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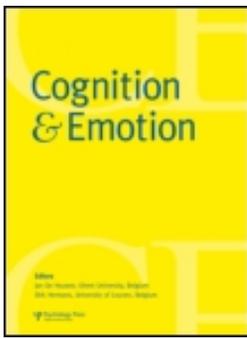
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Andrea C. Samson & James J. Gross

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## BRIEF REPORT

# Humour as emotion regulation: The differential consequences of negative versus positive humour

Andrea C. Samson and James J. Gross

Department of Psychology, Stanford University, Stanford, CA, USA

Humour is often seen as an adaptive coping strategy; however, the empirical literature is inconclusive. One possible explanation is that different types of humour have different adaptive consequences. In the present research, we predicted that positive (good-natured) humour would be more effective at regulating negative emotions than negative (mean-spirited) humour. In Study 1, participants were shown negative pictures two times. First, they simply viewed the pictures and rated their levels of positive and negative emotions. Second, they were instructed to: (a) view; (b) use positive humour; or (c) use negative humour, and then rate their reactions. Compared to negative humour, positive humour was more successful at down-regulating negative and up-regulating positive emotion. In Study 2, we replicated these findings and showed that these effects cannot be explained by differences in difficulty between the two humour conditions, participants' expectations, or social desirability. Taken together, these findings suggest that positive (but not negative) humour may be an effective form of emotion regulation.

*Keywords:* Emotion; Emotion regulation; Humour; Coping.

Humour has long been seen as a particularly healthy and effective coping strategy. This is because humour is thought to be a powerful antidote to negative emotions (Freud, 1928; Vaillant, 2000). For example, anecdotal reports suggest that some concentration-camp survivors in World War II and prisoners of war (POWs) in North Korea coped by joking about their

miserable plight (Ford & Spaulding, 1973; Henman, 2001).

Despite this consensus, the empirical literature on the effects of humour is surprisingly inconclusive, and there is no agreement regarding the likely mechanism by which humour exerts whatever effects it may have. In the present study, we focus on humour's role as an emotion-regulation

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Correspondence should be addressed to: Andrea Samson, Department of Psychology, Stanford University, 450 Serra Mall, Bldg 420, Stanford, CA 94305, USA. E-mail: andrea.samson@stanford.edu

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mechanism, and test the possibility that different forms of humour have markedly different effects on negative emotion.

### The effects of humour

Studies that have empirically examined the impact of humour have yielded mixed results. Some studies have found a positive effect of humour on mental health. For example, some studies found support for the idea that the active use of humour has a stress-moderating effect: creating a humorous narrative while viewing a stressful film resulted in a reduced physiological stress response, less emotional distress and lower negative affect than creating a serious narrative (e.g., Lefcourt & Martin, 1986; Martin & Lefcourt, 1983; Newman & Stone, 1996). This effect was found in participants with both low and high trait humour, suggesting that humour production may be an effective coping strategy, even for individuals who do not typically use humour (Newman & Stone, 1996).

Other studies on the impact of humour have yielded negative results. For example, the positive effects described above were only partially replicated (e.g., Lehman, Burke, Martin, Sultan, & Czech, 2001) and only weak and inconsistent associations between trait measures of sense of humour and well-being were found (e.g., Thorson, Powell, Sarmany-Schuller, & Hampes, 1997). Indeed, Simon (1990) found that situational and coping humour did not predict perceived health and sense of humour was not related to longevity (Rotton, 1992). Furthermore—although experimental studies demonstrated that passively viewing humorous stimuli enhances mood—no long-time effects on well-being and mental health were found (e.g., Gekkopf, Kreitler, & Sigal, 1993). Finally, some studies have shown that humour may even have detrimental effects on stress and depression (Dorz, Novara, Sica, & Sanavio, 2003), and that high cheerfulness at the age of 12 is associated with high mortality rates (Friedman et al., 1993), perhaps due to lower levels of concern about health risks.

### Positive versus negative humour

One possible reason for inconsistent findings regarding humour is that there may actually be many different kinds of humour, each with a different set of consequences. Nearly a century ago, Freud (1928) emphasised that humour must be differentiated from other forms of laughter-related phenomena such as joking, wit (as a form of displacement, see Vaillant, 2000), sarcasm, and irony. For Freud, humour referred specifically to a sympathetic, tolerant, and benevolent amusement at the imperfections of the world and the foibles of human nature in general. It also carried the connotation of not taking oneself too seriously and being able to poke fun at oneself, accompanied by a sort of philosophical detachment in one's outlook on life.

Contemporary humour researchers have also emphasised the heterogeneity of humour (see Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003, for an overview). Distinctions among forms of humour are helpful, and one of the major distinctions commonly drawn—from Freud to the present day—is between more positive (good-natured, benevolent, integrating, non-hostile) and more negative (mean-spirited, aggressive, disparaging) forms of humour. In particular, it has been suggested that only positive forms of humour have a positive effect on mental health (e.g., Martin, 2007).

Evidence favouring this perspective has largely been correlational. Specifically, the Humour Styles Questionnaire (HSQ; Martin et al., 2003) distinguishes between positive (affiliative and self-enhancing) versus negative (aggressive and self-defeating) humour styles. The two measures of positive styles of humour are generally positively related to indicators of psychological health and well-being (e.g., self-esteem, positive emotions, and optimism) and negatively related to negative moods such as depression and anxiety. In contrast, aggressive humour is positively correlated with measures of hostility and aggression, and negatively correlated with relationship satisfaction. Similarly, self-defeating humour is positively related to measures of psychological distress and dysfunction (e.g., depression, anxiety, etc.), and

negatively related with psychological well-being. These findings support the view that positive and negative humour styles are differentially related to aspects of psychological health (e.g., Martin et al., 2003; see Martin, 2007, for an overview).

### Humour as emotion regulation

Even if we focus solely on “healthy” forms of humour, we still must ask: How might humour facilitate coping? One possibility is that humour processing (particularly the incongruity-resolution process) requires attentional resources, which reduces attentional resources available for processing negative emotion (e.g., Strick, Holland, Van Baaren, & Van Knippenberg, 2009). Another possibility is that the positive emotions that accompany humour “undo” negative emotions (Fredrickson & Levenson, 1998). A related possibility is that the change of perspective associated with humour permits distancing from negative situations (Keltner & Bonnano, 1997; Martin & Lefcourt, 1983). Another variant on this same idea is that the negative event gets reappraised from a less threatening point of view (Lefcourt et al., 1995), which is in line with the view that humour allows people to look directly at what is painful but—by reappraising the situation—in a less harmful way (Vaillant, 2000).

Each of these ideas highlights a somewhat different form of emotion regulation. The first focuses on the possibility that humour might serve as a form of distraction. The second suggests that humour-related positive emotions directly undo negative emotion. The third and fourth perspectives both suggest the possibility that humour changes the way a person appraises or evaluates a potentially stressful event, thereby changing the meaning it has, and hence the person’s emotional response. Unfortunately, it is not clear which—if any—of these mechanisms might underlie the apparently beneficial effects of humour.

### The present research

The goal of the present research was to test the hypothesis that positive and negative humour

might have different effects on negative emotion regulation. More specifically, in two studies, we tested the hypothesis that positive (good natured) humour would be more effective than negative (mean-spirited) humour in regulating negative emotional responses (i.e., increasing positive emotions and reducing negative emotions).

## STUDY 1: EFFECTS OF POSITIVE AND NEGATIVE HUMOUR

The goal of the first study was to assess whether positive and negative humour have differential consequences on positive and negative emotions.

### Method

*Participants.* Forty participants (15 men) with a mean age of 24.7 years ( $SD = 5.2$ , range = 19–40) took part in this study. Thirty-six were students at the University of Fribourg; the others were community members. Participants were paid 10 Swiss Franks (US\$9.50) and written consent was obtained prior to the experiment.

*Procedure.* Participants were tested individually and saw 30 negative pictures twice. Pictures were selected from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 1995) and covered a variety of negative stimuli and situations (e.g., skulls, corpses, soldiers, handicapped individuals, aggressive or dangerous animals, dental exams, car accidents and attacks). These stimuli were selected to be negatively valenced ( $M = 2.78$ ;  $SD = 0.76$ ) and arousing ( $M = 5.89$ ,  $SD = 0.81$ ).

In the first trial, participants simply viewed the pictures and rated their emotional responses. Research has shown that two broad factors reliably capture emotional experience (usually labelled positive and negative activation, e.g., Watson, Clark, & Tellegen, 1988), and several studies on humour have measured not only positive (funniness) but also negative reactions (aversion) towards humorous stimuli (e.g., Ruch, 1992). For this reason, we assessed positive and negative emotions

separately, each on one scale from 0 (= *not at all*) to 6 (= *very strong*), in order to assess whether negative and positive humour might have differential effects on positive and negative emotions.

In the second trial, participants viewed each of the pictures a second time, under instructions either to: (a) simply view; (b) use positive humour; or (c) use negative humour. In the positive humour condition, participants were instructed to cognitively reappraise the pictures by experiencing a sympathetic, tolerant, and benevolent amusement, focusing on the imperfections of life and human beings or on absurdities of the situation without becoming hostile or depreciating. In the negative humour condition, participants were instructed to laugh at these situations in a hostile, superior way, mocking others in order to create an emotional distance. In the “watch” condition, participants simply viewed the picture a second time.

In the second trial, pictures were randomly assigned to each of the three conditions (with 10 pictures assigned to each instruction). Pictures were presented in 10-picture blocks, and the blocks were presented in random order. Each block was preceded by two negative pictures with examples for positive or negative humour, respectively—dependent on what type of humour the block instruction was, in order to clarify what was meant by either positive or negative humour. In both humour conditions, each picture was accompanied by a written example of positive or negative humour, respectively, taken from the comments made by participants in a pilot study, in order to guide the participants.<sup>1</sup> However, participants were free to provide their humorous remark before having read the example, as the example comment was provided on a slide presented after the picture, and the participant could move to the next slide whenever he or she wanted. The experimenter noted if the participant was able to come up with a humorous remark and whether the participant used the non-target type of humour (e.g., positive instead of negative) according to the participant’s report of being

able or not to come up with the required type of humour. Participants could take as much time as they wanted. After each picture, participants rated their emotional responses to that picture. The whole procedure lasted approximately one hour.

*Data reduction and analysis.* Because we were interested in the change in ratings from Trial 1 to Trial 2, the difference scores ( $T2 - T1$ ) for each picture in each condition (“positive humour”, “negative humour”, “watch negative”) were computed. Repeated measure analyses, with the three conditions as within-subjects variables, were computed. Trials were excluded if the wrong type of humour was used (e.g., negative instead of positive humour, see Appendix). This was based on the verbal responses of the participants. On average, participants complied with instructions well. Participants failed to use any form of humour for less than one picture ( $M=0.90$ ,  $SD=1.90$ , range from 0 to 8). When they did use humour, they used the wrong type of humour infrequently, using negative instead of positive humour on 0.30 pictures ( $SD=0.65$ , range from 0 to 3) and positive instead of negative humour on 0.75 pictures ( $SD=1.21$ , range from 0 to 6). All of these cases were excluded from further analyses (a maximum of 9 trials per participant).

## Results and discussion

*Manipulation check.* During Trial 1, the negative pictures evoked strong negative emotions ( $M=3.42$ ,  $SD=0.75$ ) and low levels of positive emotions ( $M=1.41$ ,  $SD=0.30$ ).

*Affective consequences of negative and positive humour.* For positive emotion, there was a main effect of Condition,  $F(2, 78) = 27.15$ ,  $p < .001$ . Follow-up  $t$ -tests revealed that positive ( $M=0.66$ ,  $SD=0.64$ ) and negative ( $M=0.32$ ,  $SD=0.64$ ) humour led to significantly greater positive emotion than the “watch” condition ( $M=-0.05$ ,  $SD=0.30$ , both  $ps < .001$ ). Furthermore, positive

<sup>1</sup>This procedure was developed after extensive piloting, which revealed that participants were better able to come up with a humorous remark after seeing an example.

and negative humour differed significantly, with positive humour being more effective at increasing positive emotions than negative humour ( $p < .001$ , see Figure 1).

For negative emotion, there was also a main effect of condition,  $F(2, 78) = 12.85$ ,  $p < .001$ . Follow-up  $t$ -tests revealed that positive ( $M = -0.89$ ,  $SD = 0.69$ ) and negative ( $M = -0.58$ ,  $SD = 0.97$ ) humour led to significant decreases in negative emotions in contrast to the “watch” condition ( $M = -0.26$ ,  $SD = 0.47$ ,  $p < .001$  for positive humour,  $p < .05$  for negative humour). Furthermore, regarding the negative emotions, the two types of humour differed significantly ( $p < .05$ ) from each other; positive humour was more effective at down-regulating negative emotions.

*Limitations.* This initial study suffers from several limitations. First, we neither assessed the difficulty of coming up with positive and negative humour nor did we measure the cognitive effort associated with the attempt to reappraise the negative pictures with humorous remarks. Differences in difficulty and cognitive effort might have influenced the subsequent emotional ratings. Second, we did not assess the participants’ awareness about our study hypotheses, which might have influenced the outcome substantially. Third, we did not include any measures of social desirability.

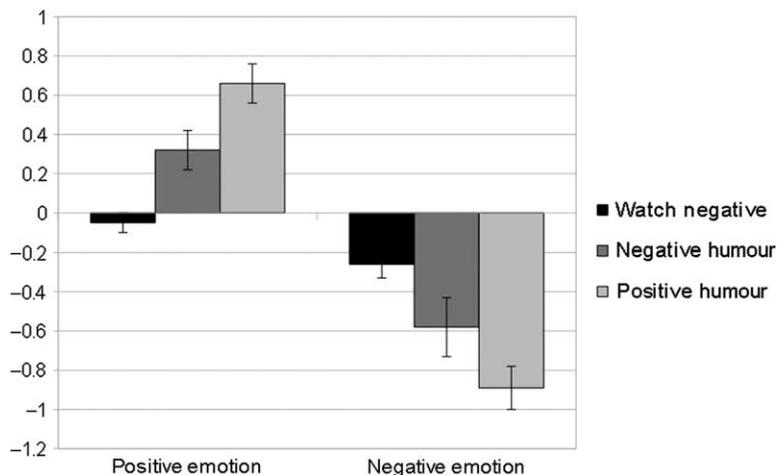
It is possible that some of the participants were actually amused more intensely using negative humour than they indicated, but felt concerned about expressing these responses. Therefore, we conducted a second study to replicate the findings of the first study by controlling for the above-mentioned limitations.

## STUDY 2: REPLICATION AND EXTENSION

The goal of the second study was to replicate the findings of the first study. In addition, we sought to assess: (1) whether the beneficial effects of positive humour over negative humour are related to the difficulty of creating positive or negative humorous reappraisals; (2) whether participants’ expectations affect the emotional ratings; and (3) whether social desirability affects the use of positive and negative humour and its emotional consequences.

### Method

*Participants.* Thirty-seven participants (19 men) with a mean age of 19.9 years ( $SD = 0.91$ , range = 18–21) took part in this study. All participants were students at Stanford University. Participants obtained credit for their participation



**Figure 1.** Average difference scores (Trial 2 minus Trial 1) with standard errors for positive and negative emotions in the watch condition, negative humour condition, and positive humour condition (Study 1,  $N = 40$ ).

and written consent was obtained prior to the experiment.

*Procedure.* Study 2 employed the same procedure as Study 1, with the following changes. First, we inserted difficulty questions in each trial after the emotional ratings. These ratings were made using a scale from 0 (= *not at all*) to 6 (= *very difficult*). Second, after the experiment, we asked participants what they thought the experiment was about. Third, after these additional questions, the participants completed a 13-item short version of the Marlowe–Crowne Social Desirability Scale (MCS; Crowne & Marlowe, 1960; Reynolds, 1982). The scale yielded moderate reliability (Cronbach's  $\alpha = .64$ ) in the present study. Fourth, unlike Study 1, which was conducted in German, Study 2 was conducted in English.

*Data reduction and analysis.* As in Study 1, the difference scores between Trial 1 and Trial 2 ( $T2 - T1$ ) were computed for each condition (“positive humour”, “negative humour”, “watch negative”). Repeated measure analyses, with the three conditions as within-subjects variables, were computed with subsequent post hoc tests. In view of the specific predictions derived from Study 1, post hoc tests were one tailed. Trials were excluded if participants were not able to come up with the required humorous reappraisal (based on verbal responses of the participants).

On average, participants complied with instructions well. Participants failed to use any form of humour for less than one picture in both conditions (positive humour:  $M = 0.83$ ,  $SD = 1.44$ , range from 0 to 5; negative humour:  $M = 0.83$ ,  $SD = 1.27$ , range from 0 to 4; no significant difference between the two conditions). These trials were excluded from further analyses. In both conditions, the participants viewed the captions equally often (positive humour:  $M = 3.49$ ,  $SD = 2.04$ , range from 0 to 8; negative humour:  $M = 3.46$ ,  $SD = 2.35$ , range from 0 to 10; no significant difference between the two conditions).

Participant responses to the question as to what the experiment was about (asked after the study was completed) were coded by two independent

raters into the following categories: (1) correct: “We want to measure the effect of using positive and negative humour to change positive and negative emotions, humour as emotion regulation strategy”; (2) only partially correct, but close (e.g., mentioning positive and negative humour, but neither whether they have differential consequences on positive and negative emotions, nor emotion regulation); (3) only partially correct (e.g., mentioning emotion regulation, humour as coping mechanism, but without differentiating between positive and negative humour); or (4) incorrect. The inter-rater reliability was satisfactorily high:  $\kappa = .83$ .

## Results and discussion

*Manipulation check.* During Trial 1, the negative pictures evoked strong negative emotions ( $M = 3.92$ ,  $SD = 0.74$ ) and low levels of positive emotions ( $M = 1.87$ ,  $SD = 0.70$ ).

*Difficulty ratings.* There were no differences in difficulty ratings between positive ( $M = 3.87$ ,  $SD = 0.87$ ) and negative humour trials ( $M = 3.81$ ,  $SD = 0.61$ ),  $t(26) = 0.63$ ,  $p = .53$ .

*Affective consequences of negative and positive humour.* For positive emotion, there was a main effect of Condition,  $F(2, 72) = 15.95$ ,  $p < .001$ . Follow-up  $t$ -tests revealed that positive ( $M = 0.79$ ,  $SD = 0.68$ ) and negative ( $M = 0.50$ ,  $SD = 0.71$ ) humour led to significantly greater positive emotion than the “watch” condition ( $M = 0.09$ ,  $SD = 0.53$ ,  $p < .001$  for positive humour,  $p < .01$  for negative humour). Furthermore, positive and negative humour differed significantly, with positive humour being more effective at increasing positive emotions than negative humour ( $p < .01$ , see Figure 2). These results replicate the findings from Study 1.

For negative emotion, there was also a main effect of Condition,  $F(2, 72) = 13.04$ ,  $p < .001$ . Follow-up  $t$ -tests revealed that positive ( $M = -0.78$ ,  $SD = 0.88$ ) and negative ( $M = -0.54$ ,  $SD = 0.94$ ) humour led to significant decreases in negative emotions in contrast to the “watch”

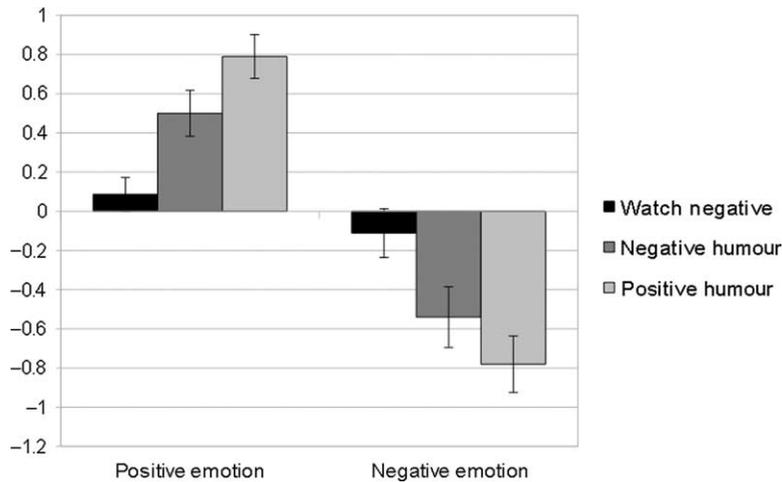


Figure 2. Average difference scores (Trial 2 minus Trial 1) with standard errors for positive and negative emotions in the watch condition, negative humour condition, and positive humour condition (Study 2,  $N = 37$ ).

condition ( $M = -0.11$ ,  $SD = 0.76$ ,  $p < .001$  for positive humour,  $p < .01$  for negative humour). Furthermore, regarding the negative emotions, the two types of humour differed significantly ( $p < .05$ ) from each other; positive humour was more effective at down-regulating negative emotions. These results replicate the findings from Study 1.

*Awareness check and social desirability.* Only one participant had the correct idea of what the experiment was about. However, the exclusion of this participant did not change any of the reported results. Seven participants had only partially correct but close ideas of what the experiment was about, three participants had only partially correct ideas and four had completely incorrect ideas (e.g., that the study was about ethnicity, or measured the effect of mood on perception). These ideas had no affect on difficulty ratings, positive emotions, or negative emotions. We also examined whether social desirability was associated with the participant ratings (difficulty, positive emotions, negative emotions). The MCS yielded a mean score of 4.14 ( $SD = 2.28$ ) and did not correlate with any of the ratings (positive emotion, negative emotion, difficulty) in either positive or negative humour contexts.

## GENERAL DISCUSSION

Humour has long been seen as an adaptive means of coping with negative emotions. However, our findings from two studies suggest that positive and negative humour may have importantly different affective consequences. Compared to negative humour, positive humour yielded better effects for up-regulating positive and down-regulating negative emotions. This finding could not be explained by differences in difficulty, expectations, or social desirability.

### Humour as an emotion-regulation strategy

Our results are consistent with the idea that positive humour leads to a reinterpretation of a negative event in line with Lefcourt et al. (1995) or Vaillant (2000). We cannot exclude the possibility that using humour requires attentional resources, which distracts people from a negative event (e.g., Strick et al., 2009). However, it is not very likely that one would be more distracted from a negative event by using positive instead of negative humour.

We assume that the mechanisms of positive and negative humour differ: one possibility is that positive humour is closely related to reappraisal of the situation, whereas negative humour may help

more to create an emotional distance from the negative event without being able to look on the bright side of the negative event. However, as our study does not allow us to infer conclusions about mechanisms, we suggest that future studies need to be conducted in order to determine which mechanisms underlie positive and negative types of humour—or humour in general.

### Extending our conception of positive humour

We have shown that positive humour is more effective than negative humour in regulating emotions when confronted with highly negative pictures. However, we know from the literature that deprecating humour (e.g., humour directed against an aggressor) can also be helpful under some circumstances. For example, POWs have reported finding this type of humour useful in dealing with a very stressful and threatening situation (e.g., Henman, 2001). By cracking jokes about the guards and about the hardships they endured, the POWs were able to gain a sense of mastery and invincibility in a situation over which they had no real control (Ford & Spaulding, 1973; Henman, 2001).

This raises the question whether and under what circumstances it might be equally or even more effective to use negative instead of positive humour. Further studies might address the question whether in really difficult, life-threatening and desperate situations even more negative forms of humour become helpful.

### Limitations and future directions

Our findings shed important new light on the distinction between positive and negative humour. They also suggest the important emotion-regulatory role positive emotion can play in shaping affective responses to negative situations. However, these studies have several limitations.

First, the present studies used a limited set of negative stimuli, as well as a relatively small number of participants (and it bears noting that these studies were conducted in two different languages and cultural contexts). In future studies,

other negative stimuli such as negative memory entries might be used. It will also be useful to broaden the participants who are included, e.g., by differentiating between different ethnicities and cultural backgrounds. It might also be interesting to include psychopathology in order to investigate humour as successful reappraisal strategies.

Second, the present studies were not able to address the issue of specificity of humorous reappraisal in contrast to other reappraisal strategies. Future studies should include a non-humorous condition such as serious reappraisal in order to distinguish humour-specific effects from effects associated with reappraisal in general. Another question is whether positive humour more strongly enhances mood than negative humour, and whether the effect is related to the fact that positive humour is better able to undo negative emotions. Future studies will be required to more fully address questions about underlying mechanisms.

Third, we assessed the effects of humour in a single laboratory context, and emotional responses were assessed via self-report measures only. Further studies might additionally assess psychophysiological parameters. It would also be very interesting to investigate whether there are specific correlates in the brain for using positive and negative types of humour to regulate emotions—this could be done using electroencephalography (EEG) or functional magnetic resonance imaging (fMRI).

A fourth limitation is that we measured participants' emotional responses at a single point in time, rather than looking at dynamic changes in emotional responding over a longer time period. One interesting question is what the time course of the emotional changes induced by using different types of humour is. Do positive and negative types of humour have different long-term effects? For example, using hostile humour to deal with a difficult situation might create a certain instant relief, but only positive humour might help to overcome the problem in the longer term. In future studies, it will be important to address these issues by using continuous and time-sensitive measures of emotional responding.

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## APPENDIX

*Examples of positive and negative humour for four representative LAPS pictures*

<i>LAPS picture</i>	<i>Positive humour</i>	<i>Negative humour</i>
1019 (constrictor snake with prey)	Looks like someone's bitten off more than they can chew.	Nourishing my future handbag.
1930 (shark)	Shauna the Shark braved leaving the ocean in her desperate search for lip balm.	Is somebody missing a fin?
9415 (handicapped men waiting in line)	The Jones family didn't expect such a trick-or-treat rush.	The wait feels shorter when you don't tap your toes.
9500 (disembowelling fish, bloody)	He always wanted to work with animals.	Ideal workplace for people with body odour.