THE EFFECT OF VISUAL DISTRACTIONS ON LISTENING

Submitted by

Darlene Trott

to

Dr. Larry Barker

March 13, 1985

6th annual SCA Convention
Orlando 71

Since the onset of the Industrial Revolution americans have been bent on doing as much as possible on the shortest amount of time possible. Americans have fallen into an age of compaction. We compact our garbage, our education, our office space, and our time to try and get the most possible accomplished with the least amount of work; in the least amount of time possible. As a result students end up trying to do homework while relaxing with a television or radio program, and in offices employees try to do their own work while having to endure the visual distractions of co-workers trying to do their own work in the same area. Situations of visual over stimulation, such as these have prompted many individuals to speculate that stimulation of our senses by trying to visually attend to one object while having to concentrate on another can only result in some type of negative effect on our competence and, or, comprehension.

Five investigations have examined the phenomena of visual distractors on various performances of children. Three studies were done comparing Learning Disabled children with normal children and two focused on normal children placed in visual distraction situations.

Investigations of Learning Disabled Children

Patton and Offenback, (1978) from Purdue University investigated whether distractability in learning disabled children could be predicted on the basis of diagnosed visual and auditory learning deficits. The study classified twenty-six children in grades 2, 3, and 4 as having visual or auditory reading disorders. They and 17 normally achieving children performed visual and auditory recognition memory tasks, with visual or auditory distractors on 80%

of the trials. Support for the model was expected to be obtained if the performance of children within each classification was poorer when tasks and distractors involved the deficient modality. The data from this study supported the view that distractability occurs with greater frequency among learning disabled children than the control group. For all groups more errors were made with visual distractors. Furthermore, the children were questioned informally about the distractors after each test session. All the children involved in this study were able to describe the distractors in detail.

A similar study was performed by Doyle Anderson nd Halcomb (1976) at Texas Tech University in Lubbock Texas. Their investigation was designed to examine the effects of a visual distractor on vigilance tasks of performance among groups of Learning Disabled and academically adequate youngsters. The results of this study indicate that the vigilance task performance of Learning Disabled children was vastly different from the performance of the control group. The Learning Disables as a group have a tendency to pay more attention to an extraneous visual stimulus. Detailed analysis supported the hypothesis that most of the differences between these two broad groups of children could be attributed to the hyperactive Learning Disabled.

John Carter and Angelo Diaz (1971) at the University of Houston, Texas, also investigated the effects of varying degrees of visual and auditory background distractions on a reading performance test (Stanford Achievement Test). Fourty-two brain injured and fourty-two non brain injured sixth grade boys were administered the reading achievement test under three visual and three auditory distraction conditions. the three distraction conditions were: 1) Low background distraction (auditory = silance, visual = test questions covering only one-fourth the test page) 2) medium background distraction (auditory = low classroom sounds, visual = regular test) 3) high background

distraction (auditor = louder classroom noises, visually = 1 light green jigsaw puzzle as a background). It was hypothesized that the distractions would adversely effect the brain injured subjects test scores. The results supported the null hypothesis. The results indicated that increased amounts of visual and or auditory distractions did not result in significant lower scores for either group.

Investigation of Normal Children

In 1969 Wayne Shano and Linda Meador at Memphis State University investigated the effects of distracting visual stimuli upon retention of information and attitude change during a persuasive speech. The hypothesis of this study was that even though comprehension can be reduced by distracting stimuli, this distraction can aid persuasion. A group of 25-35 mm color slides were chosen as the visual distraction. To test the hypothesis two experimental groups were tested under different conditions. Group A listened to an emotional message about segregation, and Group B listened to the same message but were shown the slides containing visual stimuli irrelivant to the message. After the message both groups were tested for comprehension and attitude change. The results indicated that distracting stimuli produced a significant reduction in recall of information; while also producing a significant shift in opinion.

Finally Gordon Hale and Edward Stevenson (1974) conducted an Educational Testing Service for the State of New Jersey examining five and eight year old children's performance in a short-term memory task with two auditory and two visual distraction conditions. The two auditory distractors were a humorous story, and a story played at low speed. The two visual distractors were pictures flashed in the peripheral visual field, and patterns flashing in the

center of the visual field. The hypothesis was not only that the distractors would have an adverse effect, but also that both the distractors would have differing developmental effects across the age span. The auditory stimuli were expected to maintain their distractability across the ages to a greater extent than the visual stimuli. The results of this study indicated that performance under distraction did indeed impair the childrens performance, and with minor exceptions the general effects of the distractors were the same across ages.

From the basis of this past research one can see that the controversy of whether or not visual or auditory distractions effect the comprehension or completion of tasks has not been concluded and demands further research. One can generalize, through, that a reduction in performance is evident from the occurrance of visual distractions.

The purpose of this study is to investigate further the effect visual stimuli has on human performance. It will attempt to examine the effect of visual stimuli which may be experienced in the subjects true life environment, such as MTV or actual physical movement, on the listening test scores. It should be noted that two different distractors were used to provide a varied level of intensity. Based on the research above, it is the hypothesis of this study that an increase in visual distraction will decrease task efficiency. Specifically, the premise of this study is:

1) Visual distractions will significantly effect the subjects listening test scores.
2. Subjects will score significantly higher in the presence of low visual distractions (MTV) than they will in the presence of high visual distractions (actual physical movement).

METHODS

A total of 120 college undergraduate students none of the subjects had any formal training in listing prior to this experiment, and all of the subjects were enrolled in a beginning level speech course at a medium-sized Southern University. The students volunteered and received extra-credit points for participating regardless of their performance.

Independent Variables

The independent variables used was a variation of visual distraction during the Watson/Barker Listening Test. The variation consisted of three separate treatment conditions identified as no visual distraction, low visual distraction, and high visual distraction. The no-visual distraction condition was used as a control group. The control group administered the Watson/Barker Listening Test without distractions with the only noise present being that of normal room ambience. Low visual distraction consisted of a 30-minute taped portion of MTV (Music Television) played on 19 inch color television set with out the volume. The television was placed sightly off center at the front of the room. The random selection of a 30 minute portion of MTV included the following videous: Madonna - "Like a Virgin"; The Who - "See Me, Feel Me"; Eurogliders - "Heaven"; Daryl Hall and John Oates - "Out of Touch"; The Stray Cates - "Sexy and 17"; Night Ranger - "When You Close Your Eyes".

The high visual distraction variable consisted of two plain dressed people placed at the front of the room shuffling and stacking papers on a six foot table. Each confederate did similar stacking motions with minimal noise.

Dependent Variables

Test scores on the Watson/Barker Listening Test were the dependent variables. The tests consists of 50 multiple choice questions divided into 5 sections. The scores possible range from 0 to 100. The test itself was on a cassett played back by nears of a tape recorder. Each section of the Watson/Barker Listen Test measured a different listening skill. These were: 1) interpretive contact centered short-term listening, 2) interpretive dialogue centered short-term listening, 3) short-term lecture listening 4) interpractive-emotional meaning short-term listening, and 5) instruction following short-term listening.

Procedures

Subjects were randomly assigned to one of three treatment groups, and all three conditions were administered simultaneously in adjacent rooms. The tests were given on two separate days with three testing periods per day, per conditio. The students were assigned to rooms, read a uniform set of instructions, and given the materials necessary to take the test. The MTV treatment group was read a set of instructions that differed from the other two groups in that they were made aware of the MTV, but warned that watching it might effect their abilities.) The tape volume was adjusted so that it was audible to all participants. After the test had been completed, the test materials were collected and the participants were allowed to leave.

Analysis

A one way analysis of variance was used to test the null hypothesis that an increase invisual distractions does not influence listening test scores.

RESULTS

Results for the Watson/Barker Listening test given under three different conditions were found to be similar. When an analysis of variance was computed, the listening test scores by subjects hearing the test with out distractions vs subjects exposed to MTV with out the volume vs an actual physical distraction (with a minimual amount of noise) had no significant difference ($F=.01$, $df=2,103$). The mean scores for each group also showed no visable differences, and are as follows:

Contorl Group . . . . . 34.20 with a SD of 5.81

MTV Distraction Group . . . . . 34.16 with a SD of 5.31

Phisical Distraction Group. . . 32.68 with a SD of 4.48

DISCUSSION

Several factors may have played a part in the end results showing no significant difference between treatment groups. One such factor is that there was no control for the sex of the subjects. Since there have been studies conducted to show that males are more sensitive to noise than females when listening, it may be assumed that a difference exists in visual distractions

while listening. The same results have been found when studying introverts and extroverts, in that introverts are more sensitive towards noise distractions while listening. This study did not control for such factors since the subjects were mainly 211 Speech communication students, which is a required course for most majors; thus including both introverts and extroverts. the idea being that introverts may be more sensitive to visual distractions as well as noise distractions. Another factor to be considered are the subjects psychological state. This encompases areas such as personal motivation to do well and previous experiences with the task. In using MTV, this may have been a stimuli that the subjects were already immune to due to prior experience of listening with playing in the background. Also in the area of personal motivation, due to the hour of the day being after a majority of the subjects classes, and the monotonous question answer period that lasts 30 minutes at such an hour of the day may have lowered their motivation to strive their hardest. Futhermore, on the same point, the fact that there was no direct need or reward for optimal performance may have affected the results.

In future advancement of this study, it is suggested that a larger pool of subjects be randomly chosen which would include colleges other than the Communication college. It is also recommended that a means of personal reward for more than attendance should be derived which would provide an impetus for listening to their best ability; such as giving each person their scores. Another factor to be considered is the test time. In the future vary test hours so that subjects can choose an optimal time to take the test. As for the program used as a visual distraction, in future studies it is suggested to use deviation from the norm of what students are already familiar with.