representations of the utility of emotions are largely consistent with theoretical formulations.

Implicit Representations of Emotional Utility

Accuracy rates in the lexical decision task were high ($M = 96\%$, $SD = 1.9$). To compute implicit utility scores, we excluded incorrect responses and responses to nonwords. Responses that were more than 2.5 standard deviations above or below the reaction time mean were replaced with these cutoff values (2% of total observations; Robinson & Neighbors, 2006). Scores were log-transformed to normalize the distribution (Ratcliff, 1993). Reac-

² In an additional repeated measures ANOVA, we tested the complete goal (approach vs. avoidance) \times emotion arousal (active vs. inactive) \times emotion valence (pleasant vs. unpleasant) design. The results of this analysis were consistent with the results reported in the text.

tion time means were computed separately for each of the eight cells of the goal (approach vs. avoidance) \times emotion category (approach vs. avoidance) \times utility (high vs. low) design.

We expected approach emotions to facilitate lexical decisions for useful words only when they were paired with approach (vs. avoidance) goals, and avoidance emotions to facilitate lexical decisions for useful words only when they were paired with avoidance goals. To test this prediction, we ran a repeated measures ANOVA with goal, emotion category, and utility as three within-subject factors. We found a significant main effect for goal, $F(1, 49) = 22.49, p < .001$, with faster responses following avoidance than approach goals ($M_s = 2.88$ and 2.93 , respectively); a main effect for emotion category, $F(1, 49) = 6.58, p < .05$, with faster responses following approach than avoidance emotions ($M_s = 2.90$ and 2.92 , respectively); and a main effect for target, $F(1, 49) = 9.99, p < .01$, with faster responses to high- versus low-utility targets ($M_s = 2.90$ and 2.92 , respectively).

More important, we found a significant Goal \times Emotion Category \times Utility interaction, $F(1, 49) = 9.67, p < .01$. To characterize the nature of this interaction, lexical utility scores were created by subtracting speed to high-utility targets from speed to low-utility targets, such that higher scores indicated greater implicit utility (i.e., faster responses to high-utility targets and slower responses to low-utility targets). For instance, an implicit worry-avoidance score reflects the extent to which individuals implicitly associated avoidance emotions (e.g., worry) with high utility in the context of avoidance goals.

As depicted in Figure 2, lexical utility priming scores favored approach emotions (e.g., excitement) over avoidance emotions (e.g., worry) in the context of approach-related goals. This was confirmed in a follow-up t test comparing the two types of utility scores, $t(49) = 2.45, p < .05$. Crucially, as shown in Figure 2, utility priming scores also favored avoidance emotions (e.g., worry) over approach emotions (e.g., excitement) in the context of avoidance-related goals. This too was confirmed in a follow-up t test comparing these two types of utility scores, $t(49) = 2.13, p < .05$. The cross-over nature of the interaction indicates that utility calculations may be based on the degree of match between the nature of the goal (approach vs. avoidance) and the nature of the emotion (approach related vs. avoidance related), consistent with the hypothesized motivational utility of emotions.

Representations of emotional utility were consistent in nature across explicit and implicit utility scores. Therefore, we sought to

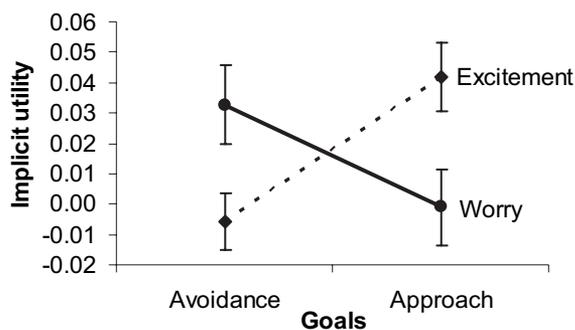


Figure 2. Mean implicit utility of approach emotions (e.g., excitement) and avoidance emotions (e.g., worry) in the context of approach and avoidance goals.

test the extent to which explicit and implicit scores assessed the same versus different underlying constructs. To test the correspondence between explicit and implicit utility scores of the same emotion-goal pair, we ran a series of simple correlations. We did not find significant correlations between explicit and implicit utility scores for worry in avoidance goals ($r = -.01$), excitement in approach goals ($r = .05$), and excitement in avoidance goals ($r = -.14$). Explicit and implicit representations of utility were negatively correlated in the case of worry in approach goals ($r = -.37, p < .05$), so that individuals who indicated that worry should be experienced to promote the pursuit of approach goals tended to have lower utility scores for worry in approach goals in the implicit utility task. Overall, explicit and implicit utility scores were not positively related, consistent with the idea that explicit and implicit measures tap distinct constructs (e.g., Devine, 1989; Dovidio et al., 2002).

Predicting Emotion Regulation Preferences

We hypothesized that mental representations of utility would predict online motives for emotion regulation. Specifically, we expected individuals who viewed worry and fear as useful for avoiding threats (i.e., higher in worry-avoidance utility) to be motivated to increase their level of worry and fear, despite their unpleasant nature, when anticipating a potentially threatening situation. To test this hypothesis, we entered the eight utility scores, summarized in terms of a 2 (explicit vs. implicit) \times 2 (approach vs. avoidance emotion) \times 2 (approach vs. avoidance goal) design, as between-subjects predictors of preferences to engage in emotion-inducing activities before the threatening task. Specifically, we centered all utility scores (Aiken & West, 1991) and entered them as simultaneous covariates in a repeated measures ANOVA, with activity type (memories vs. films) and preferred emotion (i.e., worry, excitement, calmness, or sadness) as two within-subject factors.

On average, when anticipating a threatening task, participants tended to prefer worrisome ($M = 2.93$) or exciting ($M = 2.72$) to sad ($M = 2.40$) or calm ($M = 1.79$) activities, as indicated by a main effect for preferred emotion, $F(1, 41) = 25.90, p < .05$. Follow-up t tests indicated that preferences for worrisome activities were significantly higher than preferences for sad or calm activities ($t_s > 4, p < .001$). Preferences for exciting activities were significantly higher than preferences for calm activities, $t(49) = 7.67, p < .011$, but not significantly different from preferences for sad or worrisome activities ($t_s < 1.8$). There was also a main effect for activity type, $F(1, 41) = 5.72, p < .05$, with stronger preferences for memories ($M = 2.60$) than films ($M = 2.32$), and a significant Activity Type \times Preferred Emotion interaction, $F(3, 123) = 5.81, p < .05$, indicating that preferences were stronger for worrisome than exciting activities when choosing films ($M_s = 3.18$ and 2.20 , respectively), but not memories ($M_s = 2.67$ and 3.24 , respectively).

Most important, however, and consistent with our predictions, preferences for emotion-inducing activities depended on preexisting mental representations of utility. Specifically, we found a significant Preferred Emotion \times Implicit Worry Avoidance interaction, $F(3, 123) = 6.00, p < .05$. None of the other effects in the analysis were significant. To examine the nature of this interaction, we ran a simple regression using implicit worry avoidance (i.e., the

strength of the association between worry and utility in the context of avoidance goals) to separately predict each of the emotional preferences. Because there was no effect for type of activity, we averaged across preferences for emotion-congruent memories and films. This analysis revealed that individuals who demonstrated strong associations between avoidance emotions (e.g., worry) and high utility in the context of avoidance goals were more likely to choose activities that would increase their level of worry before a threatening task ($\beta = 0.40, p < .05$). The remaining regressions did not yield significant results, although there was a marginal tendency of implicit worry avoidance to predict lower preferences for exciting activities ($\beta = -0.27, p = .06$).

To further clarify the nature of this relationship, we estimated activity preference means for individuals high (1 *SD* above the mean) and low (1 *SD* below the mean) in implicit worry avoidance, separately for worry-inducing and excitement-inducing activities (see Figure 3). Consistent with a utilitarian account of emotion regulation, participants who implicitly represented worry as useful for avoiding threats (i.e., who were higher in implicit worry avoidance utility) were more likely to choose activities that induce worry (vs. excitement) when anticipating a threatening task.

To test whether emotional preferences varied at both high and low levels of implicit utility, we compared the preferences for worry- and excitement-inducing activities in paired-sample *t* tests separately for individuals above and below the median on the implicit worry avoidance utility measure. As expected, preferences for worrisome (vs. exciting) activities were significantly higher among individuals who implicitly perceived worry as useful for the pursuit of avoidance goals (i.e., 1 *SD* above the implicit worry avoidance mean), $t(24) = 2.74, p < .05$. On the other hand, such preferences did not differ significantly among individuals who did not view worry as useful for avoidance goals (i.e., 1 *SD* below the implicit worry avoidance mean), $t(24) < 1$.

Testing Alternative Hypotheses

There are two alternative hypotheses that deserve consideration. First, individuals may prefer to engage in activities that are congruent with their concurrent feelings. For instance, individuals who became anxious on hearing that they were to complete an intelligence test perceived their anxiety as useful and preferred to engage in emotion-congruent (i.e., anxiety-inducing) activities. Second, perhaps participants who appraised the situation as threat-

ening were more willing to experience emotions congruent with such appraisals (i.e., avoidance emotions).³

To test whether online feelings accounted for the link between implicit perceptions of utility and emotional preferences, we ran a repeated measures ANOVA predicting preferences for emotion-inducing activities from implicit utility scores, including centered online emotion ratings (i.e., worry, excitement, sadness, and calmness) as covariates. The main findings remained unchanged, and none of the effects with online emotions were significant ($F_s < 3.0$), suggesting that concurrent feelings did not account for the link between implicit utility scores and emotion regulation.

Considering situational appraisals, 96% of our participants expected the intelligence task to be at least somewhat effortful ($M = 2.72, SD = 0.73$), and 84% said that it was at least somewhat important for them to do well on the task ($M = 2.66, SD = 1.15$). Although these ratings confirmed that our manipulation was successful, there was some variability in situational construals. To test whether our findings depended on situational appraisals, we ran a repeated measures ANOVA predicting preferences for emotion-inducing activities from implicit scores, including centered ratings of either expected effort or importance as covariates. As expected, the findings remained unchanged, and none of the effects involving appraisal variables were significant ($F_s < 2.3$), indicating that situational appraisals did not account for the link between implicit utility scores and preferences for emotion-inducing activities.

Discussion

The present results document robust evidence for a utility principle in emotion regulation. By focusing on a case in which emotion regulation is inconsistent with short-term hedonic goals, our findings demonstrate that individuals may seek to regulate their emotions for utilitarian reasons, even when such regulation efforts induce unpleasant emotions. This investigation further suggests that such utility-driven emotion regulation may depend on implicit representations of emotional utility.

Role of Utility in Emotion Regulation

Although emotion regulation involves the increase or decrease of either pleasant or unpleasant emotions (Gross, 1999), empirical research in emotion regulation has focused largely on cases in which individuals seek to increase pleasant or decrease unpleasant emotions. This biased empirical focus likely contributes to the assumption that emotions are regulated primarily for their short-term hedonic consequences (e.g., Larsen, 2000; Tice & Bratslavsky, 2000). The present findings clearly demonstrate that emotion regulation is not driven by hedonic considerations alone (see also Campos, Frankel, & Camras, 2004; Erber & Erber, 2000; Parrott, 1993; Tamir, 2005). Instead, we demonstrate that when emotions are considered useful, individuals seek to experience them even if they are unpleasant.

By highlighting utilitarian considerations in emotion regulation, our findings demonstrate that emotion regulation falls under the broader rubric of self-regulation. Much of the research on self-

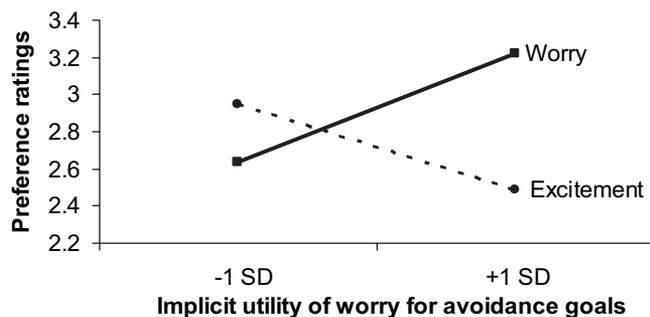


Figure 3. Estimated mean preferences for worry- and excitement-inducing activities as a function of high versus low implicit utility of worry in the context of avoidance goals.

³ We thank an anonymous reviewer for highlighting these alternative hypotheses.

regulation has focused on the assumption that individuals are willing to forego immediate pleasure to obtain long-term utility (e.g., Mischel et al., 1989). Such self-regulatory preferences are guided by mentally represented utility (Fishbein & Ajzen, 1975). The present findings demonstrate that the same assumptions apply to the self-regulation of emotion.

First, we demonstrated that individuals have both explicit and implicit representations of emotional utility such that approach emotions (e.g., excitement) were associated with greater utility when pursuing approach goals, whereas avoidance emotions (e.g., worry, anxiety) were associated with greater utility when pursuing avoidance goals. Such patterns were not only consistent across explicit and implicit measures, they were also consistent with theoretical formulations of emotion and motivation (e.g., Carver, 2001; Watson et al., 1999).

Second, the perceived utility of emotions predicted emotion regulation preferences, even when such preferences involved unpleasant emotions. Our participants chose to feel unpleasant emotions when they were perceived as useful for an instrumental goal. Individuals who implicitly associated worry with high utility in the context of avoiding threats sought to increase their level of worry before an anticipated threat. Consistent with outcome-expectancy models (e.g., Fishbein & Ajzen, 1975), emotional preferences depended on representations of emotional utility. In fact, neither online emotions, measured after the introduction of the anticipated threat, nor situation-related appraisals could account for the obtained emotional preferences. Instead, emotion regulation preferences were linked to the perceived utility of worry in threatening contexts.

Explicit and Implicit Processes in Emotion Regulation

Emotion regulation involves both explicit and implicit mechanisms (e.g., Mauss, Evers, Wilhelm, & Gross, 2006). Furthermore, emotional learning occurs both explicitly and implicitly (Rueda et al., 2004). Such explicit and implicit mental processes can be independent of one another (Dovidio et al., 2002; Rydell & McConnell, 2006; Wilson et al., 2000). Similarly, the present investigation demonstrates that representations of emotional utility exist at both explicit and implicit levels and that such representations are largely independent of one another. The possibility that explicit and implicit representations of utility tap different underlying mechanisms (Strack & Deutsch, 2004) seems consistent with available research. Nonetheless, further research is needed to confirm that the obtained dissociation is not the result of certain moderating factors (Nosek, 2005).

We found that implicit utility (i.e., stronger associations between emotions and high utility in certain motivational contexts) predicted emotion regulation preferences even when explicit representations did not. This suggests that individuals may not always have conscious access to their motives for emotion regulation. What might underlie such effects? One possibility is that explicit and implicit measures predict different types of outcomes. For instance, some have argued that implicit measures are stronger predictors of spontaneous behaviors, whereas explicit measures are stronger predictors of deliberate behaviors (Dovidio et al., 2002; Wilson et al., 2000).

Although we did not directly manipulate the spontaneous versus controlled nature of emotion regulation, at the end of the study

participants were asked to indicate what influenced their preferences for memories and films. None of the participants linked their preferences to the anticipated task. Furthermore, of all the participants, only 1 person mentioned that these activities might influence his or her current feelings (i.e., "I chose happy events to maintain happy current state"). The fact that participants were unaware of the link between their preferences and the anticipated threat suggests that our measure may reflect relatively spontaneous emotion regulation (see also Tamir, 2005). Future research should include both spontaneous and controlled measures of emotion regulation to test whether these can be uniquely predicted from implicit and explicit representations of emotional utility, respectively.

Future Directions

The present findings demonstrate that representations of the utility of emotions can predict emotion regulation preferences. Of course, to show that such preferences are utility driven rather than hedonically driven, we focused on emotion regulation when anticipating threats. However, we believe that pleasure and utility in emotion are largely independent of one another. Thus, both pleasant and unpleasant emotions can be either useful or useless, depending on the context at hand. In the future, it will be important to extend the current investigation in several ways.

First, it is important to explore the role of utility representations in the regulation of other emotions in other motivational contexts. For instance, emotion regulation before threat could be contrasted with regulation in anticipation of reward. Might the perceived utility of approach emotions in the pursuit of approach goals predict preferences for excitement before a rewarding activity?

Second, although preferences for emotion-inducing activities likely reflect motives for emotion regulation, future research should examine utility-driven emotion regulation as it unfolds over time. To the extent that knowledge about emotional utility is relatively valid, individuals who increase their level of anxiety before confronting a threat may indeed be more successful at avoiding it. Future research, therefore, should examine the extent to which utilitarian (vs. hedonic) emotion regulation leads to desirable effects on subsequent performance.

Finally, research on self-regulation demonstrates that immediate pleasure often conflicts with long-term utility. Unfortunately, individuals often succumb to temptation, choosing immediate pleasure over long-term gain. The current investigation raises the possibility that when regulating their emotions, some individuals may be tempted to increase pleasant emotions, even when they might be harmful, or decrease unpleasant emotions, even when they might be useful. Exploring the potential interplay of utilitarian and hedonic considerations in emotion regulation and their implications for everyday life is an important endeavor for future research.

Conclusions

A basic assumption in self-regulation is that individuals often try to put business (i.e., long-term utility) before pleasure (i.e., immediate gratification). In this respect, self-regulation involves the exercise of control over oneself in the service of important personal goals. The current research suggests that such assump-

tions, although largely unexplored in this domain, also inform research on emotion regulation. If unpleasant emotions can promote the pursuit of certain goals, then people may sometimes choose to feel unpleasant emotions to achieve their goals (Parrot, 1993; Tamir, 2005). Our study provides critical data in support of this perspective by showing that people perceive certain unpleasant emotions (e.g., worry) as useful for avoiding threats. Furthermore, the more individuals view these unpleasant emotions as useful for avoiding threats, the more likely they are to choose to experience them when anticipating threats. Thus, utility can sometimes trump pleasure in emotion regulation.

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Received August 15, 2006

Revision received March 1, 2007

Accepted March 6, 2007 ■