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Psychological Science 2008 19: 324
DOI: 10.1111/j.1467-9280.2008.02088.x

Research Report

Hedonic and Instrumental Motives in Anger Regulation

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ABSTRACT—*What motivates individuals to regulate their emotions? One answer, which has been highlighted in emotion-regulation research, is that individuals are motivated by short-term hedonic goals (e.g., the motivation to feel pleasure). Another answer, however, is that individuals are motivated by instrumental goals (e.g., the motivation to perform certain behaviors). We suggest that both answers have merit. To demonstrate the role instrumental goals may play in emotion regulation, we pitted short-term hedonic motives and instrumental motives against each other, 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 (but not their level of excitement) when they were anticipating confrontational, but not nonconfrontational, tasks and that (b) anger improved performance in a confrontational, but not a nonconfrontational, 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.*

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.

The investigation reported in this article tested whether instrumental motives for regulating emotions can trump short-term hedonic motives. We pitted instrumental and hedonic motives against each other, asking whether individuals would choose to experience an unpleasant emotion (i.e., anger) when it was likely to be useful in an upcoming task.

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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 forgo 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 on the balance of their hedonic and instrumental benefits 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 examined whether individuals can be motivated to increase their experience of potentially useful, yet unpleasant, emotions. Specifically, we tested whether individuals would seek to increase their anger when they were 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 not attaining a goal because of another person's improper action, yet feel capable of altering the situation (Frijda,

1986). To promote the defense of one's resources, anger increases aggression (Frijda, 1986), which propels one 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 nonconfrontational goals.

Building on these assumptions, we considered two interrelated questions. First, might individuals be motivated to increase their anger when they are anticipating confrontational, but not nonconfrontational, tasks? Second, does anger carry instrumental implications for performance in confrontational versus nonconfrontational tasks? We expected individuals to try to increase their level of anger, despite its unpleasant nature, when they expected to perform a confrontational, but not a nonconfrontational, task. We believed that such a preference would be driven by instrumental considerations, as reflected in subsequent performance. We expected anger to improve performance in a confrontational, but not nonconfrontational, 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 that 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, we asked all participants to rate 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-inducing activities (relative to excitement-inducing activities) when they were considering confrontational, but not nonconfrontational, games.

We also tested the effect of anger on game performance. Following an emotion induction (i.e., anger, excitement, or neutral), participants played a confrontational and a nonconfrontational computer game. As a control for individual differences in baseline performance, participants played each game before and after the emotion induction. We expected participants in the anger condition to perform better than other participants in the confrontational, but not the nonconfrontational, game. Furthermore, we expected this performance pattern to be anger-specific (e.g., as indicated by increases in aggressive game play).

METHOD

Participants

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

Materials

Game Scenarios

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

Music

We selected eight exciting (e.g., "BimBamBum" by Xavier Cugat), eight neutral (e.g., "Lava" by Boozoo), and six angry (e.g., "Inquisition" by Apocalyptica) instrumental musical segments; taken together, the selections in each category were equivalent in length and familiarity to the selections in the other categories. A pilot test ($N = 10$) confirmed that participants experienced greater excitement when listening to the exciting ($M = 4.01$) segments, compared with the angry ($M = 1.52$) and neutral ($M = 2.98$) segments, $t(9)$s > 2.89, ps $< .05$, and greater anger when listening to the angry ($M = 3.60$) segments, compared with the exciting ($M = 0.06$) and neutral ($M = 0.34$) segments, $t(9)$s > 6.01, ps $< .05$. Participants rated angry and exciting music as equally arousing and more arousing than neutral music (Ms = 5.04, 4.73, and 3.50, respectively), $t(9)$s $>$ 2.20, ps $< .05$. Angry music ($M = 2.85$) was rated as less pleasant than exciting ($M = 5.31$) and neutral ($M = 4.98$) music, $t(9)$s > 5.91, ps $< .05$.

Selection Tasks

Music-Selection Task

In each trial, participants read a game scenario, listened to a musical segment for 30 s, and rated the extent to which they would prefer listening to this music before playing the game (1 = *not at all*, 7 = *extremely*). Each scenario was paired with three

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

angry, three exciting, and three neutral musical segments in a random order, for a total of 36 trials.

Recall-Selection Task

In each trial, participants read a game scenario, followed by a description of a type of event (e.g., "an event in which you were angry, involving friends"), and rated the extent to which they would prefer recalling such an event before playing the game (1 = *not at all*, 7 = *extremely*). As in previous research (Tamir, 2005), the event types varied by emotional tone (i.e., angry, exciting, neutral) and content (i.e., involving friends vs. strangers). Game scenarios and events were fully crossed and presented in a random order, resulting in a total of 24 trials.

Computer Games

Participants did not play the games described in the scenarios. Instead, Soldier of Fortune, a first-person shooter game, served as a confrontational task. Diner Dash, a game in which players guide a waitress serving customers, served as a nonconfrontational task. A pilot test ($N = 10$) confirmed that the games were equally interesting, engaging, and difficult, $t(9)$s < 1.67, $p > .40$. In each game of Soldier of Fortune, the number of enemies the player killed (i.e., "kills") and the number of times the player was killed by enemies (i.e., "deaths") were recorded. We then created an overall score for performance by subtracting the number of deaths from the number of kills. For Diner Dash, we recorded the total score, as provided by the game itself (based, in part, on the number of customers served and customers' satisfaction).

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 games. Participants completed the music- and recall-selection tasks and were then randomly assigned to a music condition (i.e., angry, exciting, or neutral) and to a game-order condition (i.e., confrontational first and nonconfrontational second, or vice versa). Participants played one round of the first game for 5 min, listened to music for 3 min, and then continued listening for 5 min while playing another round. Next, they played the second game, following the same procedure. Finally, participants listened to all the musical segments they had rated earlier in the music-selection task and rated how angry, excited, pleasant, and active they felt (1 = *not at all*, 5 = *extremely*) when listening to the music.

RESULTS

Emotional Preferences

We predicted that participants would prefer anger-inducing activities more than exciting or neutral activities when they were expecting to play a confrontational game, but not a nonconfrontational game. Therefore, for each type of game, we averaged preferences for listening to music and for recalling events from memory. We then ran a repeated measures analysis of variance (ANOVA) to test the Game Type (confrontational vs. nonconfrontational) × Emotion (exciting, neutral, angry) × Activity Type (music, memory) interaction (all factors manipulated within subjects). As expected, we found a significant Game Type × Emotion interaction, $F(2, 162) = 192.89$, $p < .001$ (see Fig. 1). Preferences for anger-inducing activities were higher than preferences for exciting and neutral activities when participants anticipated playing confrontational games. However, a reverse pattern was found when participants anticipated playing nonconfrontational games. The Game Type × Emotion × Activity

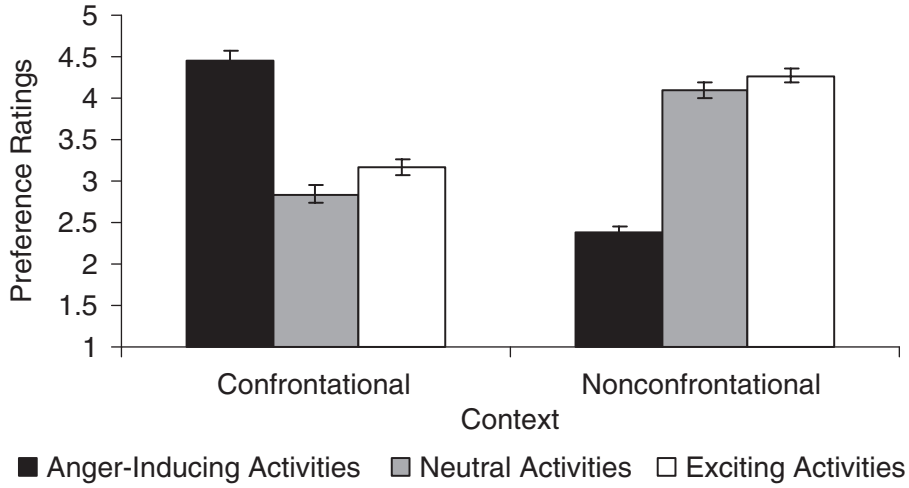

Fig. 1. Preferences for anger-inducing, neutral, and exciting activities (i.e., listening to music and recalling events) when anticipating performing confrontational and nonconfrontational tasks. Error bars represent 1 *SEM*.

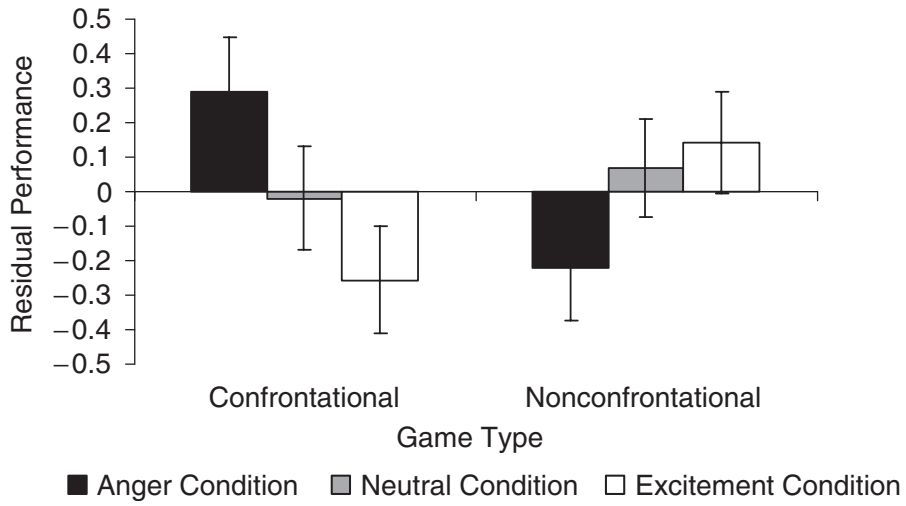

Fig. 2. Residual performance in the confrontational and nonconfrontational computer games, as a function of music condition. Error bars represent 1 *SEM*.

Type interaction was not significant, $F < 1.01$. Thus, 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, $t(81)$s > 4.20, ps $< .05$, p_{rep}s $> .99$.

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 or neutral ones. These preferences were reversed when individuals expected to perform a task in which anger was unlikely to be useful.

Effects of Emotion on Performance

Confirming that the 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 (Ms = 1.67, 3.09, and 3.16); it was also more anger inducing (Ms = 2.63, 1.30, and 1.18), and less exciting (Ms = 2.43, 2.63, and 3.44), $t(81)$s < 2.7, ps $< .05$, p_{rep}s $> .96$. Angry and exciting musical selections were more arousing than neutral selections (Ms = 3.22, 3.56, and 2.41), $t(81)$s > 3.98, ps $< .05$, p_{rep}s $> .99$.

We standardized total performance scores in each round within each game. Because preinduction performance and postinduction performance were significantly correlated (rs = .54 and .63, ps $< .05$, in the confrontational and nonconfrontational games, respectively), we created residual performance scores by predicting postinduction performance from preinduction performance within each game and subtracting predicted from actual scores (Robinson, in press). Thus, we obtained a separate residual score for overall performance in each game.

These scores were entered in a repeated measures ANOVA, in which game (confrontational vs. nonconfrontational) was a two-level within-subjects variable and music condition (anger, neutral, excitement) was a between-subjects variable.[2] As expected, we found a significant Game × Music Condition interaction, $F(2, 79) = 5.02$, $p < .01$ (see Fig. 2). Tests of simple effects confirmed that participants in the anger condition performed significantly better in the confrontational game than did participants in the excitement condition, $t(79) = 2.47$, $p < .05$, $p_{rep} = .94$. Subsequent analyses revealed that the impact of music condition was limited to number of kills, which was significantly higher in the anger condition than in the excitement condition, $t(79) = 2.30$, $p < .05$, $p_{rep} = .92$. The number of deaths did not vary as a function of music condition, $t(79)$s < 1.10. Contrary to performance in the confrontational game, performance in the nonconfrontational game did not vary as a function of music condition, $t(79)$s < 1.74.

Thus, participants chose to increase their anger 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 before engaging in confrontational tasks, individuals are sometimes motivated to engage in activities likely to increase their anger,

[2]A preliminary analysis included game order as another between-subjects variable. Because effects involving game order were not significant, Fs < 2, we collapsed across this variable.

despite the fact that such activities are less pleasant than alternative ones.

We further demonstrated that these emotional preferences are, in fact, associated with instrumental benefits in confrontational contexts. Angry participants performed better than excited participants in a confrontational task. This enhanced performance was specific to the 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.

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 regarding emotion-regulation motives. We demonstrated 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 showed 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 demonstrated that utility can sometimes trump pleasure in motivating emotion regulation.

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 those emotions promote goal pursuits (Tamir & Diener, in press).

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

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(RECEIVED 6/30/07; REVISION ACCEPTED 10/1/07)