Teaching and Learning with Humor: Experiment and Replication

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ABSTRACT. Two experiments concerning humor in teaching and learning in higher education are presented. The first study used relevant humor in a one-semester statistics course in an experimental group and no humor in a control group. One hundred sixty-one students participated, and the results showed significant differences between the two groups in favor of the group learning with humor. No significant sex differences nor interactions were found. The second experiment was a replication of the first one, using 132 students in a one-semester introductory psychology course. The students (all females) were divided randomly into two groups. Humor was used in one, and the same teacher taught the second group without using humor. Again, significant differences were found: The group studying with humor had higher scores on the final exam. Explanations for the ways in which humor in teaching can influence student learning are given.

HUMOR IN EDUCATION, as a research topic, is relatively new. Although more than 50 papers have been written praising the value of humor in teaching (Powell & Andersen, 1985), very few research projects have tried to verify empirically this widely accepted idea. Unfortunately, when such research has been carried out, results showed that the introduction of humor into the teaching process did not improve learning. In one article, Gruner (1976) reviewed nine research projects investigating humor in teaching. All except one reached the conclusion that humor had no influence on learning. These studies, as well as many others, were conducted in artificial experimental settings rarely resembling real educational situations. Nonetheless, these disappointing results have discouraged researchers in the field and, although many continue to write about the importance of humor in teaching and learning, empirical studies have waned.

Recently, there has been some renewed interest in research on the influence of humor in the educational processes in the United States and Europe. Two main research directions are most prominent. The first focuses on students' evaluations of teachers using humor in their classes, measuring affec-
tive outcomes. The second is directed toward investigating the influence of teachers’ use of humor on student learning, measuring cognitive outcomes.

The affective outcomes were measured by such studies as the ones conducted by Bryant et al. (1980) and Ziv et al. (1986). Bryant et al. had students audiotape one lecture in 70 different courses at the University of Massachusetts to investigate the amount of humor used by teachers and how students evaluated them. They found that 80% of the lecturers used humor at least once, some as much as 13 times, and one even 16 times during a 1-hour lecture. Because this study was never replicated, one wonders if such an abundance of humorous elements in American college teaching does, in fact, exist, or if something funny was happening at the University of Massachusetts. Among the findings, the authors report that for male teachers, usage of humor is related positively to appeal, delivery, and teaching effectiveness. For female teachers, only hostile humor was associated with enhanced appeal, whereas usage of nonhostile humor was associated with loss of appeal.

In the Ziv et al. (1986) study, tenth-grade students in four different classrooms watched a videotaped lecture of a professional actor playing the role of a teacher. Four films were presented (one in each classroom), one of which was a control film in which no humor was used. The other three films contained (a) self-disparaging humor (directed toward the teacher himself), (b) other-disparaging humor (directed toward students), and (c) mixed humor (a combination of a and b). Results showed that the teacher using mixed humor received the highest evaluation on “appeal” and “originality” factors. The other-disparaging teacher was perceived as most powerful, and the teacher not using humor at all was perceived as the most systematic in his teaching method.

Concerning the cognitive outcomes, previous experiments have been short in duration, none exceeding the limits of one lecture. Zillmann et al. (1980), for instance, worked with kindergarten and first-grade children to investigate retention of televised material in which humor was included. Pairs of children were shown small portions of video programs lasting only several minutes and were interviewed immediately afterwards as to their retention of the material. Wakshlag, Day, and Zillmann (1981) used first and second graders as subjects, showing them educational films in which differently paced humor episodes were introduced. Children were tested individually and left alone for 10 minutes, free to manipulate a television set on which they could choose the program they wanted to watch.

In experiments conducted in higher education, the influence of humor on learning has been investigated in conditions closer to real educational settings. Students listened to one lecture (live or videotaped), and their retention of the material or their subjective evaluations of teacher effectiveness was measured. Kaplan and Pascoe (1977), for example, investigated humor
in learning by presenting to groups of students a 20-minute videotaped lecture in which different types of humor were included.

To the best of this author's knowledge, no systematic research on actual teaching in classrooms taking into consideration the time element of educational processes was carried out before 1979, when the first book of research on humor in education was published in France (Ziv, 1979). Table 1 summarizes the research projects investigating humor's influences on student learning.

The purpose of the present study was to investigate the effects on student learning of judiciously used humor in teaching. A one-semester university course was planned, with humor as the independent variable in the experimental group and learning as the dependent variable in both the experimental and the control groups. One main study and one replication were conducted. The importance of replication is known to all educational psychologists and stressed in most books on research methodology (Borg &

**TABLE 1**

**Published Research on Humor and Learning**

<table>
<thead>
<tr>
<th>Research</th>
<th>Subjects</th>
<th>Duration of experiment</th>
<th>Method of experiment</th>
<th>Humor's influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilpela (1961)</td>
<td>College students</td>
<td>10 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Taylor (1964)</td>
<td>College students</td>
<td>7 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Gibb (1964)</td>
<td>College students</td>
<td>1 hour</td>
<td>Biology lecture</td>
<td>Positive</td>
</tr>
<tr>
<td>Youngman (1966)</td>
<td>College students</td>
<td>10 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Gruner (1967)</td>
<td>College students</td>
<td>10 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Gruner (1976)</td>
<td>College students</td>
<td>10 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Kennedy (1972)</td>
<td>College students</td>
<td>10 minutes</td>
<td>Audiotape</td>
<td>None</td>
</tr>
<tr>
<td>Markiewicz (1972)</td>
<td>College students</td>
<td>15 minutes</td>
<td>Written speech</td>
<td>None</td>
</tr>
<tr>
<td>Hauck &amp; Thomas (1972)</td>
<td>Children</td>
<td>15 minutes</td>
<td>Written task</td>
<td>Positive retention</td>
</tr>
<tr>
<td>Perreault (1972)</td>
<td>College students</td>
<td>7 minutes</td>
<td>Written advertisement</td>
<td>Positive</td>
</tr>
<tr>
<td>Curran (1972)</td>
<td>Children</td>
<td>15 minutes</td>
<td>Cartoons</td>
<td>Positive</td>
</tr>
<tr>
<td>Weinberg (1973)</td>
<td>College students</td>
<td>1 hour</td>
<td>Lecture</td>
<td>Positive for low anxiety</td>
</tr>
<tr>
<td>Kaplan &amp; Pascoe (1977)</td>
<td>College students</td>
<td>1 hour</td>
<td>Lecture</td>
<td>Positive after 6 weeks</td>
</tr>
<tr>
<td>Chapman &amp; Crompton (1978)</td>
<td>Children</td>
<td>15 minutes</td>
<td>Tape and slides</td>
<td>Positive for recall</td>
</tr>
<tr>
<td>Zillmann et al. (1980)</td>
<td>Children</td>
<td>10 minutes</td>
<td>Video clips</td>
<td>Positive for attention</td>
</tr>
<tr>
<td>Ziv (1979)</td>
<td>Adolescents</td>
<td>Semester course in high school</td>
<td>Lectures</td>
<td>Positive</td>
</tr>
<tr>
<td>Davis &amp; Apter (1980)</td>
<td>Children</td>
<td>20 minutes</td>
<td>Lectures and slides</td>
<td>Positive</td>
</tr>
</tbody>
</table>

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Gall, 1981). Nevertheless, studies using replications of psychological experiments in educational settings are extremely rare, due mostly to the time element involved.

Theoretically, the effects of humor on learning were described in Ziv (1979). Briefly, the theoretical basis of the experiments is based on the attention-gaining and holding power of humor on one hand and the conditioning paradigm of association of learning and the hedonic effects of humor on the other. Elements such as the relevance, quantity, and ways of presentation of humor are parts of the strategies used in teaching.

**EXPERIMENT 1**

The objective of this study was to investigate the effects on student learning of teaching with humor in a one-semester course. The specific hypothesis was formulated as follows: Students learning with a teacher using relevant humor will obtain higher scores on a test measuring learning than those studying the same material with a teacher not using humor. Several research studies have reported differences between the sexes in their response to humor but not one on sex differences in learning when humor is used. However, these differences as related to differences in learning were never investigated. Because research results relating to sex differences in reaction to humor in educational settings were studied only in regard to the kind of humor used by teachers (Bryant et al., 1980), no specific direction for the sex differences in response to humor as related to learning can be predicted. Therefore, the hypothesis relating to sex differences is nondirectional.

**Method**

**Subjects**

Two groups of students enrolled in an introductory course in statistics were the subjects of the first study. The two groups were formed randomly, and both studied for an entire semester with the same teacher, an experienced instructor in statistics.

One group was composed of 82 students, 51 females and 31 males; the second, of 79 students, 46 females and 33 males. The total number of students involved in the experiment was 161. By coin flipping, the first group was chosen to be the experimental group and the second to be the control. The students were not aware that they were participating in an experiment.

**Instruments**

The only instrument used in this study was the final exam at the end of the semester. This was a standard objective statistics exam, with 50
The teacher, the same for both groups, was trained to use relevant humor in the experimental group and to teach exactly the same material, without the use of humor, in the control group.

**Procedure**
The instructor participating in the experiment took part in a special seminar ("Humor in Teaching") conducted in the teacher training department. It was offered as an elective course to teachers who wanted to learn something about their ability to use humor to improve their teaching. From the 61 teachers who registered for the seminar, 12 were selected on the basis of their scores on a sense of humor test. The test's reliability and validity are described elsewhere (Ziv, 1979). In their training, different methods of improving their use of humor in teaching were employed (Ziv, 1979). The teachers researched and found jokes and cartoons relevant to the study of statistics (and, of course, other subjects they taught) and prepared some new ones. Below are two examples (a description of a cartoon and a joke):

1. While teaching about means and standard deviations, the teacher projected a slide of a cartoon prepared in advance on a screen. It showed an explorer in Africa, talking to a few native children who watch him somewhat surprised. Behind the explorer, and without his being aware of it, is a huge crocodile with a wide-open mouth, ready to swallow him. He, addressing the kids, says, "There is no need to be afraid of crocodiles; around here their average length is only about 50 centimeters." One of the children says to another, "This guy had better think about the standard deviation, too."

2. While teaching correlations and explaining that they do not show a causal effect (a correlation does not mean that one variable is the cause of the other), the teacher told the following story:

   On a planet whose inhabitants had just discovered earth and who were invisible to earthlings, experts decided to study the behavior of humans. One of them planned to conduct a study on the differences between fat and thin people. He went to a cafeteria and watched and noted the coffee-drinking patterns of those coming in. He noted carefully the behavior of fat and slim people in their coffee-drinking behavior, calculated correlations on his data, and found a positive significant relation. He reported: "There is a positive correlation between coffee drinking and body weight. Fat people mostly drink coffee with 'Sweet and Low,' thin people mostly with sugar. Conclusion: Sugar makes humans thin, while 'Sweet and Low' fattens them."

   Based on previous research (Ziv, 1981), the quantity of humor for each lesson was carefully "dosed." It was decided that three to four jokes per
lesson were the optimum dosage; more would risk transforming the teacher into a clown and students' attention would be diverted from the content of the lesson. It was also important not to employ humor "mechanically" and not to use exactly the same number of jokes in each lecture. In three lectures, chosen randomly during the semester, the teacher did not employ any humor at all. Moreover, jokes had to be presented in a special continuity with the concept learned (Ziv, 1979). The following sequence was followed:

1. The teacher taught a concept, in this case a statistical one. (The first example demonstrated the importance of knowing the standard deviation of a distribution, and the second, the noncausality of correlation coefficients.)
2. He illustrated the concept with a joke or a cartoon.
3. After the laughter, he paraphrased the concept learned.

**Results**

After 14 weekly lessons (the duration of a semester), objective standard exams were given to the two groups of students. ANOVA was calculated according to a 2 x 2 design (Group x Sex). The means and standard deviations are presented in Table 2.

One main significant effect was found—between groups: $F(1, 160) = 5.39, p < .01$. No significant differences between the sexes nor significant interaction were found. The effect size was calculated, and the results were .96 for boys and .64 for girls. These results show the high significance of the differences obtained (Cohen, 1969).

**EXPERIMENT 2**

The objective of this study was to replicate the findings of the first study. This is an operational replication (Lykken, 1968) using the same methodology with a different student population and with a different teacher. This kind of replication is necessary to verify the validity of obtained results, taking into consideration the teacher's personality and technique and the characteristics of the population. Frequently, a certain technique demonstrated

**TABLE 2**

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Boys</td>
<td>83.2</td>
<td>11.7</td>
<td>71.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Girls</td>
<td>81.7</td>
<td>12.3</td>
<td>73.2</td>
<td>13.2</td>
</tr>
</tbody>
</table>

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by one teacher does not produce the same results when employed by another. This happens rather frequently in educational research. The desire to verify the possibilities of generalization of the findings from the first study was the reason that the second study was planned. Because this is a replication, the methodology is similar and will be described only briefly.

**Subjects**
Two entire classrooms of students in a teachers' college in Tel Aviv, taking an introductory psychology course, were assigned randomly to one experimental and one control group. The experimental group was composed of 65 students, the control of 67, the entire sample totalling 132 students, all females.

**Instruments**
As in Experiment 1, an objective examination, containing 50 multiple-choice questions to which there were four possible answers, was used (reliability, KR 20 = .93).

**Procedure**
Another teacher, experienced in teaching this course at the college, participated in the previously described seminar for teachers where he learned how to utilize humor in teaching and where cartoons and jokes relevant for the psychology course were prepared. Two examples of the humorous material used in the experiment follow:
1. The teacher told the following joke to the class:

   One morning a man walks to his work and looks up a building. From a window on the eighth floor, a beautiful, charming, splendid, blonde, young woman looks at him. His heart thumping, he decides that this is the most wonderful woman he has seen in his life and he'll do anything to have her. He runs into the building, finds that the elevator doesn't work, and starts running up the stairs. First floor, second, third, . . . sixth, . . . seventh. By now, he has difficulty breathing, and his climbing is much slower. But, he continues, dreaming about the wonderful lady he's going to meet. Finally, a bit out of breath, he gets to the eighth floor. He rings. A huge, muscular, angry-looking man opens the door.

   "Can I see the blonde lady?"

   Before he finishes the last word, the huge guy starts hitting him with tremendous blows on his face and body and finally a kick in the back that throws him a few floors down the hard stairs. Getting up with difficulty, our hero Umps toward his work.

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