Differential Influences of Coping Humor and Humor Bias on Mood

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The authors investigated relationships among sense of humor measured by a questionnaire, attentional bias toward humor measured by performance on a word-search task, and experimentally induced mood change through the use of sad and humorous cartoons. Mood was significantly altered in a negative direction after the sad cartoon. Coping humor, part of the sense of humor questionnaire, was associated with less negative mood ratings after the sad cartoon. In terms of main effects, only a modest change in mood was found after the humorous cartoon. Humor bias was associated with more positive mood ratings after the humorous cartoon. The authors suggest that coping humor serves a protective psychological function, helping screen the person from negative stimuli and, thus, from negative reactions. Attentional bias toward humor serves a different protective psychological function by helping the person focus on mood-enhancing stimuli in the environment.

Index Terms: coping humor, humor bias, humor, mood

An increasing number of scientific publications report the beneficial effects of humor on health and well-being. The term humor is used to cover a variety of factors, such as sense of humor, exposure to humor, generation of humor, humor appreciation, and laughter.1-6 Because humor can mean so many things, it is not surprising that the outcomes of studies on humor also vary, with differing outcomes on such mood variables as anxiety and depression and such health variables as IgA and frequency of colds.7-12

The most common variable in humor research is sense of humor, typically measured by questionnaires. For example, Martin and Lefcourt3 have devised the Situational Humor Response Questionnaire, which asks people to rate how likely they are to laugh in a variety of situations. They have also devised a Coping Humor Scale that measures the tendency for people to use humor as a means of coping with demanding or stressful situations.13 Humor scores on these questionnaires have been related to stress levels and mood.13,14 Thorson and Powell15 argue that sense of humor is multidimensional, as reflected in their Multidimensional Sense of Humour Scale (MSHS). The MSHS has four subscales that distinguish between humor production (overt use of humor in social situations), coping humor (trying to see the funny side of things), humor appreciation (liking humor), and humor attitude (approving of humor). Although the above questionnaires have the problems that all self-report scales have, we cannot ask people directly about their sense of humor because most people tend to rate their own sense of humor as above average.16,17

In the health context, humor researchers frequently define humor in terms of an external stimulus, such as a comedy routine or series of jokes. The dependent variable in such studies is some measure of well-being—stress rating, mood, or a physiological variable such as IgA.18

Which aspect of humor is most beneficial to well-being has not yet been established. Sense of humor is regarded as a personality predisposition that helps mitigate the effects of stress. People without a dispositional (internal) sense of
humor may be able to make up for this by seeking humor externally through humorous books or videos.

Many articles on the beneficial effects of humor in healthcare recommend giving patients access to humorous material. We cannot afford to assume that exposing patients to humor stimuli will always have a beneficial effect at best, and at worst, have no effect. A similar assumption was made about relaxation therapies before cases of relaxation-induced anxiety were documented.

A lack of concern for negative outcomes both trivializes the concept of humor and is poor clinical practice.

So far, we have spoken of the dispositional aspect of humor in terms of sense of humor as a personality dimension, albeit one with several possible subcategories. It is possible that a predisposition toward humor can also be detected at a behavioral level. We could look at whether people seek out humor stimuli or make jokes around others, but these behaviors are often constrained by social and environmental factors.

Behavioral components of humor have been assessed by asking participants to produce humorous scripts or comic patterns that are then rated. The danger is that such scores may be confounded with the style and sense of humor of the raters.

Another way to examine a predisposition is to look for an attentional bias toward humor. The term attentional bias refers to the tendency to allocate a considerable amount of cognitive resources to attend to certain things at the expense of attending to other things. For example, people with spider phobias may demonstrate an attentional bias toward spiders; that is, they look for and find more spiders in the environment than people without the phobia.

Attentional bias is usually detected at a behavioral level by looking at performance on cognitive-behavioral tasks. On the Stroop Task, for example, words are written in a variety of colors and people are required to attend to the color of the word. However, they may find themselves attending to the meaning of the word, which is reflected in slower reaction times or increased errors when naming the color of the word. Performance may be enhanced by attentional bias; for example, certain "meaningful" words may be detected more readily or remembered over a longer period of time than other words in recognition tasks. For our person with spider phobia, words relating to spider would be meaningful; a selective difference in performance to spider-relevant words would indicate an attentional bias to spiders.

Many studies have detected attentional bias in various strengths across a range of conditions, such as anxiety and obsessive compulsive disorder, and motivational states, such as hunger and alcohol dependence. In these instances, the attentional bias is considered potentially harmful or disruptive and as a contributing factor to psychopathology. Occasionally, positive moods and words are used in tests of attentional bias, but usually they are used as control conditions or to elucidate theoretical issues.

Studies have also examined differences in the ability to detect humor (eg, after brain injury), but this is not the same as an attentional bias toward humor. As far as we have been able to ascertain, attentional bias as defined here has not been investigated in humor research. Attentional bias toward humor may help us understand the putative role of humor in mitigating stress and mood (ie, humor acting as a cognitive process influencing appraisal of stressful stimuli). As such, it may be incorporated in cognitive-behavioral treatments to enhance well-being. Whether such an influence on appraisal is different from that noted with coping humor would need to be explored in further studies.

In this study, we examined the relationship between three different aspects of humor: sense of humor as measured by a questionnaire, reactions to humor stimuli, and attentional bias toward humor. In particular, we are interested in the extent to which humor stimuli can enhance well-being, as measured by mood change, and the manner in which sense of humor and bias toward humor influence such an effect.

**METHOD**

Thirty-two 2nd-, 3rd-, and 4th-year social work students aged 19 to 53 years (mean age = 28.03 y, SD = 7.45) participated in the study. Participants (25 women and 7 men) were volunteers who were paid $10 for their time and were divided into groups of varying size. A power analysis indicated that a sample size of 32 gave the study an 80% chance of detecting a true statistically significant effect of .5 standard deviation units or larger. Other power analyses for correlations and differences between groups indicated that the study had a reasonable chance of detecting moderate to large effects in our data. It should be borne in mind, however, that the sample size is modest and that small effects in the data may have gone undetected.

Participants initially completed five 10-point bipolar mood scales, measuring tense, sad, anxious, distressed, and angry moods. A low score refers to a positive or elevated mood; a high score refers to a negative mood.

To assess attentional bias, we adapted a word-search task of the type commonly used in tests of attentional performance. In this task, participants are required to detect as many words as they can within a given period of time. Our task was designed using WordFind for the Macintosh with humor-related or sad-related words selected from a thesaurus search. We called this task the *humor-bias task* because we were primarily interested in examining an atten-
tional bias to humor words, which would be shown by participants detecting a higher proportion of humor-related to sad-related words. We pretested this task on staff in the social work department of the University of New South Wales to determine a minimum time (we did not want all words detected) and its level of ease (we did not want only a few words detected). The final humor-bias task had 16 humor-related words and 16 sad-related words, as well as two ambiguous words that could be rated either as humor-related or sad-related (joyless and unhappy), depending on how the word was detected. We also included some neutral words in the task.

The words were in a 20 × 20 grid of letters, and participants were given 5 minutes on the task. We obtained two scores by calculating (a) the proportion of humor-related words to all mood-related words detected and (b) the proportion of humor-related words to all words detected. Because the results of both types of analyses were highly similar, we discuss only the proportion of humor to all mood words.

To minimize any priming toward humor words, the humor-bias task was completed after the first mood scale and before any other features of the study were presented. Ours is not one of the more commonly used tasks for attentional bias. It was devised for its ease of use in groups, and it requires no individual electronic stimulus delivery or response equipment.

Participants also completed the MSHS. This scale asks participants to respond on a 5-point scale (ranging from 0 = strongly disagree to 4 = strongly agree) to items such as “uses of wit or humor help me master difficult situations” and “I can often crack people up with the things I say.” The MSHS scale is commonly used as a total scale, but factor analyses have consistently indicated four dimensions of humor: humor production/socializing, coping humor, liking humor, and attitude to humor.

In our study, we used the total score, as well as factor scores obtained by summing across the items loading on each factor. For analysis, we divided the participants into two groups, high and low sense of humor, on the basis of their MSHS scores. We designated groups above the mean as the high sense of humor group and labeled those below the mean the low sense of humor. The second factor is repeated measures with three levels—baseline, post-Eek, and post-Allegro. The dependent variables are the mood scales. We used the same design to perform a second analysis with a new set of groups formed on the basis of their humor-bias task scores.

We analyzed means on each dependent variable, using multivariate analyses of variance (MANOVAs) for repeated measures, and tested specific comparisons of means with planned contrasts, using the Bonferroni correction to the normal type 1 error rate for multiple comparisons. We also report Pearson product–moment correlations and t test results.

RESULTS

The results of the MSHS and humor-bias task are presented in Table 1. As a group, participants tended to score lower than the norms reported by Thorson and colleagues (usually around 72). This difference is significant, $t(31) = -3.09$, $p = .004$. At this time, the group was under stress because of impending final exams. It may be that the MSHS is labile under such conditions. We should note that the range of scores was quite wide, from 40 to 85.
On the humor-bias task, participants detected about 36% of the mood words. The performance on the humor-bias task cannot be related to normative data at this stage because this is its first use. We found no strong group bias toward humor words over sad words, although we noted individual differences.

We rated the experimental cartoons according to our experimental intentions. Eek was rated as significantly more funny than Allegro, t(31) = 10.49, p = .0001, and Allegro as significantly more sad than Eek, t(31) = 9.573, p = .0001. Not surprisingly, participants laughed more during Eek than during Allegro, t(31) = 8.45, p = .0001. However, participants did not like Eek significantly more than Allegro (p > .05). These results and those below are not accounted for by gender, but this may be the result of the small number of men included in our study. Similarly, the results were not accounted for by age. This is not to say that age and gender are irrelevant to humor, but such differences may be small and undetected or they may relate more to preferences among a wider range of humor material than the ones we used.

The mean mood scores for the two humor groups across the three repeated measures—baseline, post-Eek, and post-Allegro—are shown in Table 2. There were significant changes on three of the five mood scales: sad (p = .0001), distressed (p = .0001), and angry (p = .0084). The effect on tense mood approached significance (p = .065), and there was no effect on anxious mood. The planned contrasts analyses indicated that, with one exception, the mood change across repeated measures occurred as a result of exposure to Allegro rather than to Eek. The sad mood increased after Allegro and decreased after Eek. The pattern of change in mood seems to suggest that affect-related mood (sad, distressed, angry) is more readily altered than arousal-related mood (tense, anxious). Such categorization warrants further testing because some moods (eg, anger) can have both affective and arousal properties.

Overall, participants found Allegro significantly funnier and more humorous than Eek, F(2, 29) = 14.144, p = .0001; and distressing, F(2, 29) = 9.15, p = .0001. The effect on the funny mood approached significance (p = .065), and there was no effect on the humorous mood. The planned contrasts analyses indicated that, with one exception, the mood change across repeated measures occurred as a result of exposure to Allegro rather than to Eek. The sad mood increased after Allegro and decreased after Eek. The pattern of change in mood seems to suggest that affect-related mood (sad, distressed, angry) is more readily altered than arousal-related mood (tense, anxious). Such categorization warrants further testing because some moods (eg, anger) can have both affective and arousal properties.

Sense of humor (MSHS groups) was not related to either initial mood or mood change after the cartoons. When we examined the patterns of scores across the four factors of the MSHS, it became clear that the total score may mask different patterns across the four factors. Accordingly, we also examined the four factors of the MSHS. The factor most related to our manipulations was Factor 2 (Coping Humor). People who scored high on coping humor showed significantly lower levels of anxiety after watching Allegro, whereas those who scored low showed increased levels of
anxiety \( (p = .0302) \). There was no similar effect after Eek. We found no evidence that the high coping humor group liked Allegro more or found it funnier, so the effect is not a result of differing evaluations of Allegro. These results tentatively suggest that coping humor is used to minimize the effect of sad stimuli on anxious mood rather than to enhance the effect of humor stimuli.

We devised and included the humor-bias task because attentional bias may be a useful predictor of reactions to humor stimuli. We analyzed the mood data using groups on the basis of their bias toward humor words in the task. The 16 participants who detected more humor words were nominated as the humor-bias group. The no humor-bias group consisted of the remaining 16 participants, 14 of whom detected more sad words and 2 of whom detected an equal number of humorous and sad words. Scores on the humor-bias task were independent of the total or factor scores on the MSHS.

The means in Table 3 show that responses to the cartoons of participants who scored high on the humor-bias task were different from responses of the low scorers. Although the means suggest that this effect was consistent across all measures, MANOVA analysis indicated that it was significant for anxiety ratings only \( (p = .0338) \). Planned contrasts indicated that participants with a bias toward humor words were more likely to report reduced anxiety after watching Eek \( (p < .05) \). They were also more likely to rate Eek as funny, \( t(30) = 2.445, p = .0206 \), and to laugh more, \( t(30) = 1.963, p = .059 \), without necessarily liking Eek more \( (p > .05) \). Scores on the humor-bias task were not associated with baseline mood or with responses after the participants saw Allegro, the sad cartoon. At this stage, therefore, it seems the humor-bias task is sensitive specifically to induced changes in anxious mood using humor stimuli.

**COMMENT**

In this study, changes in across-mood ratings were greater after a sad stimulus (Allegro) than after a humorous one (Eek). We speculate that it may be easier, in laboratory studies at least, to lower mood than raise it. In a previous article, we also noted that it is easier to lower mood.10 Other studies suggest similar findings. For example, Danzer and colleagues29 successfully induced a depressed mood, using mood statements, but were able to induce mood only back to pre-experimental levels when they used a humorous audiotape. By contrast, Nelson and Stern30 were able to change a depressed mood to elevated levels after a comedy film, although cognitions related to depression remained unchanged.

Negative mood changes may be paralleled by physiological changes (e.g., electrodermal or heart rate levels). Hubert and De Jong31 found marked subjective changes in bodily sensations following a suspenseful film that affected mood negatively, but minimal subjective change after a humorous film, even though both films affected objective measures of heart rate and electrodermal activity.

In the healthcare context, humor rooms, where hospital patients may go to watch humorous videos or select humorous books, are becoming increasingly popular. Despite any clinical emphasis on humor, many patients will also view sad programs, read sad books, or in other ways be exposed to sad information. Should we ban such material from hospitals and clinics? Obviously, we cannot do this. Our study was limited to short-term mood change. The longer term impact of exposure to sad and humorous material may be more complex.

Dispositional sense of humor, as measured by the total MSHS, did not influence reactions to either the humorous or sad stimulus. The humor coping factor of the MSHS influenced reactions to the sad stimulus only. As measured by our humor-bias task, attentional bias toward humor was a better predictor of reaction to the humor stimulus than was sense of humor. The processes involved in attentional bias are still being debated.32,33 Whether attentional bias toward humor reflects a conscious mechanism has not been established. Using humor to cope, on the other hand, is assumed to be a conscious mechanism, and items for coping humor scales are worded accordingly.

### TABLE 3

<table>
<thead>
<tr>
<th>Mood</th>
<th>Base Eek Allegro</th>
<th>Base Eek Allegro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tense</td>
<td>5.00 3.67 5.00</td>
<td>4.19 4.88 5.69</td>
</tr>
<tr>
<td>Anxious</td>
<td>4.81 3.31 8.00</td>
<td>5.19 4.38 7.25</td>
</tr>
<tr>
<td>Distressed</td>
<td>5.44 3.63 5.00</td>
<td>4.19 5.13 5.56</td>
</tr>
<tr>
<td>Angry</td>
<td>3.94 3.31 5.94</td>
<td>4.00 4.25 6.25</td>
</tr>
<tr>
<td></td>
<td>4.69 3.63 5.44</td>
<td>4.63 4.94 5.50</td>
</tr>
</tbody>
</table>

Note. Eek is the humorous cartoon, Allegro is the sad cartoon. Presentation of Eek and Allegro was counterbalanced. There was a significant interaction between groups and anxiety across the repeated measures, \( F(2, 29) = 3.81, p = .0338 \). Contrast tests indicate this effect is a result of group differences in anxiety after Eek, rather than after Allegro \( (p < .05) \). There was a trend for group differences in tension after Eek \( (p = .06) \). For main effects across repeated measures, see Table 2.
It is frequently hypothesized that humor has a positive effect on well-being by influencing perceptual processes or stress appraisal under sorrowful or stressful conditions.\textsuperscript{34,35} Our results suggest that dispositional humor characteristics interact with how both sad and humorous information is processed. Coping humor seems to filter out sad-related information, and humor bias seems to filter in humor-related information. This differentiation may have most relevance to anxiety conditions because both coping humor and humor bias affected anxiety ratings and, to a lesser extent, tension ratings.

Our finding that coping humor mitigated anxious mood after the sad stimulus matches most views of the role of coping humor. Coping humor is believed to help people diffuse emotions in stressful situations or help people remain in difficult situations.\textsuperscript{35-37} Lefcourt and colleagues believe perspective-taking humor (a combined measure of perceived funniness and comprehension) is a form of emotion-focused coping that allows people to "think about catastrophic personal events without becoming overwhelmed."\textsuperscript{35p388}

Coping humor can also protect people from the full impact of personal criticism.\textsuperscript{38} Some authors are concerned that this moderating aspect of coping humor may be so effective that it negates valuable negative reactions to circumstances. For example, Jablonski and colleagues\textsuperscript{39} have noted that violent films were rated less stressful when viewed with a humor component, potentially trivializing violence. The value of coping humor to deal with negative events, thus, may vary according to the nature of the events. In cases where it would seem useful to confront the unpleasant aspects of an event, using humor to deal with unpleasantness may be inappropriate.

Our test of attentional bias provides a behavioral performance score; it may be that this external component of the task made it a sensitive predictor of anxiety reactions to an external humor stimulus. Humor questionnaires designed to measure the extent to which people detect humor in their environments may be similarly sensitive to external positive factors. Martin and colleagues\textsuperscript{40,41} noted a relationship between scores on humor sensitivity (ability to detect humor or humorous intent in interactions with others) and reactions to positive life events. High scorers on humor sensitivity showed an increase in positive mood as positive life events increased in number. Low scorers' moods remained more or less independent of recent positive life events. Several studies, including those measuring whether respondents see the funny side of things, have indicated that a high sense of humor is associated with relatively long-term indices of well-being.\textsuperscript{3,14,35} It may be that this association is the particular strength of the more general sense of humor concept.

Humor affects well-being through various pathways. Humor stimuli help evoke laughter. Laughter leads to changes in physiological mechanisms in ways related to health and well-being.\textsuperscript{42} Subsequent changes in mood, however, may occur only in combination with individual characteristics other than finding the stimulus funny or liking it. Various individual characteristics may differentially determine how humor influences well-being. Coping humor may serve a protective psychological function, helping screen the individual from negative stimuli and, thus, from negative reactions.

Our results suggest that attentional bias toward humor may serve a different protective psychological function by helping the person focus on mood-enhancing stimuli in the environment. At the moment, we must limit our comments about humor coping and humor bias to anxiety, rather than to other mood states. Anxiety, however, plays an important role in general well-being and contributes to distress across a variety of disorders.

The above distinctions between the effects of coping humor and attentional bias toward humor, if they prove robust, will have implications for the way we use humor clinically. In and out of our clinics, we tend to take joviality as a sign of good humor, but the relationship between overt happiness and humor does not seem to be straightforward.

In humor workshops, the overt expression of humor is emphasized. As a result, it could be assumed that if mood is not elated, humor has not been effective. We suggest, albeit tentatively from our small study, that when things in the environment are bad, using humor to cope helps. In such circumstances, however, it may help people keep their equilibrium rather than actually making them happy. On the other hand, we speculate that humor bias may be associated with elevated mood in a positive environment. Given the increased popularity of humor workshops and hospital humor rooms, it would be appropriate to examine the different components of humor encouraged in those environments and see if their outcomes show differential effects similar to those we have discussed.

\textbf{NOTE}

A complementary copy of the humor-bias task may be obtained by writing to Dr Carmen C. Moran, Senior Lecturer in Human Behaviour, School of Social Work, University of New South Wales, Sydney 2052, Australia. E-mail: C.Moran@unsw.edu.au

\textbf{REFERENCES}


COPING HUMOR AND MOOD


