

## The Effect of Humour on Learning in an Educational Setting

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**Abstract:** Humour is seen to have largely positive effects on learning, but these effects are not left uncontested. Furthermore, the fact that humour is culture specific can limit the generalizability of studies. The current paper, thus, attempts to determine if humour can have an important role in the cultural context of India.

The current study investigated the effect of humour on learning in a real-world educational setting. 56 participants from the 8th grade of the same high school were enlisted for the study, and divided into two groups in a classroom setting- one group receiving humorous material and the other group receiving non-humorous material.

All content was displayed via slideshows spanning 5 subtopics of the school subject of 'English'. All content was equated in terms of visual imagery and amount of information displayed. An intervening task of solving math problems was introduced between viewing the content and answering the post-test.

Results were obtained using a pre-post design. Data was analysed via 2 sample independent t-tests and bivariate correlations. Results showed that the material presented in a humorous manner is remembered better than other equivalent visual non-humorous material. Secondly, exposure to humorous material is also correlated with better engagement with the material, and positive affect. These results draw attention to the need for further, culture-specific research investigations in the field of humour, as it can prove to be a very effective learning tool.

**Keywords:** Humour, Learning, Education

### I. INTRODUCTION

According to Chiasson (2002), humour is as human and as authentic as the need to communicate [1]. The many positive effects of humour - which is essentially a form of social play - on individuals are widely known. These advantageous functions can be broadly categorised into psychological, physiological and social benefits. For instance, the use of humour is known to reduce pain as humorous material induces laughter, which in turn results in the release of endorphins [2]. It is also known to improve blood circulation and respiration [3]. As cited in Berk (2001), the psychological benefits of humour include anxiety reduction, tension reduction and stress reduction, as laughter causes a decrease in stress hormones like serum cortisol, DOPAC (a metabolite of dopamine) and epinephrine (Berk et al. 1988; Berk, Tan, Fry et al. 1989; Berk, Tan, Napier. and Eby 1989; Fry 1971, 1984, 1992)[4].

Due to its numerous benefits, research on humour has been varied. The effect of humour on learning and memory has been of specific interest to psychologists.

Humorous content was found to have better results than non-humorous content in a learning paradigm. Schmidt (1994) found that humorous sentences were recalled better than non-humorous sentences in lists containing both sentence types. In a later study, the same group found a similar effect of humour in cartoons (as cited in Schmidt, 2001) [5].

Subjects had a greater memory of humorous cartoons when compared to weird and literal cartoons [6].

There are several ways in which the positive effect of humour on memory can be understood. Humour can act as a strong retrieval cue, because (a) humorous information is remembered better, thus becoming an efficient cue and because (b) it activates deeper processing which leads to a stronger association between the humorous content and the material that has to be remembered [7]. When used in a classroom setting, humour can have additional beneficial effects on learning, such as creation of a favourable atmosphere in the classroom, which is related to better retention of content [8], creation of a more pleasant social climate, hence altering and negating the various barriers present in the traditional classroom setting[9], and increased interest in subject matter for the students, as well as the teachers.[10]

However, the positive effects of humour on learning are not uncontested. It has been reported that for some individuals, humour present in the material to be remembered may increase tension and thus result in already tense individuals performing worse [11]. On the other hand, Terry and Woods have obtained contrary resultsshowing that humour might only have an indirect effect on learning by relieving anxiety faced by learners [12]. The relationship between tension and humour is therefore quite complex.

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Furthermore, the fact that humour can be very culture-specific limits the generalizability of its effects. Morain (1991) specifies culture as the biggest challenge in understanding humour (as cited in Bell, 2009) [13].

Jiang et al illustrates differential attitudes between American and Chinese students towards the use of humour. Within the study, the Chinese participants rated their humour appreciation almost the same as the American participants did, but the implicit association tests showed that they devalued the use of humour- often by associating it with unpleasant words. [14].

This, in turn, might affect the use of humour in a learning situation differently when used with different populations. Thus, studies pertaining to participants from a Western culture might not hold true for participants in Eastern cultures. Nevertheless, studies reporting positive effects of humour are not limited to the western culture. Takashi and Inoue found a clear better recall of doodles with humorous content with Japanese undergraduate students [15]. These results are comparable to an earlier study on American students (of Schmidt [16]), which used a humorous cartoon learning paradigm. The similarity between the two studies and their findings point towards humour being a similar phenomenon across different cultures. Given the scarcity of research on humour in eastern cultures, more studies are clearly needed.

The inconclusiveness regarding this domain as seen in previous research, coupled with the need for a culture-specific understanding of the effects of humour resulted in the current paper.

Our study is designed to explore the impact of humour on learning when it is presented in a classroom setting. High school students were presented with school material in a humorous or non-humorous manner. Students were randomly assigned to 2 groups. In the experimental group the learning material was presented in a humorous way, whereas in the control group the same learning material was presented in a casual way. The design used was a pre-test post-test one.

We expect (1) that educational content, when presented in a humorous manner will result in better learning and memory than when it is presented in a non-humorous manner; (2) higher engagement with the learning material in the experimental group.

## II. METHODOLOGY

### *Participants*

Fifty-six participants were students studying in the 8th grade of Surajba Vidya Mandir High School. The school was chosen randomly among schools suitable by convenience of location and class strength. All students were assessed in their regular school classes. All participants were enlisted in the study in return for 2 educational and humorous sessions that would be conducted later. There were 41 male participants and 15 female participants. The students were chosen from the 8th grade, as their school syllabus content at this stage matched the kind of content the testing situation needed.

### *Materials and Procedure*

The students were assessed in their regular school classes. One classroom was assigned to be the experimental group while the other was the control group. Students were told that they would have 2 hours' worth of activities. Each classroom had 3 investigators. At first, a pre-test was handed out to all students together with verbal instructions. The students were given 10 minutes to complete a 25 items questionnaire, which tested English grammar - consisting of 13 multiple-choice questions, 4 fill-in-the-blank, and 8 open-ended questions. Students were ensured that test performance would not affect their school grades in any manner.

The pre-test was followed by a teaching intervention in the form of a PowerPoint presentation on English grammar. They were instructed not to disrupt the presentation, and were requested to pay attention to the slideshow. The written content on each slide was read out by the experimenter in a clear and audible voice. All slides were exposed for time enough for the experimenter to read out the contents on the slide and pause for 5 seconds. The content on the slides differed across the 2 groups. The experimental group was shown a presentation with the learning material presented and explained in a humorous way, such as using wordplay and the creation of alternate realities and narratives. The control group was presented with the identical learning material presented in a regular, non-humorous way. The slides were identical in additional variables like the size of font, colours used, number of characters present etc.

After the presentation, the participants were given the numerical task sheet, and were asked to answer them. The numerical task sheet consisted of 15 multiple choice questions involving algebra and simple calculus. The questions matched the kind of math questions the students solved in school. 10 minutes after the distribution, they were stopped, and the sheets were collected. The participants were then administered the post-test sheet, which was a parallel version of the pre-test. Instructions were identical to the pre-test.

Finally, all subjects were individually interviewed by the experimenter. Funniness ratings, affect, interest in the task, and their overall reaction to the tasks were assessed in a semi-structured way. The interviewer converted the responses of the subjects into a rating scale. Funniness ratings ranged from 'Not at all funny'=0 to 'Very funny'=4 in a 5-point rating scale. Engagement was seen as being classified into one of 3 groups- 'highly engaged with positive affective'=2, 'undecided/no visible affect'=1, 'disinterested and bored with negative affect'=0. Subjects were then debriefed regarding the purpose and intent of the experiment. They were also asked for their consent to use the data collected for research purposes.

### *Statistical analysis*

Data preparation was conducted with Microsoft Excel (Microsoft Corporation, Redmond, WA), and on statistical analyses were carried out in SAS 9.3 (SAS Institute Inc., Cary, NC, USA).

At first the effectiveness of the humorous intervention in conveying humour (manipulation check) was tested

by comparing humour rating between the 2 experimental groups via 2-sample independent t-test. To test the between group differences in learning, we first created difference score by subtracting the pre- from the post-test ratings, and then tested those in a 2-sample independent t-test. A further t-test was conducted to assess the effects of the humorous intervention on task engagement.

Finally, to test for dependencies among the variables involved, we computed bivariate correlations among learning success, task engagement, humour perception and baseline performance.

### III. RESULTS

The pre-test was completed with a success rate of 38.3% correct answers, with a rate of 37.6% in the EG and a rate of 39.0% in the CG. The post-test was completed with a success rate of 55.8% correct answers, with a rate of 60.1% in the EG and a rate of 51.2% in the CG. The two groups also differed in their perception of humour, with mean funniness ratings judged to be 2.69 in the EG as against a 0.88 in the CG. This difference was significant at an alpha level of 0.001, thus demonstrating the effectiveness of our intervention to produce humour.

As far as learning was concerned, subjects exposed to the humorous content had a mean score increase of 5.66 points from pre-test to post-test, while subjects exposed to the equivalent visual non-humorous content had a mean score increase of only 3.04. Thus, better learning is seen to have taken place in the experimental group, and this difference of scores between both the groups was significant ( $t=3.02$ ,  $p<0.01$ ). Additionally, subjects in the experimental group also reported more engagement with the task, and less boredom as compared to the control group ( $EG=1.8$ ,  $CG=1.5$ ,  $t=2.05$ ,  $p<0.05$ ). The perception of humour correlated positively with task engagement ( $r=0.3$ ,  $p<0.05$ ).

### IV. DISCUSSION

The current study investigated the effect of humour on learning in a real-world educational setting. One group of 8th graders received humorous content while the other group received non-humorous content. Results were obtained using a pre-post test. The major findings of this research can be summarized as follows. Firstly, material presented in a humorous manner is remembered better than other equivalent visual non-humorous material. Secondly, exposure to humorous material is also correlated with a higher perception of humour, and with a higher degree of engagement with the material, and positive affect. These findings could not be better explained by previous knowledge as measured by baseline performance.

The humorous intervention in the experimental group was clearly successful, which was shown in the significantly higher humour ratings in this group as compared to the control group. Better learning was seen to have taken place in the experimental group who were exposed to the humorous content. This difference can be attributed mainly to the effect of humour as both groups were equated on visual imagery and content. These results are similar to Schmidt et al's 1994

study, which reported that humorous sentences were better remembered than non-humorous sentences.

Besides the positive effect on learning, our humorous intervention was also associated with engagement with the task. Participants in the experimental group described the content to be more interesting and less boring, and also reported an overall positive affect as compared to the control group. This is in accord with previous work by Casper, who found that humour's major role was the creation of a pleasant classroom atmosphere, which lead to better retention of content [17]. Additionally, the relation between humour, memory and affect is also explained by Ziv, who points out that since emotions are processed within the same system as memories and there is a discernible link between the two, humour that is integrated into content that needs to be remembered leads to better memory due to the positive emotions it creates [18]. Engagement was also found to be significantly correlated with humour, which suggests a relationship between the 2 factors. Since our intervention was designed to induce humour, it is likely that engagement with the task resulted as a consequence of humour. However, a correlative result cannot be interpreted as any type of causation. Further study is needed to elucidate the relationship between these two variables.

Other aspects of humour also merit consideration with regard to learning. For example, the kind of humorous technique that is used also plays a role in learning. Humorous narratives that involve unusual material (such as that seen in this experiment) lead to more spontaneous elaboration than usual material [19]. According to Atkinson & Shiffrin (1968), humour is also seen to play a role by increasing rehearsal of the to-be-remembered material (as cited in Schmidt, 1994) [20], but this fact is highly debated in the academic community. Although the current experiment did not tackle this aspect by measuring it, it does deserve future investigation.

The experiment, however, had several limitations. Firstly, the study utilized a small and homogeneous sample of subjects consisting of 56 students of the same age, from a single school, and derived from the same socioeconomic status. This would lead the researchers to be cautious about generalizing the results to all of India. Nevertheless, despite the low N a significant relationship between group effects of humour was found. Secondly, the learning content was limited to the subject of English. Findings for other different subjects such as Mathematics and the natural sciences might therefore differ. Finally, the experiment only dealt with an immediate recall test. There is the need to test for such effects using a delayed recall test as well.

However, the experimental scenario can be evaluated favourably on many different parameters. Since the learning material of both groups was identical, apart from the humorous elements, the results can solely be attributed to the independent variable. The tasks used in the experiment closely reflect the educational learning system of the country. The closeness of our design and intervention to a real world scenario speaks for the practicability and effectiveness of humorous interventions similar to ours in a class setting.

## V. CONCLUSION

Our study clearly illustrates the positive effects humour has in an educational learning paradigm. The effect of humour on learning having been validated in a cultural setting such as India points towards the generalizability of findings involving humour and memory. Claims of the universality of such a phenomenon cannot be made without undertaking more extensive research studies, involving a greater and more representative sample as well as including more varied topics of learning. Such studies have important implications for the manner in which education is imparted in classroom settings, and advocate for humorous techniques to be used in educational settings.

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