The Effects of Background Music on Learning:
A Review of Recent Literature

Yiftach Levy
Department of Educational Technology
San Diego State University
(Education 690 - Prof. Donn Ritchie, Instructor)

Background Music and Learning

Introduction

The influence of music on rates of learning has been the subject of study for many years. Common sense tells us, and research has confirmed, that loud, cacophonous background noise impedes learning, concentration, and information acquisition. However, some amount of background music may in fact be helpful in the learning process, both in a structured school setting and under self-directed homework conditions. Several questions arise from this assumption, then. First, how much music is appropriate? Second, will any music do, or are some genres (e.g., rock vs. classical) and types (e.g., vocal vs. instrumental, fast- vs. slow-paced) more helpful and others, in fact, deleterious? Further, are students at all grade levels affected in the same way by different types of music, or do the effects of music change over time, depending on individuals' exposure to various music types and other factors?

Research in this field dates back to the 1930s (Fendrick, 1937, as cited in Koppelman & Imig, 1995), but the emergence of new technologies over the last two or three decades has brought the need for new studies. Interactive multimedia (delivered by computer, CD-ROM, or other medium) and the ubiquitous proliferation of television and audio entertainment delivery devices into the home have changed the face of classrooms and bedrooms alike. Today's schoolchildren have ever-shortening attention spans, a fact many people would like to blame on some of these very same technologies. But some modern technological conveniences/annoyances, properly tamed, could in fact be used to aid academic performance if beneficial effects were demonstrated in controlled studies.

Review of recent Literature

Recent studies on this topic have concentrated on different aspects of learning, ranging from reading comprehension to writing ability, from mathematics problem solving to on-task-performance in science classrooms. Some have been small-scale observational studies undertaken in the natural classroom setting, while others studied children in relatively sterile laboratory conditions. Subjects have encompassed all age ranges from kindergarten to university level, and results have been just as varied.

Influence of background music in television programs

Wakshlag, Reitz and Zillmann (1982) took "the fact that a large number of children's educational [television] programs make extensive use of music" (p. 666) as the basis for their study of first and second graders in Indiana. In this two-pronged experiment, 30 children were tested for the time of selective exposure to an educational television program with different types of background music, and 50 different children were tested for actual information acquisition from a televised segment with different types of background music. In the latter experiment, attention to the screen, appeal of the segment, and interest in the segment were also examined. In both conditions, children were tested outside the classroom, either individually (selective exposure) or in pairs (information acquisition, etc.). Thus, the significance of the obtained results should be tempered by a consideration of the experimental surroundings, which do not necessarily reflect the real world surroundings under which children would be exposed to educational television.

That said, the outcome of the selective exposure experiment included some notable findings. Namely, programs with fast, appealing background music were viewed considerably longer than programs with slow, unappealing music or those with no music at all. (Appeal factor was determined in a pretest experiment with cohorts of the subjects in the study.) The researchers concluded, then, that "[o]nly fast and appealing music…was effective in quickly drawing viewers to the program and maintaining the levels of exposure gained" (p. 671). Unfortunately, the results of the second experiment in this study, especially the attention and information acquisition sections, leave educators and educational television designers and producers in something of a quandary. In these latter conditions, fast music, regardless of its appeal, had a negative impact on attention paid to and information acquired from the educational segment. Interestingly, the different types of music seemed to have no significant effect on either the segments' appeal to the children, nor their reported interest in the material.

The experimenters suggest several possible reasons for the drop in attention paid to and information acquired from programs with fast, appealing music, including that the tune appealed to children so much that they tried learning it while the segment was continuing. Regardless of the cause, however, it remains that at least in the case of first and second graders in laboratory conditions (outside the classroom, alone or with just one cohort), fast-paced music diminished the levels of attention paid to and information acquired from educational television segments. The gains in selective exposure, therefore, fall somewhat flat. The researchers do admit, however, that the music they used was not "specially produced for the educational programs employed" (p. 675), and that this may be a factor in learning; this effect, they state, "remains to be empirically determined" (p. 676).

Background media and homework

In an important study that helped bring this field of research into the real world, Beentjes, Koolstra and van der Voort (1996) took an entirely different approach to the use of

television and other media in educational settings. They studied the presence and perceived effects of both auditory (music via radio, cassette, or CD) and audio-visual (television) interference on homework, as reported by students themselves. The results of this study may be seen as more robust than some others, since students were questioned about real-world conditions rather than tested in a laboratory setting, and the sample size was relatively large and statistically representative of the target population (Dutch 8th and 10th grade students). Still, the instrument used to collect data was a self-report questionnaire, not objective observation, and the authors themselves recommend further experimental studies involving "tasks [that] take up a reasonable amount of time" to effectively simulate homework (p. 71).

In the Beentjes, et al. (1996) study, not only were different types of music and television programs accounted for in the results, but home study location (own room vs. living room), access to media equipment, and different kinds of homework assignments were considered as well. Relating to this last item, homework was classified into "learning assignment" and "paper-and-pencil assignment" categories, and differing results and conclusions were observed between these conditions. Also taken into consideration was what the researchers labeled Level of Secondary Education (LSE), a Dutch-specific measure of achievement according to which students are placed in secondary schools. The LSE had a significant effect on some of the findings in the study, but these effects are not relevant to the discussion at hand.

The most oft-reported combination was the use of audio media (radio, cassette or CD) with paper-and-pencil assignments. The least common pairing was TV with learning assignments. These reported behaviors correlated positively with the students' perceived effects of the media on their homework. That is, the more positive a combination was perceived to be, the more often it was employed. For instance, background music was perceived as having a slightly enhancing effect on performance on paper-and-pencil assignments, and this combination was by far the most commonly used. Television drama series, on the other hand, were seen as having a markedly negative effect on learning assignments, and this combination was rarely engaged in by the students.

While these results may be far more generalizable than those of the Wakshlag, et al. (1982) study, the authors freely admit their own work's shortcomings and call for further experimental research. Among other topics, they suggest examining the effects of different types of background music (vocal vs. instrumental, familiar vs. unknown) on complex paper-and-pencil assignments and simple learning assignments. In addition, they recommend "research into the impact of…particularly pop, house, or rock music [in audio media, and] music programs and drama series [on television]" (p. 71).

Background music in the classroom

While those recommendations are still valid for the age group cohort of the Dutch study, Davidson and Powell (1986) took up this exact subject in their study of American fifth-grade science students. They reported the observations of on-task-performance (OTP) of children in the classroom over 42 class sessions, with data recorded every three minutes (10 times) per session. Treatment, in the form of easy-listening music, was delivered in between two control observations (i.e., 15 sessions without background music, 15 with,

and 12 without, in that order). They determined a significant increase in OTP for the males in the classroom, and for the class as a whole. While there was also an increase in OTP for females, this effect "was inhibited by the ceiling effect (the mean pretreatment OTP for females was 99%)" (p. 29).

Much of Davidson and Powell's (1986) discussion of their own study is concerned with justification of their data gathering and statistical methods, important for a sample as small as theirs and because, as they note, "it was not feasible to randomly assign the students to an experimental group and a control group." They also mention that "there were no anticipated external events that would coincide with the treatment" (p. 30). This last is a valuable fact, since external events, anticipated or not, can certainly influence the results of a study conducted outside the laboratory. In an unfortunate illustration of this point, the results of a study of the effects of music on children's writing were moderated by the sudden death of the teacher of the students involved. Her passing was noted, appropriately, as seriously impacting on the writing of the subjects (Koppelman & Imig, 1995, p. 10).

Discussion

Implications for further research

The observations made by Davidson and Powell (19xx) indicate, as they humbly note, "that the use of easy-listening background music was effective in increasing on-task-performance of children in an elementary science classroom… [and may be generalizable to] other subjects in the middle grades" (p. 32). These results, as well as those of the other studies cited, should encourage not only further research, but also perhaps a more intensive integration of background music into everyday academic life. While controlled research studies are certainly necessary for obtaining statistically significant data, there is nothing like good old-fashioned groundwork to help teachers spend more of their time teaching and less of it disciplining or engaging in other "extraneous" tasks. Indeed, the more teachers use music in the classroom, the more real-world laboratories researchers will have access to. This, in turn, will help make experimental observations increasingly valid and generalizable, while helping teachers refine their methods.

Statement of hypothesis

Existing research seems to support the hypothesis that certain types of instrumental music, especially slow- to medium-paced, non-percussive music, is beneficial in several learning situations. The traditional notion that people, especially young students, concentrate and learn best in a completely quiet environment is being challenged. In some situations, in fact, complete quiet is nearly impossible to achieve; the sounds of construction and other natural and artificial environmental noises invade almost every aspect of day-to-day life. Music may be effective not only at "hiding" or covering up some of these distractions, but also as a tool for enhancing the learning process. Extensive further research should be undertaken in controlled laboratory conditions, but actual classroom use of music, as well as its use by students in self-directed home study conditions, should also be studied.

References

Beentjes, J.W.J., Cees, M.K., & van der Voort, T.H.A. (1996). Combining background media with doing homework: Incidence of background media use and perceived effects. Communication Education, 45, 59-72.

Davidson, C.W., & Powell, L.A. (1986). Effects of easy-listening background music on the on-task-performance of fifth-grade children. Journal of Educational Research, 80(1), 29-33.

Koppelman, D., & Imig, S. (1995). The Effect of Music on Children's Writing Content. University of Virginia, Charlottesville, VA. (ERIC Document Reproduction Service No. ED 383 002).

Wakshlag, J.J., Reitz, R.J., & Zillmann, D. (1982). Selective Exposure to and Acquisition of Information From Educational Television Programs as a Function of Appeal and Tempo of Background Music. Journal of Educational Psychology, 74(5), 666-677.