
Coping Humour, Stress, and Cognitive Appraisals

NICOLAS A. KUIPER and ROD A. MARTIN,
University of Western Ontario
L. JOAN OLINGER, University Hospital

Abstract

This study investigated relationships between sense of humour and cognitive appraisals and reappraisals of a potentially stressful event. Cognitive appraisals for an academic examination were obtained at several points in time. Consistent with our predictions, individuals with high scores on the Coping Humour scale appraised the exam as more of a positive challenge than did low humour individuals. In their reappraisals, high humour subjects' ratings of importance and positive challenge were positively related to performance on the exam, whereas for low humour subjects this relationship was negative. In predicting their performance on the next exam, high humour subjects adjusted their expectations on the basis of performance on the previous exam, whereas low humour subjects did not. In addition, humour was negatively related to both perceived stress and dysfunctional standards for self-evaluation. Overall, these results support the proposal that a sense of humour may facilitate coping and adjustment.

Résumé

L'étude en question portait sur les relations entre le sens de l'humour et les appréciations et réappréciations cognitives d'une situation pouvant engendrer du stress. Les sujets ont fourni à plusieurs moments des appréciations cognitives d'un examen qu'ils devaient passer dans le cadre de leurs études. Comme nous l'avions prédit, les sujets ayant obtenu des scores élevés dans l'échelle de mesure de l'humour face à l'adaptation considéraient davantage l'examen comme un défi positif que ne le faisaient les sujets ayant moins le sens de l'humour. En ce qui concerne la réappréciation, les points attribués à l'importance de l'examen et au défi positif par les sujets ayant un grand sens de l'humour étaient corrélés positivement au résultat de l'examen, alors que la corrélation était négative dans le cas des sujets ayant moins d'humour. Pour prédire leur rendement au prochain examen, les sujets ayant un grand sens de l'humour ont ajusté leurs attentes en fonction du résultat de l'examen précédent, ce que n'ont pas fait les autres sujets. De plus, l'humour était corrélé négativement au stress perçu par les sujets et aux normes dysfonctionnelles dans le cas de l'auto-évaluation. En général, les résultats confirment l'idée que le sens de l'humour peut faciliter l'adaptation.

The notion that a sense of humour is an important contributor to psychological well-being has long been evident in the psychological literature, particularly among personality theorists. For example, Abraham Maslow (1962) considered an unhostile sense of humour to be characteristic of "self-actualizing" individuals. Gordon Allport (1961) also wrote about the positive effects of humour, and Sigmund Freud (1928) argued that humour is the highest of the defense mechanisms, allowing the ego to triumph in the face of adversity. Similarly, Rollo May (1953) suggested that humour has the function of "preserving the sense of self... It is the healthy way of feeling a 'distance' between one's self and the problem, a way of standing off and looking at one's problem with perspective" (p. 61).

According to these theorists, the beneficial effects of a sense of humour are particularly evident when individuals are faced with potentially stressful situations. Indeed, Dixon (1980) has suggested that humour may have evolved in the human species specifically as a means of coping with the sorts of social and cognitive stressors that they encounter. According to Dixon, the beneficial effects of humour are primarily produced by means of the cognitive shifts that humour entails.

From a cognitive perspective, a sense of humour may mitigate the adverse effects of stress in at least two ways. First, individuals who generally respond to life in a humorous manner may be less likely to appraise their environment as threatening, and therefore may experience less stress in their lives, than do those with less of a sense of humour. Second, in situations that are experienced as stressful, individuals with a sense of humour may be able to cope more effectively by making more benign reappraisals of the stressors. As a result, high humour individuals may have better psychological adjustment and better emotional and physical health.

It is only within the past few years, however, that researchers have begun to empirically investigate the stress-buffering effects of sense of humour. One example is recent work by Martin and his colleagues assessing the potential role of sense of humour as a moderator of the negative impact of stressful events (Martin & Lefcourt, 1983; Lefcourt & Martin, 1986; Martin & Dobbin, 1988; Martin, 1989). Using a moderator variable paradigm, this research has examined the interaction between sense of humour and life stress in predicting various outcome variables, such as mood disturbance and immunoglobulin levels. In these studies, subjects' sense of humour has been assessed in a variety of ways, including self-report measures, peer ratings, and the rated humourousness of subjects' impromptu comedy monologues in the laboratory.

Typical findings from this research indicate an interactive effect whereby level of humour moderates the impact of stressful events on negative moods such as depression and anxiety. For those individuals with low scores on measures of sense of humour, increased levels of stressful events produce greater levels of disturbed mood. In contrast, those individuals with a higher

sense of humour show little or no increase in disturbed moods with an increase in stressful life events (Lefcourt & Martin, 1986; see also Nezu, Nezu, & Blissett, 1988, for a further demonstration). Similar findings have also been found using secretory immunoglobulin A (S-IgA), a measure of immune system functioning, as the outcome measure (Martin & Dobbin, 1988). In this latter study, low humour individuals showed a significant decrease in S-IgA following high levels of stressful hassles, whereas high humour subjects showed little or no relationship between hassles and S-IgA. These findings are consistent with the notion that a sense of humour may protect the individual from the adverse effects of stressful experiences.

Although findings such as these are promising, the research to date has not addressed the *processes* by which a sense of humour may mitigate the effects of stress. In keeping with the ideas outlined earlier, one potential mechanism that seems worthy of investigation has to do with the cognitive appraisals involved in the stress process. A cognitive theory of stress assumes that appraisals influence the stress process in at least two different ways (Lazarus & Folkman, 1984). First, initial appraisals are involved in determining whether an individual will experience an event as stressful in the first place. Thus, if an event is appraised as a threat that taxes one's coping resources, rather than a challenge that can be managed, then it will be experienced as stressful. Second, cognitive reappraisals may be involved in strategies used to cope with a situation or event once it has been perceived to be stressful. For example, by altering one's perspective to view a stressor as less personally relevant, one may be able to reduce its negative impact.

The present study was designed as an initial attempt at investigating the ways in which such cognitive appraisals may differ between high and low humour individuals when they are faced with a potentially stressful event. In this study we selected a real event containing the potential for stress, namely, an academic examination. Students' cognitive appraisals were assessed one week prior to this examination, immediately afterwards, and then one week later. In particular, we measured appraisals of perceived challenge and threat associated with the examination, and the perceived personal importance of the examination for the individual. We also obtained a measure of expected performance on this examination to determine how this variable (along with actual exam performance) might bear on the relationship between cognitive appraisals and sense of humour.

The subjects' sense of humour was assessed in this study by means of the Coping Humour Scale (CHS; Martin & Lefcourt, 1983). This measure was selected because it was specifically designed to assess the degree to which individuals maintain a humorous outlook when confronted with potentially stressful situations. In addition, although it focusses on humour in response to stress, this measure has also been found to be correlated with more general measures of humour, including other self-report humour scales, peer ratings of sense of humour, and rated humourousness of impromptu comedy mono-

logues (Lefcourt & Martin, 1986). Thus, the CHS may be viewed as a measure of the degree to which individuals generally respond with humour in their daily lives, and particularly when faced with potentially stressful situations. Note that the CHS does not assess the type of humour that individuals prefer, but rather the general tendency to both perceive and utilize humour in one's life situations.

In keeping with the above formulations, our predictions related both to the *initial appraisal process* and to *reappraisals*. Initial appraisals were assessed one week before the exam, and here we hypothesized that subjects with a higher sense of humour (as measured on the CHS) would make less negative and more positive appraisals of the exam. In other words, they would appraise the exam less as a negative threat and more as a positive challenge. We conceptualized these sorts of appraisals as an "event-enhancement" function of humour, suggesting that humourous individuals actively seek out life experiences and view them in a positive rather than negative fashion.

We were also interested in examining how sense of humour might be related to the reappraisal process after the examination was completed. Here we were particularly interested in the ratings of personal importance of the exam. Several theorists have suggested that humour provides a means of protecting the self in times of threat by distancing the individual from the stressor (Dixon, 1980; Freud, 1928; May, 1953). We reasoned that, particularly with regard to performance-related stressors, this distancing may relate to the degree to which the individual perceives the event as having personal importance. Here we were also interested in taking into account the degree to which subjects' actual performance on the exam differed from their expected performance. Thus, in the present study we predicted that, after performance that was poorer than expected, high humour individuals would consider the exam to be less personally important than would low humour individuals. Conversely, after performance that was better than expected, high humour individuals would consider the exam to be more personally important. We conceptualized these sorts of appraisals as a "self-protective" function of humour.

The longitudinal design of this study also allowed us to gather some preliminary data on the nature of subjects' initial appraisals of a subsequent event (i.e., the next exam in the course). Thus, we assessed the perceived threat and challenge of the next exam, as well as the grade that subjects expected to obtain.

Participants in this study also completed several additional measures that allowed for the assessment of potential links between sense of humour and several further variables of interest. We hypothesized that the pattern of appraisals and reappraisals exhibited by high humour individuals would serve to minimize any perceived stress associated with the exam. Thus, we also expected that high humour subjects would report less feelings of stress

and greater feelings of control following the exam. This hypothesis was tested by administering the Perceived Stress Scale, a measure of global stress, one week following the exam.

In addition, the subjects completed the Ways of Coping Scale, which assesses a number of different coping strategies for handling potentially stressful events, including seeking social support, distancing oneself, confrontive coping, and so on. We included this measure to examine differences in coping strategies between high and low humour individuals in response to an academic stressor. For example, a correlation between sense of humour and the reported use of emotional distancing strategies would provide support for the proposal that distancing may be a coping strategy employed by high humour individuals (Dixon, 1980; Martin, 1989).

Finally, we were interested in the link between sense of humour and the sorts of self-evaluative standards that may underly various cognitive appraisals. For this purpose we included the Dysfunctional Attitudes Scale, a measure of the degree to which respondents endorse unrealistic standards for self-evaluation (e.g., "If I do not do well all the time, people will not respect me"). This measure has been found in previous research to be related to vulnerability to depression (Kuiper & Olinger, 1989). We predicted that high humour individuals would receive lower scores on the DAS, reflecting more realistic self-evaluative standards, which, in turn, may underly a tendency to appraise events as less threatening to the self.

METHOD

Subjects

A sample of 44 female university students participated in all three phases of this study. The subjects were enrolled in an introductory psychology course at Brescia College, a predominantly female college affiliated with the University of Western Ontario. All subjects were volunteers, and their mean age was 19, with a range from 18 to 30.

Self-Report Measures

Coping Humor Scale (CHS). This seven item self-report scale was developed by Martin and Lefcourt (1983) to provide a measure of the degree to which individuals maintain a sense of humour in potentially stressful situations, and employ humour as a means of coping with stress. Example items on this scale include; "I have often found that my problems have been greatly reduced when I tried to find something funny in them," and "I can usually find something to laugh or joke about, even in trying situations." All items on the scale are answered on a 4-point scale, ranging from (1) "strongly disagree" to (4) "strongly agree". Internal consistency analyses for this scale have yielded satisfactory Cronbach alphas (Lefcourt & Martin, 1986). In addition, CHS scores are not significantly correlated with Marlowe-Crowne Social Desirability Scale scores (r 's range from $-.10$ to $+.10$), suggesting that the CHS is not

contaminated by social desirability (Lefcourt & Martin, 1986). The validity of this measure has been supported by a variety of findings, including significant correlations with peer ratings of sense of humour (Martin & Lefcourt, 1983), increased levels of immunoglobulins (Dillon, Minchoff, & Baker, 1985), and decreased stress levels associated with dental surgery (Trice & Price, 1986). This measure has been found in previous research to exert a moderating effect on the relationship between stressful life events and such outcomes as disturbed moods and immunoglobulin levels (Lefcourt & Martin, 1986; Martin & Dobbin, 1988). Further information concerning the construct validity and psychometric properties of this scale can be found in Lefcourt and Martin (1986).

Ways of Coping Scale. Subjects in this study completed a slightly modified version of the Ways of Coping scale (Folkman & Lazarus, 1985). This scale is a 67-item self-report inventory designed to assess eight domains of coping strategies, including: confrontive coping (e.g., "Try to get the person responsible to change his or her mind", "Stand my ground and fight for what I want"); distancing (e.g., "Go on as if nothing is happening", "Don't let it get to me; refuse to think too much about it"); self-control ("I try not to act too hastily or follow my first hunch"); social support ("Ask a relative or friend I respect for advice"); accept responsibility ("Realize I brought on the problem myself"); escape-avoidance ("Try to make myself feel better by eating, drinking, smoking, using drugs or medications, etc."); problem-solving ("I'm making a plan of action and following it"); and positive reappraisal ("I'm changing or growing as a person in a good way). Respondents indicated how frequently they used each of the coping strategies on a 0 to 3 scale, where 0 was "Does not apply and/or not used" and 3 was "Used a great deal". Each domain has its own subscore with higher scores indicating greater use of that coping style. For this study, the Ways of Coping scale was specifically labelled "Strategies for handling academic evaluations". This was done to focus the subject's thoughts on how they coped with the stress of academic evaluations, rather than the stress of other aspects of their lives. The instruction paragraph at the beginning of the instrument was also slightly reworded from the original scale, asking subjects to describe how they had coped with this particular academic examination. Further details concerning the construction, reliability, and validity of this scale are provided by Folkman and Lazarus (1985).

Perceived Stress Scale (PSS). The PSS is a 14-item self-report measure tapping cognitive and emotional aspects relating to global perceived stress level (Cohen, Kamarck, & Mermelstein, 1983). In particular, the scale is designed to measure the extent to which individuals generally feel that their lives are unpredictable, uncontrollable, and overwhelming. Example items include "In the last month, how often have you felt that you were unable to control the important things in your life?" and "In the last month, how often have you felt nervous and stressed?" For each item, response options range from 0

"never" to 4 "very often". Short term test-retest reliability for the PSS is .85, with coefficient alphas ranging from .84 to .86 (Cohen et al., 1983).

Dysfunctional Attitudes Scale (DAS). The DAS is a 40-item self-report inventory designed to assess the extent of dysfunctional self-evaluative standards (Cane, Olinger, Gotlib, & Kuiper, 1986). The items on this scale tap irrational, excessive contingencies for determining self-worth with high endorsement rates being associated with increased vulnerability to negative emotions, such as depression (Kuiper & Olinger, 1989). Example items include: "If I do not do well all of the time, people will not respect me", and "If I fail partly, it is as bad as being a complete failure". Responses are made on a 7-point scale ranging from 1 "totally disagree" to 7 "totally agree". Internal consistency coefficients range from .79 to .93, and test-retest reliabilities across a 2 to 3 month period range from .79 to .81 (Kuiper & Olinger, 1989).

PROCEDURE

Participants were assessed across three time periods. Time 1 was one week before the first midterm exam in the course. Time 2 was immediately after completion of the exam, and time 3 was one week later. By time 3, each person had received official confirmation of their mark on the exam. Throughout the study, subjects were assessed in group testing sessions during class time. Prior to assessment at time 1, each participant read and signed an informed consent form.

At time 1, subjects completed the DAS and a Student Rating Form that contained several questions pertaining to the upcoming test. Specifically, this form included one question regarding expected performance on the exam: "What mark do you actually expect to get on this upcoming test?" (from 0 to 100%). Also assessed were appraisals of the personal importance of the upcoming exam, and appraisals of challenge and threat. Personal importance ratings were made on a 7-point scale (1 = not at all important, and 7 = extremely important) in response to the question, "In terms of this academic year, how personally important is this upcoming test for you?" Challenge and threat appraisals were also made on 7-point scales (1 = not at all so, and 7 = extremely so), in response to the following: "Rate the extent to which you view the upcoming test as a positive challenge", and "Rate the extent to which you view the upcoming test as a negative threat."

At time 2, one week later, participants were again asked to provide appraisals of challenge and threat. This was done immediately after the exam using the same 7-point scales described above (with minor rewording to reflect the fact the exam was now completed). Since the exam was written during a regular class period, there was insufficient time upon completion of the exam to administer more extensive measures.

At time 3, one week after the exam, subjects completed a test booklet, containing in a random order, the following instruments; CHS, PSS, and Ways

TABLE 1
Means, Standard Deviations, and Correlations with Coping Humour

	<i>Mean</i>	<i>s.d.</i>	Correlations with Coping Humour
Coping Humour Scale	19.36	4.30	
Initial Appraisals (for First Exam)			
Expected Mark (T ₁)	70.63	7.84	-.04
Positive Challenge (T ₁)	5.20	1.24	.31**
Negative Threat (T ₁)	3.84	1.82	.17
Personal Importance (T ₁)	5.81	1.06	.21
Actual Mark (on First Exam)	68.56	11.04	-.15
Cognitive Reappraisals (for First Exam)			
Positive Challenge (T ₂)	4.47	1.33	.29**
Negative Threat (T ₂)	3.72	1.61	.19
Personal Importance (T ₃)	5.06	1.24	.11
Perceived Stress Scale (T ₃)	29.18	7.63	-.35**
Initial Appraisals (for Next Exam)			
Expected Mark (T ₃)	74.06	6.89	.06
Positive Challenge (T ₃)	4.95	1.39	-.03
Negative Threat (T ₃)	3.43	1.59	.32**
Ways of Coping Scale (T ₃)			
Distancing	5.75	2.52	.27*
Confrontive	5.88	2.97	.32**
Dysfunctional Attitudes Scale (T ₃)	129.31	30.17	-.31**

Notes: * $p < .05$; ** $p < .025$. T₁ = Time 1; T₂ = Time 2; T₃ = Time 3.

of Coping Scale. Subjects then completed a final Student Rating Form in which they were first asked to report the actual mark they had received, and to again rate the degree of personal importance of this exam (using the 7-point scale described above). Participants were then asked to indicate their expected grade on the *next* upcoming test in the course (from 0 to 100%). Finally, participants also provided appraisals for the next upcoming exam, using the same challenge and threat scales as before. After completion of all instruments and scales, each subject was given a written debriefing form, followed by a group verbal debriefing.

RESULTS

Overview of Major Variables

The means and standard deviations for the major variables in this study are presented in Table 1. For the standard assessment instruments (Coping Humour Scale, Perceived Stress, Dysfunctional Attitudes, and Ways of Coping scales), our values are comparable to those typically reported in the literature. An examination of the initial appraisals for the first exam indicates

that, in general, students felt they would do reasonably well on this exam. Students also viewed this exam as a positive challenge and personally important (but with some elements of negative threat). Overall, this pattern of appraisals suggests we were successful in selecting an event with appropriate elements of challenge, threat, and personal importance.

Initial Appraisals for First Exam

Prior to the first exam, scores on the Coping Humour Scale were not significantly correlated with subjects' expected mark ($r = -.04$, ns), negative threat ratings ($r = .17$, ns), or personal importance judgements ($r = .21$, ns). However, as predicted, higher humour scores were significantly associated with greater positive challenge ratings at time 1 ($r = .31$, $p < .025$).

Actual Performance on First Exam

Averaged across all students, actual performance on the first exam (see Table 1) was slightly below initial expectations, although not significantly so [$t(43) = 1.29$, ns]. As expected, actual grades on the test were unrelated to Coping Humour scores ($r = -.15$, ns).

Cognitive Reappraisals for First Exam

The means and standard deviations for the cognitive reappraisals provided by students after the first exam are presented in Table 1. Congruent with the pattern of initial appraisals, higher humour scores were again associated with greater positive challenge ratings ($r = .29$, $p < .025$), but remained unrelated to negative threat ($r = .19$, ns) or personal importance judgements ($r = .11$, ns).

Further analyses were conducted to explore the effects of humour on cognitive reappraisals, taking into account actual grades on the first exam, relative to initial expected grades. For these analyses, we first calculated an actual-expected performance discrepancy score for each student by subtracting their expected mark rating at time 1 from their actual mark on the exam. For this measure, a positive number indicates actual performance better than expected, whereas a negative number indicates actual performance worse than expected.

Positive Challenge Reappraisals. Employing the actual-expected discrepancy measure, a hierarchical multiple regression analysis was performed to predict positive challenge reappraisals immediately after completing the first exam. These reappraisals were predicted by first entering the actual-expected discrepancy score, then the coping humour score, and, finally, the interaction of actual-expected discrepancy with humour.

In this analysis, the main effect of coping humour remained significant after accounting for actual-expected performance discrepancies, incremental $F(1,41) = 5.57$, $p < .025$. Thus, higher humour scores were associated with significantly higher positive challenge reappraisals. Of more importance, this analysis also revealed a significant interaction between humour scores and

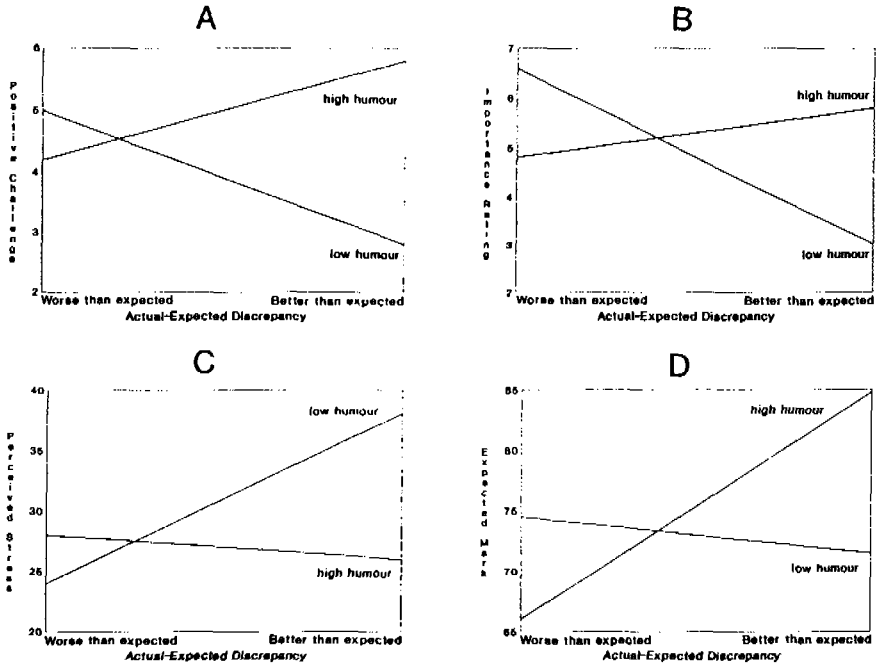


Fig. 1 Relationships for subjects with high versus low Coping Humour scores between actual-expected performance discrepancy and (a) ratings of positive challenge at Time 2; (b) ratings of personal importance at Time 3; (c) Perceived Stress scores at Time 3; and (d) expected mark on next exam at Time 3.

actual-expected performance discrepancies, incremental $F(1,40) = 4.61$, $p < .05$.

In order to clarify the nature of this interaction, the regression equation produced by this analysis was used to compute two separate regression lines predicting positive challenge ratings at time 2 from actual-expected discrepancy scores, one for low humour subjects (1 sd below the mean on the CHS) and one for high humour subjects (1 sd above the mean). Figure 1a presents these regression lines. Consistent with an event-enhancement interpretation, the positive challenge reappraisals of high humour individuals, were not only higher overall than low humour individuals, but increased as actual performance on the first test exceeded initial expectations. In contrast, for low humour individuals, their overall lower ratings of positive challenge decreased even more as actual test performance exceeded expectations. Thus, low humour individuals did not appear able to enjoy the enhancing benefits of unexpectedly good performance. In fact, their pattern of ratings suggests an inability to deal constructively with positive events that exceeded their expectations.

Personal Importance Reappraisals. We also examined the effects of humour on personal importance reappraisals for the first exam, taking into account actual-expected performance discrepancy scores. In this multiple regression

analysis, which used the same set of predictor variables as specified above, neither the main effect of actual-expected performance, nor the main effect of humour was significant. The interaction between actual-expected performance discrepancy and humour, however, was significant, incremental $F(1,40) = 4.11, p < .05$.

Figure 1b presents the regression lines associated with this significant interaction. Considering first those with low levels of humour, personal importance reappraisals varied markedly as a function of performance. When actual test scores were below initial expectations, low humour individuals provided high personal importance ratings. Conversely, when actual performance exceeded initial standards, low humour individuals provided low personal importance ratings. Thus, rather than employing a self-protective strategy, low humour individuals appear to emphasize the personal importance of unexpected poor performance and de-emphasize the personal importance of unexpected good performance. Such a pattern is clearly at odds with a self-protective strategy (and may actually contribute to self-devaluation).

In contrast to low humour individuals, the regression line for high humour subjects reveals a positive slope, indicating that these individuals tended to rate the personal importance of the exam higher when their performance was better than expected. This reappraisal strategy reveals both an event-enhancement and a self-protective function. Those high humour individuals who performed better than expected may have enhanced their sense of well-being by emphasizing the importance of the exam, whereas those who performed more poorly than expected may have minimized the impact by downplaying its importance. In turn, this would help the more humorous individual maintain an appropriate emotional distance from life circumstances or events that may otherwise prove too stressful.

Perceived Stress Levels. Additional findings consistent with the above proposals were evident when we examined the relationship between humour scores and perceived stress levels at time 3. In terms of a simple relationship, perceived stress scale scores were inversely related to coping humour scores ($r = -.35, p < .025$). Thus, as suggested by humour theorists (cf. Martin, 1989), higher levels of humour are indeed linked to lower levels of stress and greater perceptions of control over the events in one's life.

Of even greater interest, however, were the more complex effects which emerged when actual-expected exam performance was also taken into account. Here, perceived stress levels following the first exam were predicted on the basis of the same set of predictors described earlier. In this hierarchical multiple regression analysis, the sole significant effect was an interaction between actual-expected performance discrepancy and humour, $F(1,40) = 5.91, p < .025$. The regression lines for high and low humour subjects are presented in Figure 1c. As can be seen, low humour individuals experienced greater stress when actual performance exceeded initial expectations. This pattern is consistent with both the positive challenge and personal importance findings,

indicating that low humour individuals appear unable to benefit positively from unexpectedly good performance (and even seem to find it stressful). In contrast, for high humour individuals, perceived stress levels were much less sensitive to performance outcome. Perhaps because of their tendency to reappraise poor performance in a self-protective manner, high humour individuals showed minimal stress-reactivity to performance discrepancy outcome. Taken together, then, this pattern for high humour individuals offers further support for a self-protective distancing component of humour.

Initial Appraisals for Next Exam

Also as shown in Table 1, we obtained initial appraisals of challenge, threat, and expected mark estimates for the next exam in the course (at time 3). Coping humour scores were not significantly correlated with expected mark estimates at time 3 ($r = .06$, ns), nor with positive challenge appraisals ($r = -.03$, ns.). Instead, higher coping humour scores were associated with higher negative threat appraisals for the next exam ($r = .32$, $p < .025$). This pattern was unexpected, and will be considered further in the discussion.

A final multiple regression analysis was conducted using the expected mark estimates for the second exam as the dependent variable. Using the same predictor variables as in previous analyses, a significant interaction was obtained between actual-expected performance discrepancy and coping humour, incremental $F(1,40) = 3.85$, $p = .05$. As shown in Figure 1d, the predicted values for this interaction support both a self-protective and event-enhancement interpretation for high-humour individuals. In particular, high humour subjects had higher future expectations when past performance exceeded initial expectations (event-enhancement), but had lower future expectations when past performance was worse than expected (self-protection). This appears to be a realistic approach to adjusting personal expectations (and perhaps self-evaluative standards) in accordance with past performance. In contrast, for low humour individuals, expected performance on the next exam was unrelated to their performance on the previous exam, suggesting a failure to modify future expectations on the basis of experience.

Humour, Ways of Coping, and Dysfunctional Attitudes

Coping humour scores were significantly related to scores on two of the Ways of Coping subscales. As suggested by several humour theorists, higher humour scores were associated with the increased use of emotional distancing techniques, as assessed by the distancing subscale of the Ways of Coping measure ($r = .27$, $p < .05$). In addition, those individuals scoring high on the Coping Humour Scale also indicated greater use of confrontive coping strategies ($r = .32$, $p < .025$). Thus, in attempting to cope with academic evaluations, high humour individuals dealt with these stressful situations in a more direct fashion (e.g., "Stand my ground and fight for what I want"), while, at the same time, emotionally distancing themselves to a greater

degree than did low humour individuals (e.g., "Don't let it get to me; refuse to think too much about it"). This particular combination of coping strategies offers further support for two aspects of humour, in that increased levels of direct confrontation may reflect a greater focus on challenge when dealing with evaluative situations (i.e., the event-enhancement component), but simultaneously coupled with a self-protective component (as expressed through the increased use of emotional distancing techniques).

Finally, as predicted, Coping Humour scores were also significantly related to scores on the Dysfunctional Attitudes Scale ($r = -.31, p < .001$). Thus, more humorous individuals displayed significantly lower endorsement rates for extreme self-evaluative standards (as assessed by the DAS). This pattern is likely also to reflect a greater vulnerability to threats to self-esteem in individuals with a low sense of humour. Since they perceive their self worth as being more contingent on achieving excessive standards, they are more likely to encounter situations in which those standards are not met and therefore their self worth becomes more easily threatened.

GENERAL DISCUSSION

Of special relevance in this research is the relationship between humour and various cognitive appraisals relating to an academic examination. In considering these cognitive appraisals, a distinction was made between initial appraisals, which determine whether or not an event is experienced as stressful, and reappraisals, which have to do with subsequent coping with a stressful event. Based on past humour literature, we suggested that individuals with a higher sense of humour may show an event-enhancement pattern, appraising potentially stressful situations in more positive and challenging terms, rather than focussing on their negative threat aspects (Dixon, 1980; Martin, 1989; Nezu et al., 1988). Empirical support for this proposal was evident in terms of the positive challenge ratings, with high humour individuals finding the exam to be more of a challenge than low humour individuals. This pattern was evident both prior to the exam, and immediately afterwards.

With regard to reappraisals, individuals with a greater sense of humour appeared to be better able to reappraise the exam in a self-protective manner when their performance was poorer than they had expected. Thus, for these subjects, challenge and importance ratings following the exam were positively related to performance on the exam. In contrast, the challenge and importance reappraisals provided by low humour individuals were actually contrary to a self-protective pattern (with greater challenge and importance assumed for poorer performances). This pattern was also reflected in the subjects' Perceived Stress scores, with low humour subjects reporting higher levels of stress following better than expected performance. In addition, high humour individuals tended more than low humour subjects to adjust their expectations for the next exam in a realistic manner on the basis of their performance on the most recent exam.

Generally, then, it appears that individuals with a high sense of humour tend to make initial cognitive appraisals of potentially stressful events in an event-enhancing manner. This event-enhancement is further maintained following a positive outcome; however, when the outcome is negative, high humour individuals are capable of making cognitive reappraisals that serve a self-protective function. When compared to the pattern displayed by less humorous individuals, this finding is congruent with the proposal that high humour individuals may engage in personal distancing as an effective coping strategy (see also the findings for the distancing subscale of the Ways of Coping measure).

Although illuminating, several of the findings still require further empirical investigation. As one example, our original assumption was that poor actual performance on the examination (or performance worse than expected), would be the most stressful for participants. Instead, it appears that for low humour individuals, outcomes better than expected were particularly difficult to cope with. Further work is certainly necessary to clarify the degree to which this finding replicates and generalizes to other events.

Another somewhat puzzling finding was the significant correlation between coping humour and appraisals of threat for the next upcoming exam in the course. The theoretical basis for this finding is far from clear. As one possibility, this heightened threat appraisal may relate to the increased expectations for performance indicated by high humour individuals for the next upcoming exam. It also remains possible, however, that event appraisals may change as the upcoming examination draws closer, and more humorous individuals are able once again to focus more exclusively on positive elements of the event. Since this study did not follow the subjects into the second exam, we were unable to examine this possibility. Again, these proposals are preliminary, and require further empirical testing.

In a broader context, it should be noted that the present research has examined only one set of possible cognitive processes that may be involved in the stress-reduction effects of humour. In addition to appraisals, other cognitive processes that warrant future investigation include attributional styles, personal control beliefs, and problem-solving abilities (Martin, 1989; Nezu et al., 1988). In fact, Martin (1989) has proposed that the facilitative effects of humour on stress may be evident in four major domains, namely, cognitive appraisals, emotion-focussed strategies, interpersonal problem-solving techniques, and physiological-focussed coping. Emotion-focussed strategies involve the use of laughter to discharge pent-up emotions, whereas a problem-solving focus includes the use of nonhostile humour to reduce interpersonal tensions and conflicts. Physiological-focussed coping, in turn, refers to the potentially beneficial physiological correlates of laughter. Overall, the use of humour in these domains may lead not only to greater psychological well-being, but also enhanced physical health. Clearly, much additional research is still required to investigate these proposals.

This research was supported in part by Social Sciences and Humanities Research Council of Canada grant No. 410-88-188 to R. Martin and N. Kuiper. Address reprint requests to: Dr. Nicolas A. Kuiper, Department of Psychology, University of Western Ontario, London, Ontario, Canada N6A 5C2.

References

- Allport, G.W. (1961). *Pattern and growth in personality*. New York: Holt, Reinhart & Winston.
- Cane, D.B., Olinger, L.J., Gotlib, I.H., & Kuiper, N.A. (1986). Factor structure of the Dysfunctional Attitude Scale in a student population. *Journal of Clinical Psychology, 42*, 307-309.
- Cohen, S., Kamarck, T. & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.
- Dillon, K.M., Minchoff, B., & Baker, K.H. (1985). Positive emotional states and enhancement of the immune system. *International Journal of Psychiatry in Medicine, 15*, 13-18.
- Dixon, N.F. (1980). Humour: A cognitive alternative to stress? In I.G. Sarason and C.D. Spielberger (Eds.). *Stress and Anxiety (Vol.7)*. Washington, D.C.: Hemisphere, 281-289.
- Folkman, S., & Lazarus, R.S. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48*, 150-170.
- Freud, S. (1928). Humour. Reprinted in J. Strachey (Ed.), *Collected papers of Sigmund Freud (Vol. 5)*. New York: Basic Books, 1959.
- Kuiper, N.A., & Olinger, L.J. (1989). Stress and cognitive vulnerability to depression: A self-worth contingency model. In R.W.J. Neufeld (Ed.) *Advances in investigations of psychological stress*. New York: Wiley, 367-391.
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Lefcourt, H.M., & Martin, R.A. (1986). *Humor and life stress: Antidote to adversity*. New York: Springer/Verlag.
- Martin, R.A. (1989). Humour and the mastery of living: Using humour to cope with the daily stresses of growing up. In P.E. McGhee (Ed.) *Humour and children's development: A guide to practical applications*. New York: Haworth Press, 135-154.
- Martin, R.A. & Dobbin, J.P. (1988). Sense of humour, hassles, and immunoglobulin A: Evidence for a stress-moderating effect of humour. *International Journal of Psychiatry in Medicine, 18*, 93-105.
- Martin, R.A., & Lefcourt, H.M. (1983). Sense of humour as a moderator of the relation between stressors and moods. *Journal of Personality and Social Psychology, 45*, 1313-1324.
- Maslow, A. (1962). *Toward a psychology of being*. Princeton, N.J.: Van Nostrand.
- May, R. (1953). *Man's search for himself*. New York: Random House.

- Nezu, A.M., Nezu, C.M., & Blissett, S.E. (1988). Sense of humour as a moderator of the relation between stressful events and psychological distress: A prospective analysis. *Journal of Personality and Social Psychology, 54*, 520-525.
- Trice, A.D., & Price, J. (1986). Joking under the drill: A validity study of the Coping Humor Scale. *Journal of Social Behavior and Personality, 1*, 265-266.

Submission June 20, 1990

Revision August 8, 1991

Acceptance August 17, 1991