

Running Head: Humour and Test Anxiety

**The Effects of Item Humour on  
Test Anxiety and Performance**

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What role does humour play in everyday life? Does it serve to alleviate anxiety, and thereby help individuals cope more effectively? Many would support the notion that humour does indeed reduce anxiety and the effects of stress. This review will endeavor to look at the general effects of humour, and then will focus in on its effect on a specific type of anxiety that affects many individuals in achievement oriented situations - test anxiety.

Humour has been popularly believed to be an effective facilitator of positive health and life. Freud felt that humour comprised the highest of the defense mechanisms; in his view, it was an excellent means of coping. Of humour's relationship to anxiety-provoking situations, he stated: "The essence of humour is that one spares oneself the effects to which the situation would naturally give rise and overrides with a jest the possibility of such a display" (Martin & Lefcourt, 1983, p. 1314).

Evidence for the positive effects of humour on physical health have been found as well. The biographical account of Norman Cousins is a case-in-point. Cousins had suffered from an extremely painful disease, which involved severe inflammation of the joints and spine. He had discovered that ten minutes of solid belly laughter gave him two hours of

pain-free sleep. Since his recovery, Cousins has travelled the United States extensively, advocating laughter as a powerful endorphin releaser (Cousins, 1989; Martin & Lefcourt, 1983). As a result, many hospitals today support the use of humour in treating painful diseases, like cancer.

Humour appears to weaken the otherwise inhibitory control of the prefrontal cortex, "believed to be custodian of behavioral programs for social restraint, anticipatory planning, concerns over the consequences of one's actions, sequential events, caution and foresight" (Grumet, 1989, p. 1066). Evidence of this phenomenon comes from observation of frontal leukotomy patients, who show "a tendency toward euphoria and an indifference to social inhibitions" (Grumet, 1989, p. 1067). Aside from frontal leukotomy surgery then, humour releases or lowers inhibitions, usually associated with events under sympathetic nervous system control. Hence, "the laugh-reflex, a species-specific motor automaticism, dissipates nervous energy by momentarily freeing the ancient diencephalic and brain stem centres from cortical inhibition, and in doing so, tames our most incorrigible emotions" (Grumet, 1989, p. 1074).

The strongest rationale for utilizing humour in test construction in particular comes from the theories found in cognitive and Freudian psychology. Koestler, a cognitive theorist, stated that humour resulted in a "cognitive shift" - a juxtaposition of two normally incongruous frames of

reference (Martin & Lefcourt, 1983). O'Connell, a Freudian theorist, said much the same thing: humour allows one to "shift perspectives" - to distance oneself from his/her problems (O'Connell, 1976).

In the case of this review then, the author bases his hypothesis on the well-known, but still ambiguous notion that humour may serve to draw attention away from "the problem" (e.g., test anxiety) to the task at hand (e.g., the test). If humour serves to shift perspectives for the individual dealing with general stress (e.g., being locked out of the car; disagreeing with a spouse; etc.), will it do the same with the individual dealing with the situational stress of test anxiety? Other researchers have asked the same question, and it is to them that the review now turns.

#### **Humour As a Treatment for Test Anxiety**

A most unusual use of humour, which this review seeks to investigate, has been to facilitate achievement for test anxious individuals. It does seem unusual since laughter and goal-oriented behaviour are often deemed incompatible (Lewis & Haviland, 1993). In essence, one's response to humour can be seen as a release of tension and anxiety; the release for many would be from a debilitating level of test anxiety. Test anxiety can be understood as a specific response to evaluation; one which may be viewed as more of a trait than a state - being very resistant to change (Sarason, 1960). "Sarason (1972) and Wine (1971) postulate

that evaluative stress elicits higher levels of interfering "state" anxiety such that the highly anxious spend greater portions of their time focused on heightened self-preoccupation and physiological arousal, a process which directs time away from efficient task solution"

(Deffenbacher & Deitz, 1978, p. 446). Humour then, as will be discussed, has been used with varying degrees of success in attempting to reduce, or bring to an optimal level, the anxiety brought about by tests. The following discussion shall attempt to outline specific research directed toward this topic.

Smith, Ascough, Ettlinger, and Nelson (1971) were the first researchers to systematically test the facilitative effect of humour on test performance. Highly test anxious students performed significantly better on a humorous, rather than non-humorous, 30-item multiple choice test. A couple of caveats arose, however. For the moderately anxious student, performance declined in the humour condition, (though not significantly). Furthermore, other researchers questioned the equivalence of the matched humour and non-humour questions (Townsend & Mahoney, 1981). Although Smith et al. did indeed manipulate test content, they followed through by subsequently comparing the matched questions: they found no difference in scores, which serves to question Townsend & Mahoney's (1981) "equivalency" contention. The equivalency question was raised by Townsend

& Mahoney (1981; 1983) because they felt that the test items (e.g., the matched humorous/nonhumorous questions) were unequal, in terms of difficulty. In sum, the Smith et al (1971) experiment clearly showed that humour can facilitate test achievement for some individuals (e.g., the highly test anxious). In the author's mind, however, the question of an optimal frequency of humorous questions is an important one given the fact that students in the moderately anxious category had depressed scores. Would less humour have facilitative effects, regardless of one's anxiety level?

The humour and anxiety question was further tested by Terry & Woods (1975) with elementary school children, specifically, third and fifth graders. Children were randomly assigned to one of two sets of problems: one worded humorously; the other worded non-humorously. The problem sets comprised four different problems: " a brief paragraph, followed by short-answer, informational questions; a verbally presented mathematical problem; a paragraph followed by a list of portrayed events to be ordered in proper sequence; and a second mathematical problem" (Terry & Woods, 1975, p. 183). For the third-graders, humour hindered math scores, with no effect on verbal scores. For fifth-graders, humour had no effects on math scores; it had mixed effects on verbal scores. Interestingly, for the fifth-graders, humour was at first facilitative; with time, however, humour served to hinder

performance. These results are complex, yet point again to the notion of an optimal level of arousal and humour. Humour may raise or lower this theoretical "optimal" level of arousal according to the interaction of pre-test anxiety level, task complexity, and the characteristics of the situation (Smith et al, 1971; Terry & Woods, 1975; Gruner, 1978; Ziv, 1984).

Attempting a different approach from that taken by Smith et al (1971), Townsend & Mahoney (1981) manipulated actual test content, choosing to add five humorous questions to a 35-item multiple-choice test. Moreover, their participants were informed that the test didn't count towards class grades. Their results failed to support Smith et al. (1971), in that high test anxious participants did worse on the test which included the adjunctive humorous questions. Townsend and Mahoney (1981) concluded: (a) humour may have been perceived as an extraneous distraction, or not noticed at all; (b) the incongruency with Smith et al's (1971) findings may also have been due to the use of different scales of anxiety. Townsend & Mahoney (1981) used the State-Trait Anxiety Inventory, whereas Smith et al. (1971) used the situation-specific, Test Anxiety Scale. The former is postulated by Townsend & Mahoney (1981) to be a better choice of scale, since, in their view, the latter (TAS) is not a significant predictor of achievement. To the author, however, this purported advantage is unclear.

In a subsequent study, Townsend & Mahoney (1983) shed more light on the interaction of humour and test performance by examining other variables, namely: student perceptions of verbal and cartoon humour in tests. Moreover, they utilized the GEFT (Group Embedded Figures Test) to distinguish field-dependent from field-independent participants. The former are hypothesized to have a cognitive style such that humour is more difficult to extract from a stimulus; the latter are hypothesized to have a cognitive style such that humour is more easily extracted from a stimulus. The humour was added, as in their 1981 study, in the form of five extra questions on a 35-item multiple choice test. Humour was either verbal, or cartoon (e.g., from the "Peanuts" comic strip) in format. Their findings were as follows: (a) the verbal humour condition was perceived as more humorous by all participants; however, the F.D. participants found verbal humour more irritating and distracting; (b) in the cartoon humour condition all participants perceived the cartoons as being less distracting than the verbal humour, yet not as funny as the verbal humour; (c) the humour, on a whole, had no effect on test achievement scores.

Using humour within a 50-item multiple-choice grammar test, McMorris, Urbach, & Connor (1985) found humour to have no affect on test performance, either facilitative or deleterious. Twenty questions (40% of the test) were



designed to be humorous; they were distributed in the middle third of the test. "Inclusion of humorous items did not affect grammar scores on matched humorous/nonhumorous items, on common post-treatment items; neither did inclusion affect results of anxiety measures" (McMorris, Urbach, & Connor, 1985, p. 147).

McMorris et al. (1985) offer an explanation of their failure to support the notion that humour facilitates achievement scores. Most importantly, pre-test anxiety was low, (81% of the sample indicated feeling "very calm"), since participants were aware that the test didn't count towards their grades. By contrast, the Smith et al. (1971) experiment used a regular class test (worth 50% of a student's final grade), which appears to be a more valid way of testing humour's effects.

Several general conclusions can be drawn from the preceding findings, in spite of the incongruencies. Firstly, it may be important to consider not only how much humour (frequency) is optimal for inclusion in a test, but also the weight of the test. None of the previous research introduced humour into tests which varied in relative weight - perhaps humour will affect performance differently as a function of the test weight.

Another observation is that participants' scoring low on the GEFT (Group Embedded Figures Test) tended to have a difficult time extracting, or noticing humorous test items.

In their case, verbal humour resulted in feelings of frustration and indifference. Bear in mind, however, that Townsend and Mahoney's (1981;1983) results may have been confounded by the fact that the humorous questions were an adjunct to their 35-item test (as opposed to 40 items for the experimental group). Finally, participants knew that the test "didn't count"; this fact, in the author's view, questions the ecological validity of their results; the anxiety prior to taking a test will be authentic only when the test is real, and counts towards course grades.

### **Conclusion**

Thus far, the research that followed the Smith et al. (1971) study presents a somewhat equivocal picture. The use of humour in modern testing continues to be arbitrarily applied. The questions remain then: Is the use of humour in test construction beneficial or harmful to the student in general, in terms of its effects on achievement scores? How much humour is "enough?" Is it better to use humour in a low-weighted, compared to a heavily-weighted test, or vice-versa?

The author suggests, as McMorris et al. (1985) do, that if humour serves to have an innocuous or beneficial effect on test scores, then its use in testing is warranted. A systematic replication of the Smith et al. (1971) study is the author's intention. The following methodological

modifications, however, should serve to extend the current understanding of the relationship of humour and test anxiety by: (1) using two scales to measure anxiety; (2) assessing students' sense of humour; (3) varying the frequency of humorously-worded items (e.g., 0%, 15%, 30%); and (4) applying the humour manipulation to both exams and quizzes. The aforementioned steps should therefore answer the following questions: (1) Does one's sense of humour moderate the facilitative, or possibly deleterious, effects of humour? (2) In facilitating performance, what is the optimal frequency of humour necessary to do so? (3) Does humour facilitate performance in exams and quizzes, both of which likely moderate anxiety as a function of their weight?

In conclusion, the literature indicates that questions regarding the use of humour in test construction are far from being settled. The use of a wide range of samples, as well as divergent methodologies in general seems to cloud the issue somewhat. The author hypothesizes that a relatively small frequency (e.g., 15%) of humorously-worded questions will facilitate performance for the highly-test-anxious student; or at the very least, have an innocuous effect. If that proves to be the case, the author would remain firm in supporting the use of humour in test construction. This view is supported by several surveys of student opinions (Townsend & Mahoney, 1983; McMorris, Urbach, & Connor, 1985), which seem to favour the inclusion

of humour in tests. Whether the findings of the present research indicate facilitative or innocuous effects of humour, the point will be clarified in having established the optimal frequency of humour necessary to achieve non-deleterious effects on performance in both low and highly-weighted tests.

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THE EFFECTS OF ITEM HUMOUR ON TEST  
ANXIETY AND PERFORMANCE

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THE EFFECTS OF ITEM HUMOUR ON  
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Trait and test anxiety, as well as sense of humour ratings were obtained from subjects completing one of three multiple-choice exam/quiz versions. Each version contained a different frequency of humorously-worded questions. Either 0%, 15%, or 30% of all exam/quiz questions were worded humorously. A 3 (Anxiety Level: Low, Moderate, High) x 3 (Test Version: 0%, 15%, 30%) ANOVA on test scores indicated that humour at either level of frequency failed to significantly depress or facilitate performance for all subjects, regardless of their level of test anxiety. The weight of the test however, appeared to moderate the effects of humour: 30% humour was ideal in quizzes; 15% humour or less was ideal for exams.



Humour has been popularly believed to be an effective facilitator of positive health. Freud held that humour served well to reduce anxiety; in his view, it comprised the highest of the defense mechanisms (Martin & Lefcourt, 1983; Grumet, 1989). Humour has been used as a means of coping with the stresses of doctoral exams among graduate students (Mechanic, 1962). Exposure to humour has been found to reduce experimentally-induced anger in subjects especially when the humour paralleled or related to subject's current cognitions (Dworkin & Efran, 1967).

Biographical evidence of the physiological benefits of humour is reported by Cousins. He had suffered from an extremely painful disease, involving inflammation of the joints and spine. In his case, ten minutes of solid belly laughter gave him two hours of pain-free sleep. Since his recovery, Cousins has travelled the United States extensively, advocating laughter as a powerful endorphin releaser (Cousins, 1989; Martin and Lefcourt, 1983; Lewis & Haviland, 1993).

The use of humour in moderating the effects of test anxiety in particular has been a focus of research since the early 1970's. Theoretically speaking, if humour serves to reduce anxiety in other contexts of life, as mentioned above, would it not also do the same

in educational settings, in the context of reducing test anxiety? The research in response to this question has been somewhat less than assuring. A clear pattern of the effects of humour in test construction has been elusive (Terry & Woods, 1975; Townsend & Mahoney, 1981). The reasons for confusion may be partly due to disparate methodologies (e.g., different subjects; varying levels of pre-test anxiety; too high a level of humour; using un-matched controls/treatments, etc.).

The present study seeks to support the theoretical and ambiguous notion that humour reduces anxiety, even test anxiety. The only clear evidence in this regard was gathered by Smith, Ascough, Ettinger, and Nelson (1971), who found that humorously-worded multiple-choice test questions facilitated test performance among high anxious subjects. They noted, however, that the scores of the moderately anxious subjects suffered in the humour condition - although not significantly. In the present study then, the following questions will be addressed, through a replication and extension of the Smith et al (1971) experiment: (1) Does the inclusion of humorously-worded items make a facilitative difference in test performance? (2) Is the hypothesized effect of humour on performance moderated

by the weight of a test (e.g., quizzes versus exams)? (3) Is one's sense of humour correlated with measured anxiety and scores on humorously-worded quizzes and exams? (5) If humour does facilitate performance, does it do so at specific levels? -- e.g., how much humour is "enough"? These questions were investigated through the administration and comparison of quizzes and exams, varying only in the proportion of humour they contained (e.g., 0% condition; 15% condition; 30% condition).

### Method

#### **Participants**

Participants were 85 Algoma University College students, enrolled in an introductory psychology course, which consisted of two class sections, taught by the same instructor. Test and quiz questions were the same for all class sections.

#### **Measures of Humour and Anxiety**

During the second week of class, all participants were administered the 7-item Coping Humour Scale, and the 21-item Situational Humour Response Questionnaire (Martin & Lefcourt, 1983) by their course professor.

Scores on these questionnaires were subsequently returned to participants, who were led to believe that the procedure was a routine part of their course.

Approximately one week later, all participants were administered two anxiety scales by their course professor: (a) the Test Anxiety Scale (TAS) (Sarason, Pederson, & Nyman, 1968) and (b) the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). As above, participants were informed that the results of the inventories would be discussed in a future section of their course, dealing with "personality". On the basis of their TAS scores, participants were ranked into low (3-10), moderate (11-16), and high (17-36) test anxiety groups. Scores on the STAI were used to validate the TAS; their correlation was .476.

### **Experimental Materials**

Two forms of a multiple-choice 15-item quiz, and a 75-item exam, derived from the "Psychology Today Test File" (Dunn, 1991) were humorously-reworded. The two forms comprised a 15% humorously-worded version of a quiz/test, and a 30% humorously-worded quiz/test. The stem of each of the humorously worded questions was

altered; the four response alternatives were left unaltered. The author was careful in maintaining the conceptual validity of the original versions of the test questions. An example of a matched humorously-worded and non-humour question follows:

(12) Non-Humour:

Suppose you are told that your friend's child has "Guervodoces syndrome". You should expect that the child:

(12) Humour:

Homer has just been told that Bart has "Guervodoces syndrome". Homer is thrilled by the news, thinking that precocious little Bart has just won a Latin American college scholarship. You, however, should expect that Bart:

Alternatives:

- (a) is genetically female but has male sex organs
- (b) will be mentally retarded
- (c) is likely to develop homosexual preferences
- (d) will appear to be female until puberty at which time male sex organs will develop

### Procedure

Participants were informed by their instructor that they would be receiving alternate forms of tests and quizzes throughout the semester in order to prevent cheating. The two forms (conditions) of the test/quizzes, in addition to a non-humour control condition (e.g., a 0% humour-control; a 15% humorously-worded version; a 30% humorously-worded version), were administered in normal classroom conditions: one test worth 20%, and 6 quizzes worth 3% each; All quizzes and tests were administered in a random block manner (e.g., 0%, 15%, 30%, 0%, 15%, 30%,...). Each quiz/test administration was treated as a separate analysis, since the possibility of a student(s) receiving the same quiz/test condition was deemed high. The test and quizzes comprised 75 and 15 questions, respectively. On the quizzes, questions 4 and 9 were re-worded on the 15% (actually, 13%) humour condition; questions 4, 9, 12, and 15 were re-worded on the 30% (actually, 26.6%) humour condition. On the test, question stems were re-worded, resulting in a 15% (actually, 14.6%) humour condition with 11 humorous items (every 7th question was reworded, from question 7 to question 75) and a 30% (actually, 29.3%) humour condition with 22 humorous items (every 3rd question was reworded, from question 6

to question 69).

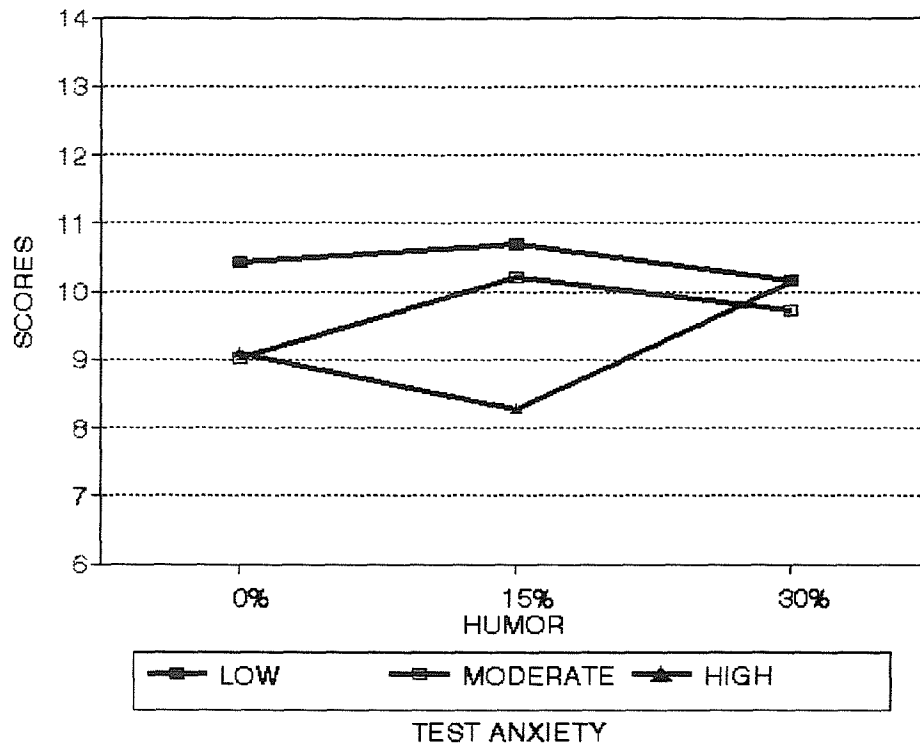
For students who missed a quiz/test and required a re-write, quizzes/tests were randomly assigned. Student complaints (e.g., "the humorous items distracted/bothered me!", etc.) were handled in such a manner that students were allowed to rewrite a non-humour quiz/test. No such complaints or concerns arose, however.

### Results

The scores from 6 quizzes and 1 mid-term examination were analyzed with a 3 x 3 ANOVA (3 levels of test anxiety x 3 versions of test). The General Linear Model was used, since the number of subjects receiving each test version was unequal. In addition, Tukey tests were implemented throughout the analyses, in order to reduce the possibility of Type 1 errors.

For the quizzes, no significant main effect of humour occurred. In the 15% humour condition, however, subjects in the high anxious group performed at a significantly lower level than the low or moderate anxious groups ( $F=5.20$ ,  $P=.025$ ). In the 30% humour condition, these differences disappeared, and all groups scores clustered together (see figure 1).

Figure 1. Relationship between test-anxiety groups and version of quiz.

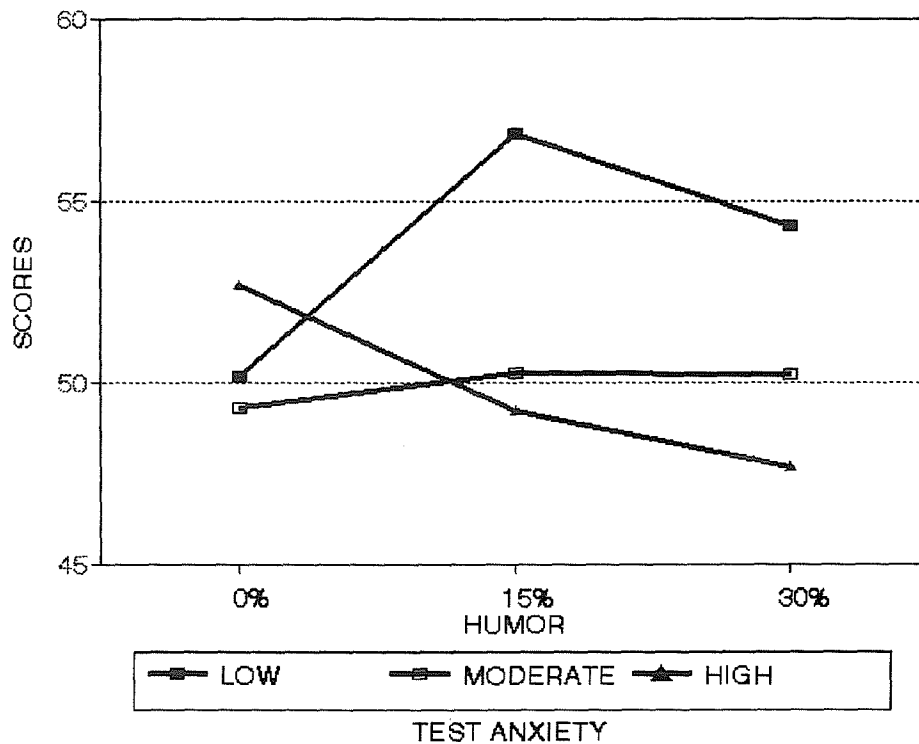


The exam results offered another picture. Again, no significant main effect of humour occurred, but low anxious subjects in the 15% humour condition performed significantly better than the other groups ( $F=4.29$ ,  $P=.05$ ). In the 30% humour condition, the low and moderately anxious subjects' scores exceeded those of the high anxious subjects, though not significantly. However, high test anxious subjects' performance showed



a steady rate of decline as the humour frequency increased (see figure 2).

Figure 2. Relationship between test-anxiety groups and version of exam.



A median split on the subjects' humour scores was done in order to examine putative differences between high and low humour groups. It was hypothesized that subjects with higher scores on the humour inventories would perform at a higher level than those with lower

scores - in short, they should use the humour more effectively in reducing their anxiety. Correlations were subsequently done on the relationship of test anxiety and performance for each humour group (high versus low). Following computation of the Fisher's z statistic, the author failed to reject the null hypothesis - the correlations between test anxiety and performance for both groups were essentially the same. One's sense of humour (as measured by scales purported to tap the extent to which humour is utilized in coping with stress and everyday life situations) was apparently not associated with differential performance in this experiment.

### Discussion

These findings do not support those of the Smith et al (1971) experiment, which suggested that humour facilitates performance for the highly test anxious student. In the quizzes and the exam, performance varied, as a function of both weight of test and frequency of humour.

With a low-weighted quiz, a 30% humour frequency appeared to be optimal, in the sense that all scores clustered together, regardless of the subject's test anxiety. With a heavily-weighted test, however,

performance appeared to decline as the frequency of humour increased. Out of these scenarios, the following may be suggested: (1) On low-weighted tests - a 30% humour frequency may be utilized without deleterious effects on performance; and (2) on heavily-weighted tests, where pre-test anxiety is likely quite high, no more than 15% humour is recommended.

The apparent lack of effect of the independent variable - humour, may be due to several things. Perhaps the subjects failed to notice or appreciate the type of humour. With respect to the creation of the humorously reworded questions, the author worked alone; only his spouse was available to validate the relative humorousness of each question. This in itself was a major weakness of the experiment, although the author's efforts in constructing humorous items were guided by the major theories of humour: superiority, relief, and incongruity (Endlich, 1993). However, with regards to subjects' failing to notice the humour, the results tended to be consistent with the Hedl, Hedl, & Weaver (1978) finding that humour appreciation is much lower in anxiety-provoking situations for high anxious individuals. This was most definitely the case in the exam situation for high anxious subjects.

In conclusion, while humour may not facilitate performance, it may be at least appreciated by the test-taker when its frequency is reasonably set according to the test weight. Interestingly, several students involved in this experiment reported to their course instructor that they enjoyed, and desired to write, the "funny tests". This was anecdotal evidence in support of the use of humour in test instruments. Furthermore, "if humour minimizes some of the negative attitudes prompted by testing and reduces the threat in many testing situations, then the progress of the test taker and the effectiveness of the instructional program might be depicted more accurately" (McMorris, Urbach, & O'Connor, 1985, p. 154). The author agrees with McMorris et al (1985), in supporting the careful use of humour in testing, if only to make for a more "humane" testing process.

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