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Abstract

What motivates individuals to regulate their emotions? One answer – highlighted in emotion regulation research – is short-term hedonic goals (e.g., feel pleasure). Another answer, however, is instrumental goals (e.g., perform certain behaviors). We suggest that both answers have merit. To demonstrate the role instrumental goals may play in emotion regulation, we contrasted short-term hedonic motives and instrumental motives by testing whether individuals were motivated to experience a potentially useful, albeit unpleasant, emotion. We found that (a) individuals preferred activities that would increase their level of anger (vs. excitement) when anticipating confrontational, but not non-confrontational, tasks and that (b) anger improved performance in a confrontational, but not a non-confrontational task. These findings support a functional view of emotion regulation, and demonstrate that in certain contexts, individuals may choose to experience emotions that are instrumental, despite short-term hedonic costs.

Hedonic and Instrumental Motives in Anger Regulation

One prominent feature of emotions is their hedonic tone - some emotions are pleasant, others are unpleasant. Because individuals prefer pleasure over pain (Freud, 1926/1959), they are generally motivated to increase pleasant and decrease unpleasant emotions. Emotions, however, are more than feelings. They have instrumental aspects (Frijda, 1986). This suggests another motive for regulating emotions, namely to increase useful and decrease harmful emotions.

This investigation tests whether instrumental motives for regulating emotions can trump short-term hedonic motives by pitting these two motives against one another. To do this, we asked whether individuals would choose to experience an unpleasant emotion (i.e., anger), when it is likely to be useful in an upcoming task.

Why Do Individuals Regulate Their Emotions?

Emotion regulation refers to individuals' attempts to influence their emotions (Gross, 2002). It is generally assumed that individuals seek to increase pleasant and decrease unpleasant emotions (Larsen, 2000). Self-regulation, however, is not driven exclusively by short-term hedonic considerations. Indeed, individuals often forego immediate pleasure to maximize long-term utility (Mischel, Shoda, & Rodriguez, 1989). Such instrumental motives might play a role in the regulation of emotion (Parrott, 1993). Therefore, we endorse an instrumental approach to emotion regulation, according to which preferences for emotions depend upon the balance of hedonic and instrumental benefits of emotions in a given context (Tamir, 2005; Tamir, Chiu, & Gross, 2007).

The hedonic and instrumental benefits of emotions are separable. Both pleasant

and unpleasant emotions can be useful in specific contexts (e.g., Izard, 1990; Keltner & Gross, 1999). Individuals may be motivated to increase pleasant emotions for either their short-term hedonic or their instrumental benefits. However, individuals may be motivated to increase unpleasant emotions primarily for their instrumental benefits.

Empirical support for the idea that emotion regulation can be motivated by instrumental considerations is currently scarce. Therefore, this investigation examines whether individuals can be motivated to increase their experience of potentially useful, yet unpleasant, emotions. Specifically, we tested whether individuals seek to increase their anger when expecting to engage in a task in which anger might be helpful.

Hedonic and Instrumental Aspects of Anger

Anger is an unpleasant emotion. It arises when individuals feel they are kept by another's improper action from attaining a goal, yet feel capable of altering the situation (Frijda, 1986). To promote the defense of one's resources, anger increases aggression (Frijda, 1986), which propels the person to confront others. Anger, therefore, promotes confrontational behaviors (Parrott, 2001).

Although anger often leads to harmful consequences, it is sometimes useful (Averill, 1983; Tiedens, 2001). The instrumental implications of anger depend on the context in which it is experienced (Bonanno, 2001). Anger may offer instrumental benefits when one pursues confrontational goals. However, anger is unlikely to offer instrumental benefits when one pursues non-confrontational goals.

Building on these assumptions, we considered two interrelated questions. First, might individuals be motivated to increase their anger when anticipating confrontational, but not non-confrontational, tasks? Second, would anger carry instrumental implications

for performance in confrontational vs. non-confrontational tasks? We expected individuals to try to increase their level of anger, despite its unpleasant nature, when they expect a confrontational, but not a non-confrontational, task. We believed that such preferences would be driven by instrumental considerations, as reflected in subsequent performance. We expected anger to improve performance in the confrontational, but not non-confrontational, task.

The Current Investigation

To test whether motives for emotion regulation depend on anticipated performance contexts, we examined the extent to which individuals preferred to engage in activities that are likely to induce certain emotions (Erber, Wegner, & Therriault, 1996; Tamir, 2005). Because anger is unpleasant and arousing, we compared preferences for anger with preferences for excitement, which differs from anger in pleasantness, but is equivalent in arousal.

Participants were told that before playing a computer game they would engage in another activity. They were then given descriptions of games they would presumably play, which differed in their confrontational nature. After reading each description, participants were given examples of activities they could perform before playing the game and rated the extent to which they would prefer to engage in each activity. To ensure that emotional preferences were motivated by the emotional tone of the activity rather than the activity itself, all participants rated their preferences for two distinct types of activities – namely, listening to music and recalling past events. We expected participants to have stronger preferences for all anger- (vs. excitement-) inducing activities when considering confrontational, but not non-confrontational, games.

We also tested the effect of anger on game performance. Following an emotion (i.e., anger, excitement, or neutral) induction, participants played a confrontational and a non-confrontational computer game. To control for individual differences in baseline performance, participants played the game before and after the manipulation. We expected participants in the anger condition to perform better in the confrontational, but not the non-confrontational, game. Furthermore, we expected these performance patterns to be anger-specific (e.g., as indicated in increased aggression).

Method

Participants

Eighty two male undergraduates (mean age = 19.99) received research credits or \$20 for participating.¹

Materials

Game scenarios. A pilot test ($N = 10$) confirmed that two confrontational (e.g., (e.g., the goal is to strike members of a drug cartel) and two non-confrontational (e.g., the goal is to spread peace and rebuild an empire) game scenarios were equivalent in how engaging and interesting they seemed, $F_s < 1$. The confrontational games were viewed as more confrontational ($M = 7.75$) than the others ($M = 2.65$), $F(1, 9) = 87.02$, $p < .05$.

Music. We selected 8 exciting (e.g., BimBamBum by Xavier Cugat), 8 neutral (e.g., Lava by Boozoo), and 6 angry (e.g., Inquisition by Apocalyptica) instrumental musical segments, that taken together were equivalent in length and familiarity. A pilot test ($N = 9$) confirmed that participants experienced greater excitement when listening to exciting ($M = 4.01$) compared to angry ($M = 1.52$) and neutral ($M = 2.98$) segments, $t_s > 2.89$, $p < .05$, and greater anger when listening to angry ($M = 3.60$), compared to exciting,

($M = .06$), and neutral ($M = .34$) segments, $t_s > 6.01$, $p < .05$. Participants rated angry and exciting music as equally arousing and more arousing than neutral music ($M_s = 5.04$, 4.73, and 3.50, respectively), $t_s > 2.20$, $p < .05$. Angry music ($M = 2.85$) was rated as less pleasant than exciting ($M = 5.31$) and neutral ($M = 4.98$) music, $t_s > 5.91$, $p < .05$.

Music selection task. In each trial, participants read a game scenario, listened to music for 30 seconds, and rated the extent to which they prefer listening to this music before playing the game (1 = Not at all; 7 = Extremely). Each scenario was paired with 3 angry, 3 exciting, and 3 neutral musical segments in a random order, resulting in 36 selections.

Recall selection task. In each trial, participants read a game scenario, followed by a description of an event (e.g., “An event in which you were angry, involving friends”), and rated the extent to which they prefer recalling such an event before playing the game (1 = Not at all; 7 = Extremely). Following Tamir (2005), events varied by emotional tone (i.e., angry, exciting, neutral) and content (i.e., involving friends vs. strangers). Scenarios and events were fully crossed and presented in a random order, resulting in 24 selections.

Computer games. *Soldier of Fortune*, a 1st-person shooter, served as a confrontational task. *Diner Dash*, a game in which players guide a waitress serving customers, served as a non-confrontational task. Both games lasted 5 minutes. A pilot test ($N = 9$) confirmed that the games were equally interesting, engaging, and difficult, $t_s < 1.67$. Number of enemies killed and number of deaths by enemies were recorded in *Soldier of Fortune*. Total score was recorded in *Diner Dash*.

Emotion ratings. Participants rated how angry, excited, pleasant, and active they felt (1 = not at all, 5 = extremely) when listening to the music rated in the music selection

task.

Procedure

Participants were told that the experiment concerned the relation between memory and computer games and that they would either recall events from their past or perform an unrelated activity (e.g., listen to music) before playing a game. Participants completed the music and recall selection tasks and were then randomly assigned to an angry, exciting, or neutral music condition and to a game order condition (i.e., confrontational first and non-confrontational second or vice versa). Participants played one round of the first game for 5 minutes. Afterwards, they listened to music for 3 minutes and continued listening for 5 minutes while playing another round. Participants proceeded to play the second game following the same procedure. Finally, participants rated their emotional reactions to the music.

Results

Emotional Preferences

We predicted that participants would prefer anger-inducing (vs. exciting or neutral) activities when expecting a confrontational (vs. non-confrontational) game. Therefore, we averaged across preferences for the same type of activity (i.e., music or memory) for either confrontational or non-confrontational games. We ran a repeated-measures ANOVA to test the Game (Confrontational vs. Non-confrontational) x Emotion (Exciting, Neutral, Angry) x Activity Type (Music, Memory) within-subject design. As expected, we found a significant Emotion x Game Type interaction, $F(2, 162) = 192.89, p < .001$. Preferences for anger-inducing activities were higher than exciting and neutral activities when participants anticipated confrontational games (see Figure 1). However, a

reverse pattern was found when participants anticipated non-confrontational games. The Emotion x Game Type x Activity Type interaction was not significant, $F < 1.01$, demonstrating that preferences for emotion-inducing activities depended on the emotional tone, rather than the type, of the activity. This was confirmed in t -tests of simple effects, $ts > 4.20$, $ps < .05$, $p_{repS} > .99$.

Thus, before completing a task in which anger could be useful, individuals sought to increase their anger by engaging in anger-inducing activities rather than pleasant ones. Such preferences were reversed when individuals expected a task in which anger was unlikely to be useful.

Effects of Emotion on Performance

Confirming that music elicited the intended emotions during task performance, repeated-measures ANOVAs revealed that participants found the angry music to be less pleasant than the neutral and exciting music ($M_s = 1.67, 3.09$, and 3.16), more anger-inducing ($M_s = 2.63, 1.30$ and 1.18), and less exciting ($M_s = 2.43, 2.63$ and 3.44), $ts < 2.7$, $ps < .05$, $p_{repS} > .96$. Angry and exciting music was more arousing than neutral ($M_s = 3.22, 2.41$, and 3.56), $ts > 3.98$, $p < .05$, $p_{repS} > .99$.

We created an overall performance score in the confrontational game by subtracting number of deaths from number of kills within each round. We standardized total performance scores in each round within each game. Because pre- and post-manipulation performances were significantly correlated ($r_s = .54$ and $.63$, $p < .05$, in the confrontational and non-confrontational games), we created residual performance scores by predicting post- from pre-manipulation performance within each game and subtracting

predicted from actual scores (Robinson, in press). This resulted in separate residual scores for overall performance in each game.

These scores were entered in a repeated-measures ANOVA, in which Game (Confrontational vs. Non-confrontational) was a 2-level within-subject variable and Emotion Condition (Anger, Neutral, Excitement) was a between-subjects variable.² As expected, we found a significant Game x Emotion Condition interaction, $F(2, 79) = 5.02$, $p < .01$. Tests of simple effects confirmed that participants in the anger (vs. excitement) condition performed significantly better in the confrontational game, $t(79) = 2.47$, $p < .05$, $p_{rep} = .94$. Subsequent analyses revealed that the impact of emotion condition was limited to number of kills, which were significantly higher in the anger condition, $t(79) = 2.30$, $p < .05$, $p_{rep} = .92$. The number of deaths did not vary as a function of emotion condition, $ts < 1.10$. Contrary to performance in the confrontational game, performance in the non-confrontational game did not vary as a function of emotion condition, $ts < 1.74$ (see Figure 2).

Thus, participants chose to increase their anger (vs. excitement) before playing a confrontational game, and doing so improved their performance. The benefit to performance was anger-specific, as indexed by increased aggression.

Discussion

Discussions of emotion regulation often assume that individuals always want to increase pleasure and decrease pain (e.g., Larsen, 2000). This investigation supports an alternative view, according to which individuals want to experience emotions not only for their short-term hedonic benefits, but also for their instrumental benefits (Bonanno, 2001; Parrott, 1993; Tamir, 2005; Tamir et al., 2007). Specifically, we demonstrated that

individuals are sometimes motivated to increase their anger before engaging in confrontational tasks, despite the fact that such activities are less pleasant than alternative ones.

We further demonstrated that these emotional preferences were, in fact, associated with instrumental benefits in confrontational contexts. Angry (vs. excited) participants performed better in a confrontational task. This enhanced performance was specific to the confrontational (vs. non-confrontational) task and to outcomes associated with increased aggression (i.e., kills but not deaths). Together, these findings demonstrate that individuals can be motivated to experience even unpleasant emotions in the short-term, if such emotions offer instrumental benefits.

A Functional Approach to Emotion Regulation

Our findings are consistent with a functional approach to emotion regulation (Tamir, 2005; Tamir et al., 2007), according to which emotional preferences depend on the goals (e.g., feel good, perform well) individuals pursue in a given context. Our findings make important contributions to the limited empirical evidence that is available regarding emotion regulation motives. We demonstrate that individuals can be motivated to increase unpleasant emotions, rather than decrease pleasant emotions (e.g., Erber et al., 1996; Wood, Heimpel, & Michela, 2003) or maintain unpleasant emotions (e.g., Heimpel, Wood, Marshall, & Brown, 2002). We also show that such preferences are linked to instrumental motives, rather than motives to neutralize feelings (Erber et al., 1996) or experience trait-consistent states (e.g., Heimpel et al., 2002). In summary, we demonstrate that utility can sometimes trump pleasure in motivating emotion regulation.

The Regulation of Unpleasant Emotions

Unpleasant emotions are important predictors of mental health. It is not surprising, therefore, that emotion regulation research has emphasized the importance of decreasing unpleasant emotions. Our findings, however, suggest that experiencing some degree of negative emotions in specific contexts may be adaptive, if they promote goal pursuits (Tamir & Diener, in press).

Anger may be instrumental in some contexts (e.g., when fighting with others over limited resources) and harmful in others (e.g., when cooperating with others and sharing limited resources). In this investigation, we created artificial contexts in which anger could be relatively more (vs. less) instrumental. Given the uncertain ecological validity of these contexts, future research should test the present hypotheses in the context of daily life (e.g., aggressive sports).

Footnotes

¹ Only male participants were included, because a pilot study revealed that males had greater experience than females playing computer games.

² A preliminary analysis included Game Order as another between-subjects variable. Because effects involving Game Order were not significant, $F_s < 2$, we collapsed across it.

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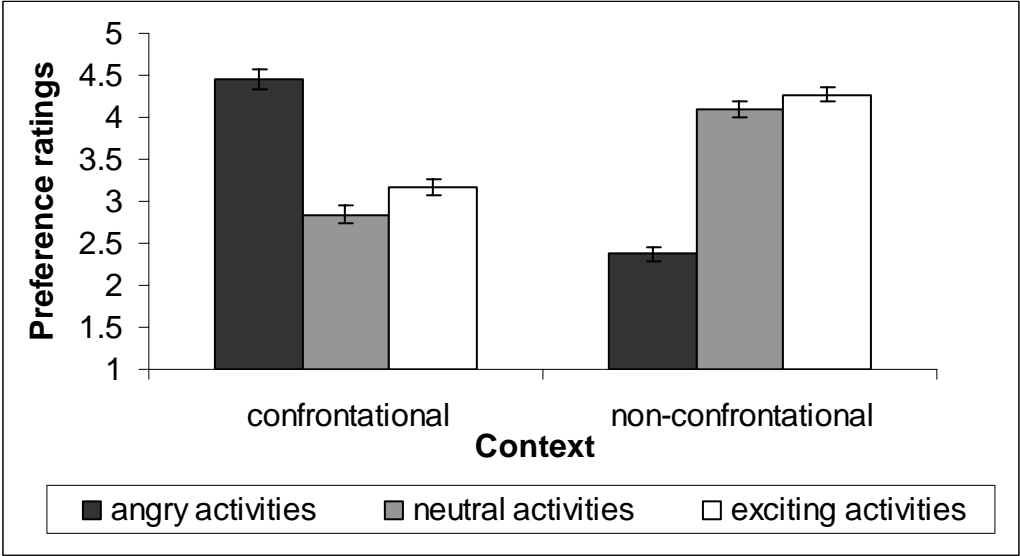
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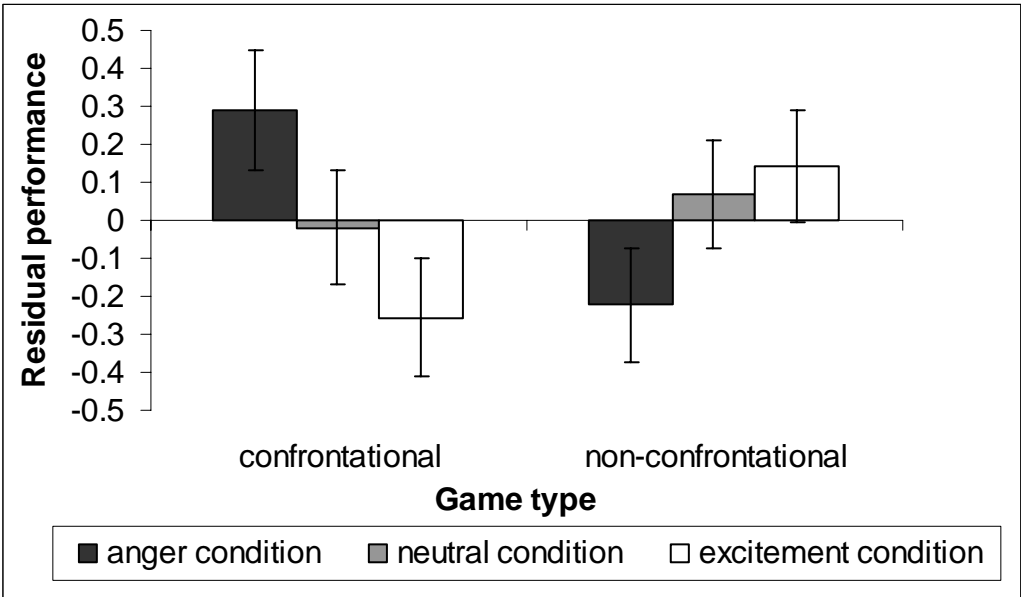
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Figure Captions

Figure 1. Preferences for anger-, neutral, and excitement-inducing activities (i.e., music and recall) when anticipating confrontational and non-confrontational tasks.

Figure 2. Residual performance in a confrontational and a non-confrontational computer game, as a function of emotion condition.





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