The Effect of Background Music in an Educational Setting

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Although many studies have researched the educational benefits of background music, some caution is needed in the interpretation of their findings. Studies have produced varying results, some concluding that background music has no benefit on memory retention or test-taking ability and others concluding that the use of calm background music produces moderate to significant improvements in any of several cognitive functions. However, the interpretation that background music has a direct cognitive effect is questionable. The influence of music may be indirect through its effect on mood and stress.

Numerous studies have shown the benefits of background music in classroom study and test situations. A case study of 39 1st graders found that studying with background classical music resulted in greater retention of letter sounds and names than studying without it (Lewis, 2002). A Dutch study of 36 individuals demonstrated improved learning of foreign languages with background music (deGroot, 2006). A study using 126 American sophomore high school students demonstrated improved vocabulary and grammar learning with background music (Wolff, 1969). A study of elementary students from three Chicago suburbs showed improvement in spelling word retention with background music (Anderson, Henke, McLaughlin, Ripp, & Tuffs, 2000).

A number of studies have investigated the Mozart Effect. According to the hypothesis, music should enhance spatiotemporal reasoning. (Spatiotemporal cognitive processes are a subset of the visuo-spatial domain.) A study by Ivanov and Geake (2003)
demonstrated “some evidence” for improved spatiotemporal reasoning on paper-folding tasks using school-age children in a classroom setting.

**Two Literature Reviews**

In a 1993 literature review on the effects of background music in education, Felix reported: “Significant positive effects of music during learning have been reported on vocabulary recall, reading performance and on-task behavior” (277). Felix adds that the effect of music may be non-cognitive:

> The facilitative effect of music on learning may also be related to physiological factors such as lower heart rate and increased alpha brain waves, or to affective factors such as the perception of the learning environment as more pleasant.  (*Ibid.*)

This mention that music may have indirect benefits to learning, rather than direct cognitive benefits, suggests that many previous studies may have failed to control for physiological and affective factors.

A more recent 2006 literature review by Črnčec, Wilson, and Prior arrived at a less positive conclusion. These authors state:

> Research suggests that while Mozart effect studies have attracted considerable media attention, the effect cannot be reliably demonstrated in children. . . . Overall, evidence for the non-musical benefits of music listening and instruction is limited.  (579)
However, Črnčec, Wilson, and Prior arrive at the positive conclusion that “background music may calm and focus children with special education needs, thereby enhancing learning” (ibid.).

**On-Task Performance**

Although the benefit of background music in education may be indirect (non-cognitive), nevertheless, the use of background music may provide significant educational advantages. Hallam, Price, and Katsarou (2002) examined the influence of background music on arithmetic and memory tasks in school-age children. They found that children who listened to calm music performed better than those who listened to no music, and children who listened to “aggressive” music performed the worst of all. The researchers conclude: “This suggests that the effects of music on task performance are mediated by arousal and mood rather than affecting cognition directly” (111).

The relaxation effect of calm music has been well-documented by the medical community. Classical music has been found to lower heart stress, reduce cortisol levels, and to positively affect the neural and immune systems in ways which are not wholly understood (Kemper & Danhauer, 2005).

The effect music has on relaxation and mood results in greater on-task performance in the classroom. In a classroom study of 26 5th grade students, calm background music was demonstrated to significantly increase the on-task performance of the male students; female students were also positively effective, but the statistical result was less due to the “ceiling effect” (Davidson & Powell, 1986).
In a 1952 study, Hall found that background music helped students to more quickly settle down in the morning and after lunch. In a more recent study, Frontzak (no date) likewise found that background music signaled students to “quiet down and get to work” (p. 1).

A study using background music with 3rd graders found that classical background music “would significantly reduce the number of minutes and teacher prompts necessary for third grade students to become engaged in appropriate on-task behavior during morning and afternoon transitional periods” (Cluphf & MacDonald, 2003, p. 23).

The Center for Psychoacoustic Research in conjunction with Advanced Brain Technologies produced the Sound Health® CDs, compilations of classical music specially selected to enhance learning. Teachers were polled as to their effectiveness in the classroom. The result: 70.5% of teachers reported that their students were more on task, 50.5% reported that their students were more productive, and 48.5% reported that their students were more attentive (2003).

Finally, an experiment by Haynes (2003) demonstrated the efficacy of classical background music to reduce mathematics anxiety in college algebra students prior to testing.

**Special Education**

The calming effect of background music makes it exceptionally useful in the special education classroom setting. In their 2006 literature review, the benefit of background music in special education was the only positive effect of background music
Črnčec, Wilson, and Prior acknowledged. Calm background music has been found to benefit children with various disabilities.

Lang (2001) studied the effects of classical background music on a small self-contained classroom of five children with the following disabilities: autism, ADHD, PDD, and moderate cognitive delay. After ten days of exposing the children to the background music, she concludes:

Significant improvement was found in the on-task persistence behaviors for all the children in the study. Those students who exhibited the greatest incidents of off task behaviors during morning arrival or individual seat work showed the greatest improvement in on-task persistence following the Mozart music intervention. Improvements were not limited to the type of disability. All subjects in this study improved. (Abstract)

The successful results Lang observed in a cross-categorical classroom have also proven successful on specific disabilities.

Many experts and advocates recommend the use of calm background music for children with ADHD and/or LD (Zieman, 2002; Owens, 2006; Janover, 2008). In a 2003 study of children with autism, Ablort-Morgan states, “. . . the introduction of background music into the classroom of children affected by autism has a positive effect on their behavior.” She concludes: “. . . background music can contribute to enhancing the functioning of the autistic child” (abstract).
Hallam and Price (1998) studied the effects of background music on a classroom of ten students with Emotional/Behavioral Disorder. The presence of calming background music resulted in increased performance on mathematical tasks and less rule breaking. The students who benefited most from the background music are described by Hallam and Price as “hyperactive.” Savan (1999) exposed ten boys with EBD to various renditions of Mozart. As a result, these children experienced lower blood pressure, body temperature, and pulse rate; better physical coordination was also observed.

**Conclusion**

The sum of data on the use of background music in an educational setting suggests that its efficacy is secondary in nature and not directly cognitive. Calming background music produces a variety of positive physiological effects. Students become relaxed and focused. Their time on-task increases significantly, their mood is elevated, and aggressive behaviors are diminished. Greater time spent on-task ultimately translates into better academic performance. Social atmosphere is also improved.

General educators and special educators are experimenting with home-like environments to create natural, relaxed settings for classrooms. Perhaps music is one aspect of this larger hypothesis: namely, that students work and study better in a friendlier environment. Arguably, if it the relaxing effect of music which produces such wonderful results in on-task performance and improved classroom behavior, then perhaps other environmental classroom modifications would be beneficial as well.

Yet if a classroom teacher would be allowed to make a single environmental modification, calm background music would be an excellent choice—for its behavioral results and aesthetic beauty.
References


Hallam, S., & Price, J. (1998). Can the use of background music improve the behavior and academic


