Walden University

SCHOOL OF PSYCHOLOGY

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2007

ABSTRACT

The Effect of Music on the Reading Comprehension of Junior High School Students

by

Stacey A. Anderson

M.A., West Virginia College of Graduate Studies, 1990
B.S., Ashland College, 1985

Dissertation Submitted in Partial Fulfillment
Of the Requirements for the Degree of
Doctor of Philosophy
Psychology

Walden University
May 2007

ABSTRACT

Students often claim they can study for exams and complete homework assignments effectively while listening to music. However, scores on national achievement tests indicate otherwise. Empirical studies of the effects of lyrical music on reading comprehension are limited and mixed in their findings. The purpose of this quantitative study was to investigate the effects of lyrical music on the performance of a reading comprehension task in junior high school students. Theories such as personal construct theory and social identity theory formed the basis for the study; concepts such as attention and distraction, self-discipline and self-regulation, and the role of music in adolescent identity development and formation were considered. Three-hundred-thirty-four 7th and 8th graders completed the reading comprehension subtest of the Gates-MacGinitie Reading Tests, Fourth Edition, under nonmusic conditions and with accompanying music composed of *Billboard* Magazine's Top Hit Singles. Following the music portion of the test, the students completed a survey to assess their preference for or against listening to music as they study. An Analysis of Variance procedure determined that the reading performance declined significantly when listening to music. A point-

biserial correlation illustrated a more pronounced detrimental effect on comprehension for students exhibiting a stronger preference for listening to music while studying. Results are important for furthering student, parent, and educator understanding of the internal and external influences on study habits with the goal of designing, implementing, and evaluating support systems and strategies uniquely tailored to the developmental needs and personal preferences of adolescents.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1:

INTRODUCTION TO THE STUDY

Introduction

It is well established in the scholarly and anecdotal literature, the popular press, and conventional wisdom that one of the essential challenges of modern educational reform is to enhance the basic literacy of children and adolescents. Researchers and educators have long sought the keys to students' problems with reading and writing, with approaches ranging from the physiological to the psychological.

One intriguing puzzle is that while students are apparently able to remember the biographies, discographies, and sounds of their favorite musicians and groups, and to decode the symbolic, emotional, and cultural meanings of many song lyrics, the same students have difficulty deciphering the meaning of the texts they read in the course of their formal education. Another piece of conventional wisdom is that they can apparently do their homework while they are listening to music, watching television, and chatting with their friends.

In the case of listening to music, the brain processes lyrics and melodies independently (Besson, Faïta, Peretz, Bonnel, & Requin, 1998). Experimental research whereby students perform reading or mathematical tasks in the presence of background music often involves instrumental music (Hallam, Price, & Katsarou, 2002). This approach fails to capture the natural environment of adolescents, who typically listen to musical genres that emphasize lyrics over melody and instrumentation. Ironically, students themselves have admitted that a quiet room might be more conducive to studying, yet virtually all still preferred to do their homework with background stimuli in the form of music or television (Patton, Stinard, & Routh, 1983).

There is some indication that listening comprehension and reading comprehension involve similar cognitive processes (Savage, 2001). To Savage, the similarity implies that the tasks are not necessarily competitive. However, that assumption runs counter to theories of limited capacity, which postulate that attempting to carry out two tasks that draw on inherently limited cognitive resources will work to the detriment of one or both (Pool, Koolstra, & Van Der Voort, 2003). There are two divergent

perspectives to this approach. Some theorists, in line with Pool et al., argue that attempting to accomplish two tasks simultaneously exceeds a person's capacity for attention. Others such as Bourke, Duncan, and Nimmo-Smith (1996, as cited in Pool et al.) contend that the decisive factor is not whether the cognitive capacity is exceeded but rather that performance declines when both tasks involve processing the same types of information. Although comprehending lyrics and text are not identical tasks, both demand attention to verbal material.

There is limited research on this topic. Furnham and colleagues conducted several studies involving music of varying degrees of complexity as well as background noise to discern their effects on attention (Furnham & Allass, 1999; Furnham & Strbac, 2002). The overall results were inconclusive. A notable distinction between their research and the present study is that their subjects were college students. The young adolescents who are the focus of this study are more distractible than the more mature older students. There is also a question of whether distractibility affects actual performance (Paulhus, Aks, & Coren, 1990). Although concerned adults may insist that background distractions interfere with homework and related

cognitive tasks there is limited empirical support for this claim.

Theories of limited capacity have frequently served as the framework for exploring the effects of competitive tasks on the concentration of adolescents (Pool et al., 2003). In one study conducted by Pool et al., the researchers reported that the audio-only component of a television show did not adversely affect the attention of students doing homework assignments. They attributed this to the idea that lacking the visual dimension the medium was not as attractive to the students and therefore did not compete for their attention. This raises the question of whether the selection of music influences the extent to which it arouses attention. Adolescents view their own musical preferences as distinctly different from the music they encounter in the school setting (Stålhammar, 2003). The music for the present study was deliberately chosen to reflect the musical preferences of the target group to simulate the conditions under which students study at home.

The current study is designed to explore the effects of music containing lyrics on adolescents' reading comprehension. The specific focus is the extent to which

the combined stimuli of music and lyrics compete for the attention of students engaged in a reading task.

Background of Study

The literature that forms the context for the current research includes research into the cognitive aspects of music listening, the psychological effects of music, the attentional characteristics of children and young adolescents, the social aspects of music listening, and the practices associated with homework and classroom work in this age group.

One major thread in the research literature encompasses studies of the emotional and cognitive processes related to making and listening to music. Perhaps typical of this research is the work of Besson et al. (1998), who found that the brain processes lyrics and melodies independently. Researchers concerned with listeners' varying cognitive and emotional responses to distinct musical elements (such as melody and harmony) have tended to focus on the relationships between types of music and listeners' moods (Boehnke, Münch, & Hoffman, 2002; Kellaris & Kent, 1992).

Stålhammar (2003) studied the spatial or environmental distinctions adolescents made among their music listening experiences, and found that subjects preferred to listen in their own individual space (alone or with headphones) when they were feeling strongly about something, or when they wanted to relax or think. Sloboda (2001) is among many researchers who have concluded that, for adolescents, music is highly personal and has social connotations in nonschool-based contexts and activities.

Another thread in the literature concerns the role of music in adolescent literacy; this is closely related to identity development (e.g., Luttrell & Parker, 2001). More substantial is the research on homework. While most of it is empirical, Hong, Milgram, and Rowell (2004) recently offered a conceptual model of homework that is organized along dimensions of *motivation* and *preferences,* including those related to surroundings, such as light, temperature, and furniture, and perceptual/physical variables that include auditory, visual, tactile, kinesthetic, and mobility qualities.

Of particular interest is that, in an empirical test of the model, Hong et al. (2004) found that the more motivated and persistent students expressed a preference

for background sound when they were doing their homework, while those students with weaker motivation and a tendency to put off doing their homework preferred a quiet, dimly lit environment.

Savage (2001) is among the few researchers to study the role of listening comprehension in predicting reading comprehension in terms of memory function. The idea that listening to popular music lyrics while attempting to comprehend written text is part of similar cognitive processes suggests that the processes need not necessarily be competitive.

In an early study of where and under what conditions students do homework, Patton et al. (1983) assessed students' perceptions of the effects of television, radio, or stereo on their degree of distraction from reading, writing, and math tasks. The authors found that nearly all of the participants reported that, no matter what the task, they usually had the television or a radio or stereo playing while they did homework. They did prefer a quiet room for a reading assignment, but not necessarily for a math assignment or for an assignment that involved both reading and writing. Patton et al. concluded that there was a clear difference between students' perceptions of the

effects of those distractions and their decisions to do their homework with or without them. Students acknowledged that quiet rooms would probably be a better environment, but still preferred doing homework where a television, radio, or stereo was on and/or where others were present.

Educators, parents, and researchers appear to be consistent in their basic assumption that listening to music is distracting to young people, at least judging by the number of studies that attempt to prove the assumption, despite self-reports of adolescents to the contrary. Still, the findings of distractibility studies have been intriguing.

Paulhus et al. (1990), for example, found a clear correlation between visual and auditory distractibility, but no relationship of either type of distractibility with actual performance. Those authors concluded that reports of distraction are actually reports of emotional responses to distractions, rather than of effects on performance. This conclusion may imply that adolescents' response to music is a response to the emotions invoked by the music, rather than to the music as a distraction from their attempts to perform some task.

The researchers who have investigated the effects of sound on comprehension specifically have approached the problem from a variety of perspectives, and have been considering the subject for more than 25 years (Weinstein & Weinstein, 1979). Oswald, Tremblay, and Jones (2000), for example, studied the disruptive effects of both meaningful and meaningless speech. Both types of speech were equally disruptive in this study, suggesting the possibility that distraction by speech may have complex elements, and that there may be a significant difference between *hearing* and *listening*. In terms of the current study, the possibility is that adolescents attend to lyrics discriminately, varying their attention when they are listening to familiar versus unfamiliar lyrics, or listening to preferred musical artists versus those in which they have less interest.

Boyle and Coltheart (1996) chose to study the degree to which what they termed *irrelevant sounds* disrupted reading comprehension and short-term memory tasks. In their study, both lyrical and instrumental music affected performance of both types of tasks negatively, but not significantly. Pool et al. (2003) chose to use television soap operas as the potentially disruptive variable in their study of eighth grade students' performance of a reading

comprehension or memorization homework assignment. The experimental conditions used included the playing of a new episode, a previous episode, an audio-only episode, and a control condition with no audio or visual distraction. The audio-only condition did not produce distraction, suggesting to the researchers that actually listening to the background dialogue was not as attractive to the students because they did not have the visual images.

Furnham and colleagues have conducted a number of studies of distractibility from reading comprehension tasks by noise, television, and music, primarily in attempts to identify the role of personality differences. In one study, television was shown to be significantly distracting and negatively influenced performance (Furnham, Gunter, & Peterson, 1994); in another study using music as the distracting element, there were no positive or negative effects on performance as compared with performance in quiet conditions (Furnham & Allass, 1999), even when the music varied in complexity. More recently, when Furnham and Strbac (2002) compared the differences in distraction between music and noise in the background while subjects attempted a reading comprehension task, they found that both music and noise were equally distracting.

Unfortunately, the work of Furnham and colleagues has been carried out in samples of college students whose cognitive and emotional maturity is quite different from junior high school students.

Of the researchers interested in relating cognitive performance to the emotional effects of music and other sounds, the typical approach has been to introduce different types of music or sounds as stimuli under experimental conditions. The underlying implication is that such backgrounds need not necessarily be distracting, but may in fact enhance performance. Hallam et al. (2002), for example, conducted such experiments, and also introduced the variable of their participants' perceptions of the characteristics of the background sounds—pleasant or unpleasant—as part of the experimental conditions. In this case, instrumental music only was used in a classroom environment while students performed reading and computation tasks. Carlson, Hoffman, Gray, and Thompson (2004) have taken this premise a step further by using relaxation exercises accompanied by music, in an attempt to see whether reading performance in the classroom could be improved by this preparation.

There is far less research available that clarifies the gender issues in the context of the effects of music on academic performance, although a great deal has been written about the psychosocial influence of music on adolescent identity development and about the role of popular culture in that development. Lowe (2003) found, for instance, that when early adolescent girls were asked about a popular female pop singer and icon, their focus was on her appearance and behavior rather than her music. Other researchers have found that music preferences are typically influenced by friends' preferences and other social factors (Hurtes, 2002, for example).

In the academically oriented research literature, such as that focused on self-regulation literature, there have been some suggestive findings, such as that of Raffaelli, Crockett, and Shen (2005), whose study showed that girls had better self-regulatory ability than boys, and that this ability persisted from age 4 to age 13. Self-regulation in the form of voluntary reading habits has been linked to female socialization practices that supported reading and sharing books with others and to male socialization practices that linked boys' mothers, rather than their fathers, with reading considered to be a *girl's thing*, not

a *boy's thing* (Irwin, 2003; Millard, 1997, as cited in Irwin).

Some researchers have suggested that gender-related identification with and engagement in reading is related to individuals' earliest perceptions of their ability to read and their enjoyment of reading (Horner & Shwery, 2002), perceptions often reinforced by schools, teachers, and some parents (Pajares, 2002). Even among adolescent boys who engage in leisure reading, the choice of reading matter (and the acknowledgement that they are reading) is a matter for great care (Love & Hamston, 2003). Adolescents of both genders are more likely to listen to music than to read, although both activities have been shown to be associated with self-esteem and social identity. Particularly for boys, peer identification is a critical factor, and is often signaled by music preference (Tarrant, 2002).

Problem Statement

Students often claim that they can study effectively while listening to music. However, scores on national achievement tests indicate that students of today are not performing much better than did students of the past (National Center for Educational Statistics, 2005).

Empirical studies of the effects of lyrical music on reading comprehension are limited and mixed in their findings; however a small body of researchers has begun to establish some parameters for the study of this relationship (Furnham & Allass, 1999; Furnham & Strbac, 2002).

While there are researchers that have concluded that there is significant deterioration in the performance of reading comprehension when distractors such as music or speech are present (Furnham & Strbac, 2002; Oswald et al., 2000), some studies have claimed no effect of music or verbal noise on performance (Boyle & Coltheart, 1996; Pool et al., 2003), and yet other studies have proclaimed a beneficial effect (Hallam et al., 2002).

The problem is that adolescents continue to study and prepare homework while listening to their stereos, radios, ipods, MP3s, and to MTV; but the current literature does not consistently confirm or negate whether this has negative or positive effects on comprehension and learning of new information. Therefore, the problem this study is concerned with is whether the presence of background lyrical music aids or hinders academic recall, and whether the effects differ by gender.

Research Questions

Is student attention and concentration enhanced or abated by listening to lyrical music? What are ideal academic studying conditions for most students? Is background lyrical music an influence or a distractor for students as they are attempting to comprehend new information? Are there gender or preference differences?

Hypotheses

The specific hypotheses that will be tested in this study are as follows:

Null Hypothesis 1: There is no difference between reading comprehension scores completed in the environment without the music and those scores obtained with the lyrical music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Alternative Hypothesis 1: There is a difference between reading comprehension scores completed in the environment without the music and those obtained with the lyrical music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Null Hypothesis 2: There is no gender difference regarding the reading comprehension scores completed in the

environment without music and those scores obtained with the background lyrical music as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Alternative Hypothesis 2: There is a gender difference regarding the reading comprehension scores completed in the environment without music and those scores obtained with the background lyrical music as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Null Hypothesis 3: There is no relationship between amount of preference for studying with music and scores obtained on a reading comprehension test completed in either the environment without music or with music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Alternative Hypothesis 3: There is a relationship between amount of preference for studying with music and scores obtained on a reading comprehension test completed in either the environment without music or with music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition.

Purpose of the Study

The purpose of this study is to investigate the effect lyrical music has on reading comprehension of certain students. Assuming the majority of contemporary students read, study for tests, and prepare their homework assignments while the radio, television, or stereo is playing in the background, it is of utmost interest to determine whether or not this audio accompaniment is an aid or a hindrance to these activities.

The specific objectives are as follows:

1. To determine whether reading comprehension scores are affected by lyrical music playing in the background.

2. To discover if the reading comprehension of males and females are similarly effected by background lyrical music.

3. To present specific, relevant data to the study of how listening to lyrical music may affect reading comprehension in junior high school students.

4. To establish a research base area for junior high school students concerning their comprehension of reading material while lyrical music is playing.

5. To assess students' preference for or against listening to lyrical music as they are studying.

6. To provide information to educators, parents, and other researchers regarding if and how students' comprehension of written material is affected when they are listening to a radio, television, or stereo.

Theoretical Framework

The theoretical bases of the study are drawn from a range of disciplines and perspectives, including research on attentional function and distractibility among adolescents, as well as their capacity for self-discipline and self-regulation, and the role of music in their identity development and formation. A review of the literature on reading comprehension has not been undertaken in any detail, except to note how researchers have conceptualized the process of comprehension in reading (*see* Savage, 2001, for an overview).

There is a substantial body of research on the various uses of different media among adolescents, including their motives for using media (Boehnke et al., 2002), and the role of media use in identity formation, separation from parents, social engagement with peers, and mood regulation.

The research into adolescent attentional capacity and distractibility has generally used theories of mental

capacity for processing information to describe what occurs when they are attempting to perform competitive tasks (Pool et al., 2003), such as completing homework while watching television. Some theorists contend that the attempt to perform competing tasks may exceed an individual's attentional capacity; others have argued that when individuals are attempting to process the same types of information, they become distracted even though they may have the capacity to attend to both tasks (Bourke et al., 1996, as cited in Pool et al.). Pool et al. have suggested, for example, that homework requiring reading comprehension may be interfered with by the multiple demands of television playing in the background, so that processing the information from both sources is compromised.

The conceptual frameworks that have been proposed to describe the process of self-regulation attempt to describe the degree to which individuals are goal-oriented, aware of their strengths and their limitations, and able to monitor their behavior in pursuit of their goals (Zimmerman, 2002). Looked at from this perspective, self-regulation is related to motivation and to persistence, which may explain why the concept has often been used as the basis for studies of study habits, the development of academic skills, and

academic achievement. In the context of the current research, self-regulation may also be seen as a conceptual relative of the frameworks that have informed much of the homework research. Trautwein and Köller (2003) concluded from a comprehensive review of the empirical homework research that educational psychology concepts, such as self-regulation theories, have much to contribute to this field.

Such frameworks as *personal construct theory* have been used to explain reading motivation and pleasure, as well as the social construction of reading (Irwin, 2003), while *social identity theory* has been used to explain the peer influence factor in reading (e.g., Tarrant, 2002; Tarrant, North, & Hargreaves, 2001).

Operational Definitions

Lyrical music: Refers to music that is lyrical (songs with lyrics, as opposed to instrumental-only songs). In this study, top 40 songs were chosen for playback, under the category of pop music. Such songs included “SOS (Rescue Me),” by Rihanna, “Bad Day,” by Daniel Powter, and “Walk Away,” by Kelly Clarkson.

Nonmusic environment: Refers to typical study hall classroom conditions when students are asked to remain silent (as with studying or preparing homework, taking individual tests, or with silent reading).

Reading comprehension scores: Refers to raw scores obtained on the S and T forms of the Reading Comprehension section of the Gates-MacGinitie Reading Tests, Fourth Edition (MacGinitie, MacGinitie, Maria, & Dryer, 2000).

Assumptions, Limitations, Scope, and Delimitations of the Study

Reading ability of the participants in this study was not assessed, nor was attentional deficits. The assumption was that the sample of participants would be representative in terms of these variables. It was also assumed that environmental factors (such as time of day and the fixed volume at which the background music is played) and individual factors (such as participants' moods or anxiety levels) would not have a significant influence on the results.

Although it was anticipated that the sample would include 300 students, the results may not be generalizable to any other group of 300 junior high school students. It

is hoped, however, that the study may be replicated in other, similar sample populations.

Although it was the scope of this study to identify any effects the selected lyrical music had on a reading comprehension task, as only one experimental condition of music was compared to the control group of nonmusic, it is difficult to ascertain whether it was in fact the particular type of music played in the background that had an effect (or not) on the reading comprehension task. It was anticipated that responses from the administered survey would provide additional data to determine if the actual effects may have been caused by the particular type of music played, rather than simply by noise in general.

According to a review of current research, as well as interviews obtained from local disc jockeys, the music chosen for this particular study included selections that adolescents and teens typically listen to, appreciate, and identify with. Thus, it was assumed that the music that was played was meaningful, preferred, and familiar to the students.

Future studies may want to compare the effects of various types of music such as jazz, hip hop, country, alternative, classical, to determine any effects these

particular genres of music have on achievement or comprehension tasks.

Significance of the Study

The current study will contribute to what is already known about adolescents' use of media, study skills, and literacy practices. The study was conducted against a background of continued concern among parents, educators, and those interested in the physical and mental health and welfare of adolescents, much of which concern is focused on their academic performance in and out of the classroom and on their use of media.

In a comprehensive review of the empirical homework research, Trautwein and Köller (2003) found a number of weaknesses in the existing research, including the use of time spent on homework as the predominant measure of academic engagement. In the view of these scholars, students engage in a number of school-related activities while they are completing homework assignments, particularly in uncontrolled (that is, nonexperimental) environments. In addition, *time spent* is a more accurate measure of how much homework is assigned than how much time

is spent actually doing homework, and, further, does not measure motivation, attention, or ability.

Study skills are significantly influenced by such psychological factors as self-regulation, in which study environment—its physical and social aspects—is a critical factor (Kitsantas, 2002), suggesting that much more needs to be discovered about the ways in which adolescents prepare to engage in academic activities and actually engage in them, including dealing with distractions (e.g., Quiocho, 1997). These conceptual and theoretical frameworks will be addressed within this study.

A number of the gaps in the existing research are methodological. Paulhus et al. (1990) have pointed out, for example, that researchers typically measure distractibility by collecting data on speed or accuracy as a measure of performance. The use of self-reports is also typical, asking participants to assess their own distractibility or the degree to which various environmental elements interfere with their attention to a cognitive task. Yet, Paulhus et al. concluded, self-reported distractibility does not always correlate with behavior and not always with task performance. In their view, “direct assessment of performance under conditions of distraction” is a more

reliable measure of distractibility than self-reports (p. 786). It is hoped that the current research will be regarded as such a “direct assessment”.

Summary

The current study explores the effects on reading comprehension performance of playing background lyrical music, and to determine whether there are gender differences in those effects. The study was based on existing research into distractibility and attentional capacity in adolescents, their use of media, and their self-regulating ability in the context of academic performance.

This chapter introduced important issues that are relevant to reading comprehension in adolescents and described the conceptual and empirical background of the proposed study, its purpose, the hypotheses to be tested, and its potential significance.

Chapter 2 reviews the theoretical and empirical literature relative to reading comprehension, adolescents and learning, and effects of music. Chapter 3 describes the methodology employed to conduct the current study. It will detail the study design, including descriptions of the

sample, sampling procedures, data gathering and analysis, and the research instruments that were used. Chapter 4 will present the factual results of the current study. The data analysis techniques used for this study, as well as descriptive and inferential statistical analyses will be presented. Chapter 5 concludes the current study with a discussion and summary of the data results, integrating them into the existing literature; interpretations; and any implications for future studies.

CHAPTER 2:

REVIEW OF THE LITURATURE

Introduction

This study examined the effects that lyrical music may have on the reading comprehension of junior high school students. This chapter will present and review relevant literature that establishes a theoretical basis for this study. The issues of attention, distraction, and self-discipline and self-regulation as they affect subject performance will be considered. Theories such as personal construct theory and social identity theory will also be reviewed as they apply to this study. Research pertaining to adolescents, literacy, and reading comprehension will be explored, as well as how and why adolescents use music. Gender studies will also be reviewed to determine if gender is typically a factor in studies similar to the current study.

Literature for the current study was obtained through extensive computer online database searches such as EBSCO Host, Cambridge Scientific Abstracts (CSA), Google Scholar, Academic Search Premier, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Communication and Mass

Media Complete (CMMC), ERIC (Educational Resources Information Center), PsychARTICLES, PsychINFO, Social Sciences Full Text, and Sociological Abstracts.

Review

Mahiri (2000/2001) has contrasted what he calls *pop music pedagogy*, with particular reference to the texts (that is, the lyrics) of popular hip hop and rap music, with the traditional texts that adolescents encounter in schools in an effort to widen the discourse on adolescent literacy. Literacy among young people forms a part of the context of the current research, at least in relation to young people's music preferences and their preferences for song lyrics and other texts delivered in a variety of technological media outside of the classroom. The extent of their nonschool experience with these texts may, in fact, influence their motivation to read conventional material and their ability to comprehend it.

A substantial proportion of the research literature dealing with adolescents and music has come from health care organizations and journals, sounding a common theme. The Committee on Communications of the American Academy of Pediatrics (AAP; 1996), for example, is among the

professional organizations that have issued formal statements about the risks of music lyrics, linking them with sex, drugs, and violence. At the same time, this particular organization acknowledges, “music is important to teenagers’ identity and helps them define important social subcultural boundaries” (p. 1219). North and Hargreaves (1999) have suggested that adolescents’ preferences for certain types of music send an “implicit message” to other adolescents about their attitudes and values (p. 76). As Boehnke et al. (2002) have pointed out, there is a substantial body of literature on adolescents’ use of the media, largely due to the preponderance of studies of the potential effects of movies, television, and popular music on teenage violence and drug use. In their view, *why* adolescents use popular media, rather than *how* they use the media, is the more critical question.

Another stream of the research literature originates in the music education field, where practitioners are increasingly concerned about the disconnect between the music that students associate with music class in schools and the music that they typically choose to listen to during their leisure time. As Sloboda (2001) has pointed out, there are numerous sociocultural trends that are

putting pressure on the traditional music education curriculum, including multiculturalism, youth culture that has put considerable economic power in the hands of young people, and the proliferation of electronic communications tools and access to many kinds of music, among influences on attitudes toward traditional and popular music.

Wilhelm (2002) is among those who have attempted to characterize the current generation of young people in terms of their use of multimedia and the Internet, adopting the label *Millenials* to describe the generation. As they describe the Millenials, they use various kinds of technology simultaneously, instant messaging their "friends while doing homework, talking on the phone and listening to music" (p. 293), estimating that they typically spend about six and a half hours each day in these activities.

Caldwell, Darling, Payne, and Dowdy (1999) studied adolescent boredom during their free time, using both individual and situational variables in order to describe the *context* in which adolescents experience boredom. On the individual level, they considered that adolescents' perceptions of their internal motivation to participate in particular free time activities and the level of parental control of their activities were the critical variables. On

the situational level, they assessed the reason that adolescents chose to participate in specific activities during their free time along three dimensions: “I had to,” “I wanted to,” and “I had nothing else to do” (p. 106). Because part of the study included collecting information about adolescents’ involvement in negative behaviors, such as vandalism, this study may be classified as one of those attempting to examine ways to prevent delinquencies among adolescents. However, as discussed later in this review, the use of both social and psychological variables adds more dimension to this research attempt, and provides another view of the issue of *attention* among adolescents to various stimuli in their environments, including their school books and their music.

Larson and Seepersad (2003) also turned their attention to adolescents’ free time, and have provided a useful overview of what adolescents do with approximately half of their waking hours. Of particular interest is the authors’ analysis of the time adolescents spend “partying” away from adult supervision, in mixed gender groups, and with music and, often, alcohol, as important ingredients. Going to parties is much more common among older than younger adolescents, although time spent with friends

outside of the home has been found to increase substantially at about the ninth grade (Larson & Richards, as cited in Larson & Seepersad). While Larson and Seepersad do not directly address the role of music in partying, preferring to concentrate on the social, identity, and emotional aspects of the experience, music is in fact the environmental context, whether adolescents party in someone's home, in a public park, or in a commercial space.

Conceptual and Theoretical Frameworks

There are a wide range of conceptual and theoretical frameworks that have been applied to research on adolescents and that could be applied to studies of their reading and studying abilities and processes and their use of and cognitive and psychological relationships to music and music listening (Furnham & Strbac, 2002; Hallam et al., 2002; Hong et al., 2004; Katsarou, 2002; and Savage, 2001). Among the frameworks that have been used are those that conceptualize adolescents' attentional faculties (Pool et al., 2003), their distractibility (Hygge, 2003), their capacity for self-discipline and self-regulation (Raffaelli et al., 2005; and Zimmerman, 2002), and their identity development and formation (Boehnke et al., 2002; and Irwin,

2003)—all of which have been related either to their academic efforts or their use of music and music listening. It has been necessary to select from among these many frameworks those that have been used to support the kind of empirical work that is most closely related to the current research, but a review makes clear that much more work is needed if conceptual and theoretical bases are to be found that capture the complexity of adolescents' psychological and social relationships to "their" music.

Cognitive Processing Theories

The overarching framework for this study draws on theories of concentration, attention, and distractibility. While the *Millenials* may be proficient at multitasking (Wilhelm, 2002), their ability to divide attention among different tasks is defined by the same parameters that govern basic human cognitive processing capabilities.

Attention and Distraction

Theories of *limited capacity* generally propose that individuals' mental capacities for processing information are limited (Pool et al., 2003), so that when they are attempting to do two tasks that compete for their mental

resources, one of the tasks will suffer. As Pool et al. have suggested, “combining homework and television, therefore, may lead to an overload of information that exceeds attentional capacity or resources, with the result that only part of the information can be processed and homework performance decreases” (p. 362).

There are generally two theoretical approaches to explaining capacity in conditions of competing or concurrent task effort. Some theorists contend that two tasks exceed an individual’s capacity for attention, while others argue that performance may suffer from interference even when the individual’s capacity has not been exceeded because both tasks require that the same kind of information be processed (Bourke et al., 1996, as cited in Pool et al., 2003). Pool et al. suggest that homework performance may deteriorate when a television is playing in the background because of its complexity in terms of audio and visual effects, movement, cutting, and changes in camera angles and focus. Particularly when a homework assignment requires comprehension of a printed text, the interference from the various stimuli contained in a television broadcast can seriously interfere with the

amount of attention available for the print and for processing the ideas and information contained in it.

Self-Regulation

According to Zimmerman (2002), *self-regulation* is not a skill or an ability; it is, however, a process, an activity in which students engage in order to reach their goals. Being self-regulated means being aware of strengths and limitations, being invested in goals, and being able to monitor one's behavior in relation to those goals. In Zimmerman's view, self-regulation is not a trait, but a process that incorporates a number of skills, including setting specific goals, using specific strategies to attain them, monitoring progress toward them, "restructuring one's physical and social context to make it compatible with one's goals," using time efficiently, evaluating the methods used, "attributing causation to result," and "adapting future methods" (p. 66).

Zimmerman (2002) is among those who have attributed self-regulation to motivation. Of interest is that Zimmerman suggests that experts spend a substantial amount of time studying and practicing activities in which they want to excel, but that novices easily become discouraged

unless they are encouraged and offered some guidance to help them persist. While the substantial literature that has appeared on motivation and its relationship to studying, the development of academic skills, and academic achievement is well beyond the scope of the current review, the distinction Zimmerman makes between expert self-regulators and novice self-regulators has some relevance to the current research.

Zimmerman's (2002) model of self-regulation consists of three phases that reflect what occurs before, during, and after learning experiences: the *forethought* or task analysis, goal-setting, and planning phase; the *performance* phase, which involves focusing one's attention and using specific strategies to perform a task; and the *self-reflection* phase, which involves self-evaluation. Despite the clear before-during-and-after structure, Zimmerman has conceptualized the model as a continuous loop, in which the self-reflection phase (which occurs after the attempt to learn) leads directly into the forethought phase, which precedes the next attempt.

Novices at self-regulation typically neglect the *forethought* phase, so that they must attempt to self-regulate their learning after they have attempted to

perform some task, such as a test. Because they have not set specific goals or monitored their progress systematically, they tend to judge their performance on what others do (Zimmerman, 2002, p. 69).

Raffaelli et al. (2005) have recently examined the developmental course of self-regulation, following a group of children from ages 4-5 through ages 12-13, using longitudinal study data. Their survey is of interest because they include the concept of *attention* in their definition of self-regulation; their definition is "the internally-directed capacity to regulate affect, attention, and behavior to respond effectively to both internal and environmental demands" (pp. 54-55). The purpose of Raffaelli et al. was, in part, to review what has been learned about self-regulation after about age eight, because most researchers have focused on the development of this facility in younger children. They found that while self-regulation increases from age four or five to age seven or eight, there is little appreciable increase between age seven or eight and age 12 or 13, at least in the aspects of self-regulation that they measured. What happens to self-regulation ability during preadolescence

has not been much studied, despite the developmental importance of this age group.

Trautwein and Köller (2003) have argued that homework research should be more closely linked to conceptual frameworks of self-regulation, among other theoretical constructions. Their own investigation of the empirical homework research was undertaken in the context of the ongoing argument among parents and professionals regarding the value of homework in the broader educational picture, but to argue for the inclusion of recent advances in educational psychology into the dialogue about homework.

Empirical Studies of Distraction and Performance

Paulhus et al. (1990) conducted an experimental study in which self-reports of students' self-assessed degree of distractibility two weeks prior to a performance test involving both visual and auditory distractors. No music was among the auditory distractors; the researchers used common sounds, such as a crying baby, a ringing telephone, a barking dog, and crowd noises while students were attempting a timed visual search task. Among their findings was that visual distractibility was highly correlated with auditory distractibility, but that neither type of

distractibility could be associated with actual performance. Paulhus et al. interpreted these findings to suggest that when individuals report that they are distracted, they are reporting their emotional responses to distractions, rather than the effects of distraction on their performance. The implication for the current research is that when adolescents respond to music—an auditory distraction—they are not responding to a distraction that affects their performance of a task, but to the emotions invoked by the music.

Some researchers have investigated the effect of *irrelevant sound* in distracting readers and interfering with comprehension. Oswald et al. (2000), for example, found that meaningful and meaningless speech disrupted the performance of a group of undergraduate college students, suggesting that the disruption is not a direct result of the meaningfulness of the speech. This finding may imply that adolescents' attention to lyrics may be more complex than previously thought. If, for example, they are reading while listening to song lyrics that they have heard before and know well, they may not be decoding those lyrics at all, but simply *hearing* rather than *listening* to them.

Boyle and Coltheart (1996) focused on the disruptive value of what they termed *irrelevant sounds* in reading comprehension and short-term memory tasks, and found that while the effects of both singing and instrumental music presented at approximately 75 decibels did interfere to a certain extent with short-term memory, and slightly reduced participants' ability to comprehend complex sentences, the disruption was not particularly significant. Of particular interest is that the researchers classified vocal music and instrumental music as comprising *irrelevant* sounds.

Pool et al. (2003) experimented with the effects of television soap operas on the performance of eighth grade students with an average age of 14 given a homework assignment. Of particular interest to the current research is that the investigators used four experimental conditions: one in which a television set within the view of the students played a new episode of a popular soap opera, one in which a previous episode of a popular soap opera was played, one in which only the audio portion of the new soap opera episode was played, and a control condition in which no visual or audio distraction was deliberately introduced. The intensity of the television sound in the two conditions with audio accompaniment was

set at a level of approximately 60 to 70 decibels. In addition the research design included observation of only half of the participants, and two different kinds of assignments: a paper-and-pencil reading comprehension task and a memorization task that included a reading comprehension component.

The most interesting of the findings in the Pool et al. (2003) study was that distraction occurred only in the television conditions, not in the audio-only experimental condition. The investigators found this result surprising, because they had expected to find that students were distracted by background speech. They attributed the difference between their study and earlier studies to the fact that they used a realistic homework assignment, rather than a time-constrained test condition, and that participants were not restricted to a certain amount of time to complete the tasks. They also suggested that because the background sounds consisted of dialogue, students' may have been less interested in attending to the sense and meaning of the speeches than they would have been if they had been exposed to visual images as well.

The work of Furnham and colleagues is referenced frequently in the literature reviewed for the current

research. While Furnham's focus has consistently been on the personality differences in individuals' distractibility by noise, television, or music, it is his use of music as a distraction and his experimental use of reading comprehension tasks that are of most interest to the current study.

Overall, Furnham and colleagues have found that a quiet environment is best for successful reading comprehension. Television, for example, was found to be a significant distraction and affects performance (Furnham et al., 1994). In an experimental study of the effects of music on reading comprehension, however, Furnham and Allass (1999) found neither a positive nor a negative effect. Of interest to the current research is that the Furnham and Allass (1999) study used two different kinds of music in their experiment, based on the hypothesis that the *complexity* of background music could be responsible for differences in cognitive performance. In this study, participants were exposed to three conditions: silence, *simple music*, and *complex music*. They were given three tasks, one of which was a reading comprehension task. The music samples were chosen by a panel of knowledgeable musical experts, who rated compositions for tempo,

repetition, the complexity of the rhythm and melody, the meaning of the lyrics, and overall complexity, so that some pieces could be identified as *simple* in these variables and others as *complex*. All of the compositions were by popular artists, such as Michael Jackson, REM, George Michael, and similar artists. Although decibel readings were not noted, all participants wore headphones during all three conditions. The results were that "the presence of either simple or complex music neither enhanced nor inhibited performance… beyond the scores achieved in silence" (p. 35).

In a more recent study, Furnham and Strbac (2002) compared the distraction differences between background music and background noise and their effects on cognitive performance. Again, one of the experimental tasks was a reading comprehension task. The researchers found that while both music and noise adversely affected the participants' performance on reading comprehension and other tasks, compared with their performance of those tasks in silence, there was no significant difference between performance against a background of music and performance against a background of noise. While the work of Furnham and colleagues has made a significant contribution to the

literature, the results of the work are not directly applicable to the current research because of the composition of the research samples used. Furnham and his fellow researchers conducted their studies among college students, considerably older and cognitively more mature than the junior high school students targeted in the current research.

Of the studies of noise and music as distractors in the classroom, more than 25 years ago, Weinstein and Weinstein (1979) found that background noise of approximately 60 decibels in an open elementary school classroom had no significant effect on reading comprehension or reading speed. More recently, Hallam et al. (2002) conducted two studies among children aged ten to 12, in order to determine the effects of music on performance in arithmetic and a memory task. Of interest, is that Hallam et al. used two kinds of music (in addition to a no-music experimental condition)—one characterized as calming and one characterized as arousing/unpleasant—in order to determine whether the type of music played in the background had any influence on the children's performance of the experimental tasks.

Overall, Hallam et al. (2002) concluded that music influenced performance through arousal and mood, rather than from distraction. Of interest, is that part of the study required the participants themselves to identify the music by type (that is, calming/pleasant or arousing/unpleasant), suggesting that the participants' perceptions of how the music made them feel is of primary importance. The musical selections chosen for the Hallam et al. study were classical—a relaxing Albinoni piece and an aggressive John Coltrane piece. Although the authors conducted their study in a classroom environment, in part to demonstrate the potential use of calming music as a background to enhance children's concentration and attention to reading and computation tasks, they also acknowledged that the use of music in the home may be even more important to children's learning, and suggested that parents take an active role in monitoring music in the home when children are engaged in learning activities.

Carlson et al. (2004) are among the practitioners who have recommended that relaxation exercises accompanied by music be used to improve reading performance in the classroom. The study utilized a vibroacoustic chair, a beanbag-style chair with built-in speakers that allow the

sitter to feel the vibrations of the music. This study was conducted in a third grade classroom with children younger than the target group for the current research, and did indeed demonstrate that relaxation can improve reading performance.

Hygge (2003) is one of the few researchers to have conducted experimental studies in large groups of children. His work is of additional interest because his participants were in the target age group, 12 to 14 years old. While Hygge did not use music in these experiments, he did introduce traffic, train, and aircraft noise, as well as verbal noise as distractors. Various noise sources were presented at 55 to 66 decibels. The significance of Hygge's work is that he was able to distinguish the effects of different types of background noise on recall and on recognition tasks. In addition, he was able to test for differentiation between experimental patterns: some participants were exposed to a noise-quiet pattern, while others were exposed to a quiet-noise pattern. Another point Hygge made that has relevance for the current research is that verbal noise was not a significant factor in participants' distraction or their performance of the experimental tasks.

Identity Formation and Development

Boehnke et al. (2002) have suggested that the *uses-and-gratification* framework might be useful to researchers for its focus on adolescents' perceptions of the benefits of various media, rather than a focus on what media "does" to them, referring to the body of research attempting to link popular music to drugs, sex, and violence among young people. Boehnke et al. used the uses-and-gratification framework, which explores individuals' motives for using media and their perceptions of the rewards they gain from media use, with the addition of a developmental perspective as a conceptual basis for their study of adolescents' use of radio as a music medium.

In the view of Boehnke et al. (2002), adolescents' use popular media as part of their identity formation, their separation from their parents, and their social engagement with peers. The focus for these researchers was on adolescents' use of radio, which is not only a music medium (although most of their participants used it that way) but also a medium for political dialogue, interviews with authors and other adults (and some adolescents), news, and information. Boehnke et al. found that the adolescents in their study did in fact use radio programming for

developmental purposes, but not the music programming. Music, for their participants, was primarily a means of regulating their moods and for perceiving that they were integrated into a social group.

Personal Construct Theory

Irwin (2003) believes that motivation to read and pleasure in reading are at least as important as the cognitive aspects of reading that have received so much attention, in the classroom and in the professional literature. In her view, personal constructs are crucial to understanding *engagement* in reading. *Personal Construct Theory*, the basis of *Personal Construct Psychology*, was originally developed by Kelly (1970, as cited in Irwin) to describe individuals' attempts to understand reality. Kelly's contention was that "individuals scrutinize the world through transparent patterns or templates"—what he called *constructs*—"and then attempt to fit those patterns over what they see in order to make sense of what they see, whether or not the fit is appropriate" (Irwin, p. 29).

One example of a Personal Construct that may be typical for teenaged boys, according to Irwin (2003), is that reading is for girls, leading to the conclusion that

reading is effeminate behavior for boys. This example illustrates the way in which Personal Constructs combine thinking, feeling, and moral judgment. A number of educational theories have evolved from Personal Construct Psychology, since one of its basic premises is that "learning is never separate from the individual experience and constructs of the learner…; what is learned must be assimilated with what is already known, particularly with the learner's sense of personal identity" (Irwin, p. 30) and self-concept. Coles (1998, as cited in Irwin) links emotional development and reading, contending that poor readers need to alter their self-concepts as well as to learn cognitive skills or strategies: "changes needed include self-confidence instead of fear of failure, high motivation instead of low, and feelings of efficacy rather than incompetence" (Irwin, p. 30). Irwin considers that *reading identity* is a core construct in Personal Construct Psychology because young readers and their parents and teachers emphasize reading competence as a measure of identity.

Social Identity Theory

Social identity theory, developed by Tajfel and Turner (as cited in Tarrant, 2002; Tarrant, North, & Hargreaves, 2001), proposes that a significant element in the development of individual identity, or *self-concept*, is membership in various social groups toward which an individual has positive attitudes, particularly in comparison with other groups of which an individual is not a member. The social comparison process has been advanced as one means by which adolescents evaluate their own peers and thus their own identities (Tarrant).

Music and Adolescence

There is a substantial body of literature that has examined the emotional and cognitive processes associated with making and listening to music. Although a few studies included in the following review of the literature regarding music and adolescents are purely subjective and offer no true statistical evidence, most of the researches included have appropriately substantiated their findings.

The work of Besson et al. (1998), for example, is relatively typical of the physiological approach to these investigations—they found that lyrics and melodies in music

are processed independently in the brain. Kellaris and Kent (1992), on the other hand, examined music as an influential factor in consumer environments, in an attempt to see whether music had any effect on consumers' perceptions of the passage of time. Of importance to the current research is that the different elements of which *music* is composed—tempo, rhythm, melody, harmony, and music—have been shown to have varying effects on listeners' cognitive and emotional responses to it.

As an example, Kellaris and Kent cite the early work of Hevner (1935, as cited in Kellaris & Kent, 1992) demonstrating that while compositions written in a major key (*modality*) evoke positive feelings, individuals typically perceive that those written in minor keys are melancholy or sad or foreboding. Much has been written on the subject of the use of movie music to establish mood that substantiates this perspective. This suggestion may be related to adolescents' use of music to regulate mood, as implied by Boehnke et al. (2002), among others. Of further interest, is that 79% of Kellaris and Kent's subjects reported that their particular music listening preference was for pop / rock genre.

Teachers, parents, and the general public appear to assume that adolescents spend much of their out-of-school time listening to music. As Stålhammar (2003) has observed, adolescents are highly aware that the music they encounter in the school context has very little to do with "their own world of music" (p. 62), its value to them, its role in their lives, and the areas in their lives in which they experience music.

In the study Stålhammar (2003) conducted, the adolescents interviewed suggested that school (and the adult world) had very different ideas about music and musical knowledge. While adults were interested in students' technical knowledge of music, the students identified relaxation, life style, and group identification as the values associated with music that were most important to them. Adults, in the students' view, did not place much value—as the students themselves did—on listening to music in the company of close friends, to learning about popular music styles and songwriters, or to engaging with music in the context of sports events and dancing.

With regard to different types of music, Stålhammar (2003) found that the adolescents in his sample tended to

associate music with “attitude, context, and environment” rather than any objective criteria. This was evident in the case of classical music, which was associated with three different ideas: one group associated it with “school, control, and compulsion”; another considered that it had “certain indisputable aesthetic and cultural qualities”; and a third group reported that they listened to it sometimes, when they wanted to relax or be calm (p. 65).

Also of interest to the current research is Stålhammar’s (2003) reading of what the adolescents in his study told him about the different *spaces* in which they were engaged with music. When music was experienced in the *individual* space—often by oneself and/or using headphones—the rest of the world was shut out and their individual space was perceived as private and inviolate. The participants in this study referred to wanting to engage with music in their individual spaces when they were experiencing strong emotions (positive or negative), when they wanted to relax, or when they wanted to think something over.

The participants in the Stålhammar (2003) study distinguished *internal space* from individual space by reference to listening to music with a group of friends,

again at a distance from the rest of the world in a private space. *Imaginary space* was not as clearly defined by these participants. Stålhammar interpreted this kind of space as a ream that combined perceptions of personal and social factors related to feelings of identification, belonging, and acceptance by peers. As Stålhammar describes imaginary space, "It may have to do with skateboards, inlines, and the music of a ghetto blaster; or with cybercafés and other Internet environments. The persons around can see and hear, approach, participate, or withdraw. It is not necessary to be friends or even to know one another. What counts is style and attitude" (p. 67).

Sloboda (2001), in an investigation of the reasons why students tend to lose interest in traditional (school-based) music education—particularly playing an instrument—at about the time they transition from elementary school to secondary school, has conjectured that significant sociocultural pressures are in operation. First, he suggests, playing an instrument may be a *hobby* that children grow out of. In addition, children may associate playing an instrument with the primary school culture and their peer groups in primary school that are not carried over to the secondary school. The third reason Sloboda

believes that children give up a musical instrument is that they associate the activity with the parental controls and home environment, and are more interested in asserting their independence, identifying with their new peers (and their activities), and investing in their lives outside of the home. Finally, Sloboda suggests that at this point students do not see a future for themselves in instrumental music as it is framed and practiced in the school context.

As background to these hypotheses, Sloboda (2001) argues that the role of music in young people's lives is highly personal and social in ways that have nothing to do with the context and activities with which school-based music is associated. In an earlier study, Sloboda and colleagues had asked participants to keep a diary, using an experience sampling methodology, to record their engagement with music (Sloboda, O'Neill, & Ivaldi, 2001, as cited in Sloboda). The diaries showed that individuals experience music in a vast range of nonmusic activities, including routine activities of daily life, including housework, cooking, travel, and—for students—doing homework and "hanging out" with friends. As Sloboda points out, this study, like all others he could find, was conducted in an

adult sample, so that very little is known about the daily experiences of children with music.

Research has shown that adolescents tend to stereotype their peers—positively and negatively—according to the types of music that they prefer. Using a related t-test to compare the subjects' mean liking ratings for the in-group and the out-group, Tarrant et al. (2001) are among those who determined that adolescents tended to stereotype individuals who were fans of music they themselves liked positively and to stereotype individuals who were fans of music they themselves disliked negatively. The subjects tended to like the in-group significantly more ($M = 7.12$, $SD = 1.50$) than they liked the out-group ($M = 5.10$, $SD = 2.26$).

Tarrant (2002) is among the researchers who have attempted to determine whether listening to music is a matter of individual preference or somehow linked to peer group identity. In a study of 14- and 15-year-old males and females, Tarrant found that listening to music was one of the top four activities in which groups participated; the largest percentage (85 percent of the whole sample) listed "hanging around talking" as the activity members of their group most often engaged in. Watching television was listed

by 66 percent of the whole group, listening to music by 64 percent, and going to the movies by 64 percent. Homework was mentioned by nine percent of the whole sample.

North and Hargreaves (1999) conducted a series of studies that explored different aspects of adolescents' consumption of and identification with musical styles. Although the perspective of these researchers was essentially a social one—they were interested in the ways in which adolescents see others because of their musical preferences—one of the studies is of particular interest to the current research because it examines the relationship between musical preference and self-concept in a sample of 10-11-year olds.

When the younger adolescents who were included in one of the North and Hargreaves (1999) studies were asked to identify the characteristics of fans of popular music and classical music, the results showed that these participants did have normative expectations of each type of music fan. Using a chi-square test to assess each of five questions presented to the students, the researchers found that there was a significant association between the students' responses and the types of music liked by a fan in a particular vignette in 3 of the 5 questions. Of interest

are the answers to the question "What does he/she do in his/her spare time", given the choice of *intellectual* or *nonintellectual* to characterize their activities. The term *intellectual* was operationalized as *reading*; *nonintellectual* was operationalized as playing sports or listening to music. Male pop fans were judged to spend their spare time in *nonintellectual* activities, typically listening to music. Female pop fans were more likely to be characterized as engaging in *intellectual* spare time activities, but to spend less spare time listening to music.

Among the classical music fans, the characterizations were approximately similar, except that female classical music fans were judged to spend much more of their spare time than male classical music fans in nonintellectual activities. Specific questions that addressed what kind of clothes the fan would wear, and what types of television programs the fan would most likely watch, were significant in their findings. Respective $\chi 2$ values for the 3 t-tests that were significant were 36.49 (d.f. = 3, $p<0.01$); 22.83 (d.f. = 6, $p<0.01$); 15.71 (d.f. = 3, $p<0.01$). North and Hargreaves (1999) offered no interpretation of these results beyond the conclusion that they confirmed the

authors' hypothesis that their participants would hold certain expectations or make stereotypical assumptions about popular versus classical music fans.

Reading and Literacy Activities

Reading Comprehension

While a complete review of the literature on reading comprehension is beyond the scope of this review and the current research, it is nevertheless important to look at the ways in which researchers have conceptualized the process. Savage (2001) has neatly summarized the research history by noting that there are essentially two models: the *simple view* and the intelligence or *psychometric* model. The *simple view* of reading (Gough & Tunmer, 1986; Hoover & Gough, as cited in Savage) proposes that reading comprehension is the result of listening comprehension and word decoding. As this is the least complex model of reading, because research cited by Savage and others has shown that the two component skills can be clearly distinguished, it has been popular with researchers. The *psychometric* model relies on IQ tests to assess reading comprehension, and assumes that intelligence can be used to distinguish between higher order reading skills (such as

comprehension) and lower order reading skills (such as word recognition). No one method has as yet reached consensus level, although Savage has observed that most practitioners whose job is to assess children's reading skills tend to rely on IQ tests as part of the assessment.

Adolescent Literacy and Learning

Literature on adolescent learning embraces a wide range of subjects, from reading comprehension to the development of study skills to academic achievement. In an attempt to identify the research contributions most relevant to the current research, it has been necessary to look at the full range of researchers' interests.

Luttrell and Parker (2001) are among the researchers who have argued that adolescents' identities and literacy are closely related in a number of highly complex ways. They substantiate their view by pointing out numerous demonstrations that there is a significant gap between the "formal" literacy experiences that occur in school and in the context of the school curriculum and their personal literacy practices, which often bear little relation to what goes on in school. A number of preadolescents and adolescents, for example, keep private journals or diaries,

write stories and poetry, create music, and engage in other activities that in their view are completely unconnected with school-based literacy experiences.

Homework activities. There is a well-established body of research on homework, much of it anecdotal or practitioner-oriented. Hong et al. (2004), however, have recently proposed a conceptual model of homework that encompasses a range of variables that influence adolescents' motivation and their contextual preferences for doing homework. In part, the model is an attempt to accommodate the concerns of parents and educational professionals about the context in which students do their homework, and about the apparently wildly varying preferences for where, when, and how students choose to do their homework. The model is organized along dimensions of *motivation* (including the source and the strength of an individual's motivation) and *preferences*. The *preferences* dimension is of most interest in the context of the current research, because it includes numerous relevant variables.

Hong et al. (2004) conceptualized the *preferences* dimension of their homework model as including *organizational* preferences, *surroundings* preferences,

perceptual/physical preferences, and *interpersonal* preferences. The organizational variables include students' preferences for structured types of homework, the order in which they do it, and the times and places they prefer. The surroundings, obviously, include such elements as sound (or absence of sound), light and temperature levels, and furniture. The perceptual/physical elements identified in the Hong et al. model include auditory, visual, tactile, kinesthetic, and mobility elements, while the interpersonal variables include preferences for doing homework alone or with peers or with or without the presence of an adult.

In a test of the model, Hong et al. (2004) found that students with the strongest motivation tended to prefer structured homework assignments, and to complete them in the same order in the same place at about the same time. The study findings regarding students' preferences for the *surroundings* of homework are somewhat surprising. The highly motivated and persistent students preferred some sound in the background while they were doing their homework, to eat while they were completing their assignments, and to move around in their environment. The students with weak motivation, little persistence, and a tendency to procrastinate preferred to do their homework in

a quiet area with dim light, and to use a couch or a bed for furniture. Also interesting was the finding that while the poorly motivated preferred to do their homework alone without a parent around, the highly motivated preferred the company of their peers and the presence of an adult.

Trautwein and Köller (2003) recently reviewed the empirical homework research with the intention of identifying the gaps and weaknesses in the research. They found, for example, that researchers have most often used *time spent* doing homework as the major experimental variable, despite this variable's lack of clarity. The inherent problems in using self-report measures aside, the authors suggest that *time spent* is not necessarily a "clean" measure, since students may engage in other learning- or school-related activities while they are completing specific homework assignments. In addition, the typical measure *time spent per week* is often an aggregate of the frequency with which homework is assigned and the extent of the assignments, which are combined into a variable like *homework amount*. Significantly, time spent is not necessarily a measure of either motivation or ability, since so many cognitive and affective factors may influence students' performance on homework assignments.

Kitsantas (2002) studied the use of students' self-regulation in the context of test preparation and performance. While the sample in the study was composed of college students, and while the focus was as much on the students' use of self-regulation processes during test taking and afterwards, of interest to the current research is what students did before taking a test. These activities were coded by the researcher, and included goal-setting and planning, keeping records and monitoring preparation, rehearsing and memorizing, organizing material, seeking information and help, and *environmental structuring*. As Kitsantas noted, "awareness of the effects that the social and physical environment may have on students' learning is critical, because it prompts the learner to seek assistance, restructure his or her study environment, or both (Zimmerman & Risemberg, as cited in Kitsantas).

Cognitive approaches. A number of researchers have tackled the various issues of literacy, reading comprehension, and learning skills from cognitive perspectives. As Hall and Myers (1998) observed, students can benefit greatly from knowledge about their own ability, the learning tasks that are given them, and ways to

approach those learning tasks. This kind of self-knowledge would appear to be a natural fit with theories of self-regulation, which have been frequently tested empirically. Quiocho (1997), for example, found that middle school children found their own ways of approaching reading tasks, adopting different strategies before they began their reading (such as drawing pictures and listening to the teacher), during their reading (such as dealing with distractors like noise and boredom with the material), and after their reading (such as reviewing what they had read in a group or drawing pictures to capture their impressions of their reading). While much of the focus in research studies of reading comprehension and studying is on academic achievement, rather than the specific issues involved in reading comprehension and the influence of distractors on reading, studying, and learning, the cognitive studies are nevertheless of interest.

Gettinger and Seibert (2002), for example, found that study skills are not entirely about *strategies* that teachers have long encouraged each other to teach students. Instead, these authors suggest, students need different kinds of skills to undertake different kinds of learning tasks. Some tasks, for instance, are better approached by

repetition, drill, or practice, while others require a structural or organizational approach to learning new or complex material. The higher-order skills require *thinking*, particularly thinking about information and relating new information to what is already known. A fourth kind of skill, *metacognition*, literally refers to students' being able to think about thinking; that is, to think about how their own minds work. This aspect of information processing is well outside the scope of the current research; however, thinking *per se* is clearly related to adolescents' approach to their schoolwork, to their ability to attend to material they are asked to read and comprehend, and to their functioning in the presence of distractors.

Peverly, Brobst, and Morris (2002) are among those who have concluded that metacognition is more important to understanding how older, rather than younger adolescents, process information and learn. They were able to substantiate this contention in a study comparing seventh grade and eleventh grade students in a reading comprehension study. Using a 2 x 2 x 3 repeated measures of ANOVA, the researchers found that in all students, the total recall was significantly related to metacognitive relation of monitoring. Peverly et al. found a definite age

difference with regard to metacognition, and an age difference with regard to the relationship between reading comprehension and studying. In younger students, the ability to think about one's own thinking processes were not as important to reading comprehension as was short-term memory. There were a number of other findings of interest in this study, but it is the overall conclusion of Peverly et al. that is of most interest to the current research: reading comprehension and studying are relatively independent of each other. If this is in fact true, it should be possible to isolate particular aspects of the environments in which reading takes place and studying takes place and determine their influence on these distinct processes.

Savage (2001) found that listening comprehension was a clear predictor of reading comprehension. While Savage was concerned with the relationships between listening comprehension and reading comprehension in terms of the functions of memory, he does not address the issue of distraction directly, nor does he refer to experiences other than listening to information in a school-based environment. However, the concept of listening comprehension in relation to reading comprehension is

intriguing for its implication of the possibility that listening to the lyrics of music while attempting to comprehend text that is being read are part of similar processes.

One of the earliest studies of where and under what conditions students do homework is that conducted by Patton et al. (1983). Despite the passage of more than 20 years, this study continues to retain integrity. Patton et al. assessed students' approaches to four specific tasks (reading, reading with writing, writing, and math), in four different environments (a quiet room, a room where the television was on, a room where a radio or stereo was on, and a room with other people in it). The participants—students in grades five through nine—were asked to report the typical location in which they performed each of the homework tasks, and then to rate the effects of television and radio or stereo on them when they were engaged in each type of task (*helps, bothers, no effect*).

The results of the Patton et al. (1983) study showed that nearly all of the participants reported that either the television or a radio or stereo were playing while they did their homework, whatever the type of task. Asked what they preferred, the participants said that a quiet room was

preferable for a reading assignment, but not for a math assignment or one that required both reading and writing. It is in the researchers' interpretation of the participants' rating of the effects of distractors on their performance or concentration that this early study continues to retain its interest. Patton et al. concluded that the participants' perceptions of the effects of distractors, and their actual choices of working with or without those distractors were quite different. While students knew that they would probably do their best work in quiet rooms, they nonetheless persisted in preferring rooms where a television set, radio, or stereo was on and/or where other people were present. The researchers suggested that beyond the obvious, there were clearly other benefits to be gained by these students from being in a room with others where there was some background sound when they were doing their homework.

Gender Issues

Much has been written about gender identity development in preadolescents; this period appears to be critical in terms of identity and socialization and to set the adult pattern for many individuals. At the same time,

popular culture is a frequent subject of research and editorial attention, because adults—parents, teachers, and others—are concerned that popular music and popular culture in general have serious long-range effects on children, particularly preadolescents, who are seen as particularly vulnerable to formation of what adults consider to be the "wrong" attitudes toward sex, drugs, and violence, as mentioned earlier in this review.

Lowe (2003) conducted a phenomenological study of early adolescent girls focused on Britney Spears, a popular icon. Of particular interest is that most of what her participants had to say about their icon had to do with her looks, clothes, makeup, and behavior, and not her music. Lowe concluded that while preadolescent girls may disapprove of the most popular figures in their world and the media texts that represent them, "they seem able to separate their disapproval from their enjoyment of those texts that confuse and anger them. At times, particularly when they are hanging out with friends, they hear but don't *listen*, see but don't *read*" (p. 140, italics original).

In an examination of adolescent female culture, Hurtes (2002) emphasized the strong need for relatedness and affiliation among girls in this age group, contending that

this need is their overarching characteristic. Hurtes interviewed a group of 15-year-old girls involved in a leadership program that was held in a summer camp setting. As expected, Hurtes was able to identify *friends* as the single most important domain of experience among the participants in the study, who even described school in terms of their friends and nonfriends, rather than in terms of learning experiences, teachers, subjects, or any other school-related element. Preferences for leisure activities also hinged on the *friends* factor, so that the participants consistently reported choosing their activities based on what their friends preferences were. Hurtes interpreted this finding to mean—not necessarily that the participants were responding to peer pressure—that participants were intent on pursuing leisure activities as part of a group, rather than independently.

In a review of the self-regulation literature, Raffaelli et al. (2005) found that girls had significantly better self-regulatory ability than boys, in all three of the age groups they studied (ages 4-5, ages 7-8, and ages 12-13). They were unable to determine the basis of this stability, suggesting that it "could reflect neurological underpinnings (differential maturation), temperamental

differences in reactivity associated with gender, or differential socialization during the first few years" (p. 71).

Some researchers have identified voluntary reading as a gender marker (Millard, 1997, as cited in Irwin, 2003) and as socially constructed appropriate behavior for females rather than males. Irwin suggests that one way to encourage adolescents' engagement in reading is to recognize that adolescents' self-concept and emotional processes are highly influential in their engagement. Irwin is also among the researchers who have remarked on the negative attitudes expressed by boys towards reading, and to relate those attitudes in younger adolescents to their emerging gender identity.

Irwin (2003) identified the potential sources of influence on boys' attitudes toward reading as the family, sharing books with peers, perceptions of personal reading ability and facility, and time spent reading. In all these potential sources, Irwin found that boys were socialized to be nonreaders. Their mothers, rather than fathers, were identified as the readers in the family. While more than half of the girls in the study reported that they shared books with (girl) friends, more than 70 percent of the boys

reported that they never shared books with friends. When asked to recall what their earliest experiences of learning to read were like, boys overwhelmingly reported that they were unable to remember much about them, suggesting to Irwin that that they were not much interested in the subject. In common with others, Irwin concluded that reading was a *girl's thing*, not a *boy's thing*.

With regard to perceptions of reading ability and facility as a significant factor in gender-related engagement in reading, Horner and Shwery (2002) are among those who have suggested that perceptions of self-efficacy are of primary importance in children's engagement with reading from a very early age. Pajares (2002) suggested that gender differences in academic interests, often reinforced by schools and teachers, are an important factor in engagement. The subtle and not-so-subtle encouragement of males, for example, toward math and the sciences, and the accompanying discouragement of females' interest in these fields, conveys the message that gender somehow conveys efficacy in some arenas and not in others. If, as others have suggested, reading is perceived as a female activity, the absence of appropriate gender-neutral models

in schools and in students' homes is doing young people a great disservice.

Love and Hamston (2003), in a study of leisure reading among adolescent boys, found that by midadolescence male cultural norms are well-established, so that boys who choose to read do so reluctantly, and with careful attention to *what* they read (and what they tell others they read). In general, Love and Hamston found that boys of this age tended to seek out print and electronic sources that either provided practical information or that enhanced their social image among their peers. The authors were particularly concerned that research on boys and reading was hampered by a narrow focus, fueled perhaps by educators' emphasis on texts that appeal to boys and to boys at different ages. This narrow view, according to Love and Hamston, neglects the assertiveness of boys in midadolescence and their ability to integrate reading in their fields of interest into their identities and the male culture of their peers.

Tarrant (2002) found some differences in the activities engaged in reported by the males and females in his study sample of 14- and 15-year-olds. Of particular interest is that while 48 percent of the males reported

that members of their peer group listened to music, 81 percent of the females reported that their peers engaged in that activity—the same percentage reported that shopping was a major activity, and the only activity that had a higher percentage was “hanging around talking”, which was engaged in by 95 percent of the females’ peer group members.

Tarrant et al. (2001) conducted a study of self-esteem, musical preferences, and social identity among male adolescents. While the primary research interest of the researchers was an investigation of the ways in which individuals perceive themselves to be identified as members of particular social groups, and to contribute to an understanding of their intergroup behavior, their choice of musical preferences as a major variable is of particular interest. In their view, “adolescents believe that their musical preferences are strongly related to those of their peers, and their preferences may have positive or negative consequences for their evaluations of others,” leading Tarrant et al. to conclude that “musical preference may be a valued and important dimension of adolescents’ social identity” (p. 568).

Tarrant et al. (2001) found, as predicted, that the participants associated fans of the types of music that they liked with positive characteristics and fans of the types of music that they disliked with negative characteristics. Of particular interest to the current research is that the types of music the participants categorized as music they liked included dance, indie, and pop; while music categorized as classical or jazz were typically disliked by the participants. While acknowledging that their study was limited by the use of a sample of English boys, all of whom attended a particular schools, and the manipulation of their social categorization process by asking them about boys that attended another school, Tarrant et al. nevertheless confirmed that musical preferences are a salient variable in the judgments adolescents make about each other, as individuals and as members of groups.

Methodological Issues

Measurement of Distractibility

Paulhus et al. (1990) have observed that distractibility is typically measured by performance (speed or accuracy) or by self-report when distracting conditions

or elements are introduced into an experimental situation. Self-report measures typically ask respondents to rate their sensitivity to noise, annoyance, perceived distractibility, or arousability. At the time of their study, the authors found that “the link between self-reported distractibility and actual behavioral measures of sensitivity to distractors is, on the whole, surprisingly weak” (p. 782).

Paulhus et al. (1990) concluded that distractibility self-reports are not valid measures of the behavioral component of distractibility, since there was no link between reports of visual and auditory distractibility and the actual task performance of the participants in their study. They suggest that “direct assessment of performance under conditions of distraction” is a more reliable measure of distractibility (p. 786).

Pool et al. (2003) are among the investigators to acknowledge that in experimental studies of distraction, the presence of an observer in the experimental environment can itself constitute an additional distraction. To reduce this potential effect, Pool et al. used a very small camera to observe students’ orientation toward the visual distraction (a television set playing a soap opera or a

homework assignment), they informed students that their posture was the object of the experiment, and not all of the participants were observed.

Design Issues

Sloboda (2001) is among those who have observed the gap in the research literature represented by phenomenological studies of the musical experiences of children and adolescents. What is needed, in his view, the field has need of the "details of the intimate hour-by-hour musical lives of children in contemporary society" in order to understand how they use music and what it means to them when they are alone, when they are with friends, when they are with strangers, and when they are with their families.

Caldwell et al. (1999) did use a daily diary in their design of a study of adolescent boredom during free (that is, nonschool) time. They asked their sample of eighth grade students to identify their activities during two periods—between school and dinner and between dinner and bed—and then chose activities categorized as *leisure* activities (versus school work or employment) about which to interview the participants regarding the level of boredom experienced, among other aspects. The interview

technique, added to the diary technique, enabled the investigators to focus on specific activities during specific time periods and to establish the social and psychological factors that formed the context for adolescents' leisure activities.

Conclusion

The conceptual and empirical literature that forms the background of the current research originates in a wide range of disciplines and perspectives. There are substantial bodies of research on such topics as reading comprehension, attention, distraction, youth culture, adolescent literacy practices, popular culture, adolescent identity formation, and gender issues in these areas, all of which have been drawn on, to one degree or another, to inform this study. While empirical research that is specifically focused on the effects of lyrical music on reading comprehension is rather limited, numerous related studies have been reviewed to complete the context in which these focused studies have been conducted.

The theoretical background for the current research has also been drawn from work in that has been conducted by a variety of disciplines, including cognitive,

psychological, sociological, and cultural efforts. There is a long tradition of theoretical work in the cognitive and biopsychological processes involved in reading, word recognition, and comprehension, as well as in listening and attentiveness to visual and auditory stimuli. From this work, the concept of *limited capacity* has been reviewed (Pool et al., 2003) as a background for the current research because it proposes that divided attention (between, for example, a printed text and background music) influences comprehension, either because an individual's capacity for attention becomes overloaded or because an individual attempts to process the same kind of information from two different sources simultaneously.

The psychological literature on the processes involved in self-regulation, with specific reference to self-regulation in learners, has been included here for its relationship to the development of reading comprehension skills and study skills in children and preadolescents. In the view of some researchers, such as Zimmerman (2002), self-regulation is not a psychological trait, but a process or activity in which individuals engage, the skill components of which can be learned and taught. Self-regulation has been linked to perceptions of self-efficacy

and to self-concept, both of which are very common themes in the psychological research.

The concepts that underlie various theories of identity development and self-identity play a role in the current research because of the particular importance of identity in the preadolescent and adolescent developmental periods of the life span. Identity is especially important in adolescents' preferences for music, based on their perception that music preferences represent personal characteristics that are one way in which individuals relate or distance themselves from their peers. One feature of the relationship between adolescents and their music is their preference for experiencing music in the company of others, usually their peers, or for experiencing music in isolation and privacy. One of the interesting paradoxes of the relationship is that, for adolescents, music is both a very private and very public activity.

Much of the literature concerned with adolescents and music emphasizes that music has, in addition to its role as social arbiter and in identity formation, a significant emotional component. Adolescents' preferences for different types of music depend in part on their mood, and their desire for relaxation or arousal. Presumably, background

music is also, for some, simply that—unheeded background sound.

In the context of education, a number of researchers (such as Sloboda, 2001) have observed the disconnect between *school music* and adolescents' *own music*, suggesting that some means must be found by schools to at least acknowledge that students may have a musical life outside of what they hear in the school context. For many adolescents, music is highly meaningful and highly personal, an interpretation not necessarily shared by the adults in their lives.

The literature on adolescent literacy and learning is substantial, and has a long history of research and conceptual development. The more recent literature has begun to reflect recognition that in current times the definition of literacy must be expanded to include more than the traditional printed texts that form the core of most school curricula. There is increasing evidence that preadolescents and adolescents are engaged in texts that are neither traditional nor printed, a phenomenon that offers both a challenge and an opportunity to modern educators.

Empirical studies of the effects of music as distractors on reading comprehension performance are limited, but a small body of researchers has begun to establish some parameters for the study of the relationship. While most research in this area has proceeded from the assumption that there must be *some* deterioration in reading performance when distractors are present, researchers are beginning to realize that young people are not distracted to the same degree or in the same way that older adolescents and adults are distracted.

Experiential studies reviewed have included a variety of variables such as different types of noise (e.g., television, baby crying, telephone ringing, dog barking, crowd noises, traffic, train, and aircraft noise), and performance tasks of varying degrees of difficulty (e.g., homework, preparing for exams, writing, math, visual search, short-term memory, and recall). Although music is examined in some of these studies, the music used is typically instrumental music, not music that is lyrical, and not music that is popular with today's youth. The current study attempted to look at music most likely sought out and listened to by adolescents today. The current study

also attempted to check the preferences of the students as to whether or not such music is typically listened to.

Measurements utilized within some of the studies included those that are more subjective in nature, such as interviews, diaries, and self-reports. The current study conducted appropriate and sound experimentation to determine effects of lyrical music on reading comprehension. Some of the research studies reviewed have focused their assessment on older college students or young adults, and not so much the junior high or middle school aged students. The older subjects have most likely developed and established individual study and coping skills that may alter their effects to noise distractions during their performance of a task.

It is hoped that the current research study will contribute to what is known about preadolescents' ability to concentrate on reading comprehension tasks while some part of their attention is directed toward listening to background lyrical music without any impairment of their performance. It is also hoped that this study's contribution to the literature will add to what educators have already learned about students' learning outside the classroom.

CHAPTER 3:

DESIGN OF THE STUDY

Introduction

Determining the effects of listening to lyrical music on performance of a reading comprehension task in a sample of junior high school students, as well as whether or not the effects differed by gender, was the focus of the research study. This chapter describes the research design and approach of the study, as well as the method by which the sample was selected, and its size, eligibility criteria, and characteristics. In addition, the instrumentation and materials used in the study will be described, along with the procedures that were used to collect the study data, the data analysis methods and procedures, and the measures taken to protect the rights of the study participants.

Research Design and Approach

This quantitative, within-subject, experimental study was conducted in study hall classrooms of junior high schools in southwestern Arizona. This design was selected because it is most appropriate to examine the relationships

between the dependent and independent variables identified in this study. The experimental sessions were conducted under two environmental conditions: (a) in a typical study hall classroom without any music accompaniment and (b) the same room but with lyrical music playing in the background. These environmental conditions are the independent variable in the study. The reading comprehension section of a standardized reading test, which constitutes the dependent variable, was administered twice, under both environmental conditions.

The study was conducted over a 2-day period, with a mean time of one day between study sessions, as a counterbalancing technique. The rationale for conducting the two experimental sessions a day apart was that this design may reduce any effects of disparate reading levels on test outcomes, differences in students' mood, anxiety levels, and responses to school environmental effects, and practice effects. This study, in effect, created 20 different sets of data.

Setting and Sample

Subject Sample

The sample was drawn from the total population of seventh and eighth grade students, ages 12 to 14 years, attending five public junior high schools in southwestern Arizona. The total number of seventh and eighth grade students enrolled within the school district used at the time of the study was 2,058. The racial and ethnic composition of the school population is approximately 65% Latino, 30% Caucasian, and 5% Black, Native American, and "other".

Sampling Method and Size

The students were selected by class distribution and were recruited from among those who volunteered. In the five targeted schools, 10 study hall classes of approximately 30 eligible volunteers were randomly selected for this study. As each study hall has approximately 45 students, this number (30) allowed for excluding up to 33% of the students who may have chosen to not participate in this study or were deemed ineligible to participate for other reasons. During the school day, there are a few class periods in which study halls are held. As there are at

least three different study halls in session during those class periods, students who chose not to participate in this study were assigned to a different study hall for the 2 days that the study was being conducted. With a confidence interval of 5 and a confidence level of 95%, the suggested sample sized for a population of approximately 2,000 is 322 (Creative Research Systems, 2005). Although a total of 375 students were assessed during this study, the scores of any students who were absent on one of the 2 days the experiment was conducted, were eliminated from this research data. The remaining number of students tested in both music and no music conditions was 334, fairly evenly divided between males and females. In addition, the researcher attempted to replicate the racial and ethnic composition of the total sample in the participant group.

Eligibility Criteria

All of the students in the participant sample were proficient in speaking, reading, and writing English (according to IDEA Proficiency Test scores contained in their records), to rule out limitations of secondary language learners. Students with hearing deficits (as

indicated in annual school health examinations) were not included in the study sample.

Sample Characteristics

The participant sample consisted of approximately 50% males and 50% females, reflected the racial and ethnic composition of the total population from which the sample was drawn, and consisted entirely of volunteers. This researcher believes that students at this age are acquiring their own unique learning styles and studying skills, and are forming habits to help them prepare for high school life.

Instrumentation and Materials

The instruments and materials that were used in this study included the Reading Comprehension section of the S and T forms of the Gates-MacGinitie Reading Tests, Fourth Edition (MacGinitie et al., 2000), background lyrical music, and a brief survey of student study habits and music preferences.

The Reading Comprehension Test

The Gates-MacGinitie Reading Tests, Fourth Edition, are widely used group-administered reading achievement instruments. This assessment instrument consists of two subtests, vocabulary and comprehension, which provide norm referenced scores. Two alternate forms of the Tests are available (S and T forms) as well as versions for various grade levels from kindergarten through 12th grade.

The vocabulary test contains 45 questions, each consisting of a test word in a brief context followed by five other words or phrases. The task of the student is to choose the one word or phrase that means most nearly the same as the test word (multiple choice format with five choices per item). The test is a measure of word knowledge (student's reading vocabulary), not the ability to derive meaning from context (which is the function of the comprehension test). In other words, the test assesses the student's ability to identify words in isolation. The test items are arranged in an increasing order of difficulty. The vocabulary test generally takes approximately 30 minutes to administer.

The comprehension section of the Tests that was used as the instrument in this study contains 48 questions

pertaining to 11 prose texts that vary in length. These passages were chosen from a variety of published sources appropriate, yet not very familiar to students at the grade levels for which the test was developed. Passages include a wide range of content and genre. Such content categories of the passages include fiction, social science, natural science, and humanities. Students are asked to read a short narrative or expository text and then answer a few multiple-choice questions (with five choices per item) after each passage. The questions are designed to measure students' ability to comprehend information contained in the text stated explicitly or implicitly. The comprehension section usually takes approximately 35 minutes to administer. Reading comprehension test scores were chosen as the dependent variable, as this researcher believes this task most closely represents the concentration and focus needed to acquire and process new information.

The comprehension test passages and multiple-choice questions were examined by consultants of various cultural diversities for possible bias or offensiveness. African American, Asian, Hispanic, and Native American consultants were used to review all passages and questions. Any passage

or question found to be questionably biased or offensive was either rewritten or eliminated from the test.

Student performance on each of the subtests may be expressed in a variety of forms. Vocabulary, comprehension, and total raw scores may be converted into five derived scores: Stanines, normal curve equivalents (NCE), percentile ranks (PRs), grade equivalents (GEs), and extended scale scores (ESSs). Scores obtained will be dependent variables.

Reliability is the extent to which a test yields consistent results. Estimates of the Gates-MacGinitie's alternate form reliability using the Kuder-Richardson Formula 20 (K-R 20) are generally quite high on each of the subtests and for total test scores. Vocabulary subtests range from 0.75 to 0.92, and comprehension subtests range from 0.74 to 0.87. Total test reliabilities range from 0.81 to 0.95. All grades with the exception of grade 11 are at 0.80 or higher, with a median of 0.88. Further, grade 11 was based on a relatively small sample size.

Validity is the extent to which a test measures what it claims to measure. The Gates-MacGinitie Reading Tests, Fourth Edition, is not a test of reading speed, but rather, a measure of students' knowledge of concepts related to

reading, knowledge of decoding skills and word meanings, and general understanding of what they read (MacGinitie et al., 2000, p. 64).

The Lyrical Music

The music that was played in the background during the experimental procedures consisted of top hit songs listed in *Billboard* magazine for the week in which the study was conducted. The top hot 100 singles reflect their sales and the number of times they are played on radio stations nationally. The decision to use *top hot* music, rather than a specific genre of music, was based on the assumption that the participants would most likely be aware of and familiar with the selections, whether or not they reflected participants' personal tastes in such music. Local disc jockeys were also polled for their suggestions regarding the types of music today's local youth most listen to.

Nine of the top hot 100 hits were selected for play based on the following: songs chosen did not contain fowl language or explicit lyrics depicting or eluding to sex, violence, or substance abuse. No songs containing the parental advisory label were used in this study. Edited version labels were considered but not used. Using

Billboard magazine (as opposed to less known and reputable magazines or sources) assumed that an accurate poll of the national top 100, as opposed to the top hits of a local radio station, would be represented. Further, the top songs chosen from the Billboard charts are very similar to those listed in other top charts such as MTV charts, Rick Dees Weekly Top 40 charts, and American Top 40 with Ryan Seacrest charts. The 9 songs chosen for this study were actually from the top 20 on the designated charts.

The top hit songs selected for this study were recorded on a single disc by a local professional disc jockey, using appropriate recording equipment.

The Survey

A survey (*see* Appendix A) was designed by the researcher to gather information about participants' study habits and music preferences. It was administered following the completion of the study session in which the music was played. The survey asked about the conditions under which participants typically study and their preferences in music from among the songs used in the music portion of the research sessions. Participants were asked to rate the degree to which they appreciated hearing each of the nine

songs played using a Likert-type scale, ranging from 5 = *strongly appreciated* to 1 = *strongly disliked*. The data from this survey was used to determine the relationship between individual/group preference and the effects of the music. Preference for each of the musical selections played during the music portion of the research session were asked in the survey, as well as general preference for studying with (or without) music, and is related to this study's third hypotheses of whether or not preference for the lyrical music played effects reading comprehension scores. Literature review indicates most adolescents choose to listen to music in some form (i.e., stereo, television, or radio) as they are studying or preparing homework assignments. Literature review also suggests that adolescents typically prefer listening to music that they view as being socially accepted within their group of peers.

Data Collection Procedures

Since the research instrumentation included two parallel forms of the Reading Comprehension Section of the reading test and two environmental conditions, the participants were randomly assigned to one of four groups

(Group 1, Group 2, Group 3, or Group 4) for reasons of efficiency.

On the first day of the study, the students in Group 1 completed Form S of the Reading Test under nonmusic classroom conditions, students in Group 2 completed Form S with accompanying background music composed of the *Billboard* magazine's Top Hot Hits for the week of actual testing, students in Group 3 completed Form T of the Reading Test under nonmusic conditions, and students in Group 4 completed Form T with background music.

On the second day of the study, students in Group 1 completed Form T with background music, students in Group 2 completed Form T under nonmusic conditions, students in Group 3 completed Form S with background music, and students in Group 4 completed Form S under nonmusic conditions.

Reading Test Administration

Participants were provided with separate desks, positioned so as to avoid any temptation to copy another's answers on the reading comprehension section of the Tests. Tests were administered according to the procedures recommended by the Technical Manual issued by the authors.

Playing of the Background Music

During the experimental session in which music was played in the background, it was played continuously for the duration of the session (35 minutes). The music, previously recorded by a professional disc jockey, was played via a Bose Wave Radio/CD unit over the school's public address system at a preset volume of approximately 75 decibels. The preset level of 75 decibels was selected after careful consideration of prior research (which intimated that the more intense the noise, the more difficult the completion of the task becomes). The purpose of this study was not to test the loudness effect, however, but to test the content effect of the noise, in this case lyrical music, hence the selection of a moderate playback level, 75 decibels. The researcher monitored the volume with a sound level meter.

Survey Administration

As noted earlier, the survey was administered after participants had completed the background music portion of the study sessions.

Data Analysis

The data collected in this study was analyzed using an analysis of variance (ANOVA) procedure, with an alpha level established at .05 for null hypotheses 1 and 2 that were tested. The overall general linear models were used to reject or accept the null hypotheses of no effect of music on reading comprehension scores, and no effect of gender on scores.

Analysis of variance (ANOVA) is one of the most frequently employed methods of statistical inference for the analysis of experimental data (Bordens & Abbott, 1999). It is a method for testing hypotheses about means. That is, the ANOVA tests the difference between the means of two or more groups. A one-way analysis of variance is a way to measure the statistical significance of the differences among the mean scores of two or more groups on one or more variables. Statistical information will be provided in tables in chapter 4.

Subsequent analysis using a point biserial correlation due to the dichotomous and continuous variables was used to accept or reject null hypothesis 3 of determining any relationship between individual/group preference and the effects of the music on a reading comprehension test, in

order to illustrate how students who do typically study with the musical selections used scored compared to those students who do not typically study with such music.

The point-biserial correlation coefficient (symbolized as *rpbi*) is a statistic used to estimate the degree of relationship between a naturally occurring dichotomous nominal scale and an interval (or ratio) scale. By convention, the dichotomous variable is treated as the X variable, its two possible values being coded as X=0 and X=1; and the nondichotomous variable is treated as the Y variable (Brown, 1996).

This correlation provides a measure of effect size (strength of relationship), allowing the researcher to determine whether the strength of the relationship between the two variables is *weak* (r = .10), *moderate* (r = .30) or *strong* (r = .50). This is especially important in a study such as this with a large sample (N > 100) where it is easy to have a statistically significant correlation even though the relationship between the variables may be actually quite weak.

The point-biserial correlation can range from 0 to +1.00 if the two scales are related positively (i.e., in the same direction) and from 0 to -1.00 if the two scales

are related negatively (i.e., in opposite directions). The higher the value of *rpbi* (positive or negative), the stronger the relationship between the two variables (Brown, 1996).

The intended survey was administered to a total of 52 seventh and eighth grade students prior to this study. These 52 students were randomly chosen from two homeroom classes in two different junior high schools. The students were asked to read and respond to each of the 11 items on the survey. Results of this pilot indicated that of the 52 students questioned, 41 (79%) stated that when they study, they like to listen to music. When asked about their preferences for listening to the specific music listed in the survey, a majority (37 of the 52, or 71%) of the students reported that they did enjoy listening to the music selections listed in the survey (i.e., they chose 5 = *strongly agree* or 4 = *agree* choices on the survey). These findings are consistent with the review of literature stating that most adolescents do study with music playing in the background. The fact that most of the students reported liking the musical selections listed on the survey supported that supposition that this genre of music is typically listened to by these students.

Measures Taken for Protection of Participants' Rights

All participants were treated in accordance with the *Ethical Principles of Psychologists and Code of Conduct Guidelines* of the American Psychological Association (1992). Participation in the study was entirely voluntary. This researcher and classroom teachers spoke with students about volunteering for this study. Entire grade levels (seventh and eighth) were spoken to, leaving no other like students to be excluded in the schools. Participants were treated with respect and had all of their questions regarding this study addressed prior to their volunteering to participate. No harm was brought upon any of the volunteers in this study.

Each student was supplied a parental informed consent form prior to participation, a sample copy of which appears in Appendix B. These consent forms were signed by both the students and their parent(s) and returned prior to the administration of any formalized testing. Permission from the school district to assess the students is contained in Appendix C. Confidentiality of participants' responses were preserved by the use of identifying numbers to link test results and surveys. Any identifying information was removed from the data so that no student was identifiable.

All testing materials were appropriate for the age and grade range assessed, as well as the language preference and estimated academic ability of the participants in this study. The survey utilized was developed via the use of appropriate psychometric procedures for its rationale for use, design, standardization, and reduction of bias. This researcher was the only person to administer, hand score, and view the participants' individual response forms. Data will be stored in a locked file cabinet drawer at the Exceptional Student Services offices of Yuma School District One in Yuma, Arizona. Only this researcher will have a key to access the file cabinet. All data will be kept for a period of 5 years as recommended by the American Psychological Association. Data will then be shredded. (Walden IRB approval #04-19-06-00048936.)

CHAPTER 4:

RESULTS OF THE STUDY

Introduction

The purpose of the current study was to investigate the effects lyrical music has on the reading comprehension of junior high school students.

This study examined the differences in raw scores obtained on a standardized reading comprehension test given in two different environmental conditions: (a) that of a typical (nonmusic) study hall classroom, and (b) while listening to lyrical music playing in the background at a preset volume. The study also sought to determine whether gender differences occurred on the reading comprehension test scores within the music and no music environments, and whether student preference for studying while listening to music affected the reading comprehension scores or varied by gender.

This chapter displays the results of the data analysis obtained from the instruments utilized in this study. The analyses of quantitative methods are reported and examined in the context of the theoretical constructs, which guided this study.

Demographics of Participants

A total of 375 seventh and eighth grade students participated in this voluntary study. However, as 41 students were present for only one of the 2 days of testing, the data obtained from 334 students was analyzed.

Gender was fairly equivalent in representation. There were 172 males (51.5%) and 162 females (48.5%) included in this study, of which 198 (59.3%) of the students were in the seventh grade and 136 (40.7%) students were eighth graders. Students were selected from five public junior high schools in southwestern Arizona, and the testing was administered during study hall periods.

The predominant race and ethnic group of both the school district population and the actual sample of student participants for this study was Hispanic (64.60%), followed by students who were White (30.50%). The remainder of the students within both the population and sample represented African (2.84%), Native (1.04%), and Asian (1.01%) status.

All students in this study were regular/general education students. All students were proficient in speaking, reading, and writing English (according to IDEA Proficiency Test scores contained in their records), as to rule out limitations of secondary language learners. No

students with hearing deficits (as indicated in annual school health examinations) were included in this study.

Instrumentation and Materials

The students in this study were assessed with the Reading Comprehension section of the S and T forms of the Gates-MacGinitie Reading Tests, Fourth Edition (MacGinitie et al., 2000).

A brief survey of student study habits and music preferences was also administered after the music environment portion of the testing was completed. The data from this survey was used to determine whether or not preference for studying with (or without) music, and for the lyrical music selections played during this study, effects reading comprehension scores.

Results

Data were analyzed using a repeated measures one-way analysis of variance (ANOVA) procedure. The alpha level was established at .05 for the null hypotheses being tested. Subsequent analysis utilizing a point biserial correlation was conducted to test the third hypothesis. Lastly, a three-way analysis of covariance (ANCOVA) test considered

the relationships between the dependent variable and the four independent variables in this study. Results of statistical analyses including means and standardization for each condition considered in this study will be presented in the tables that follow.

Hypothesis 1

Null Hypothesis 1 stated that, "There is no difference between reading comprehension scores completed in the environment without the music and those obtained with the lyrical music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

To test this, an Analysis of Variance (ANOVA) was used to compare how students performed in the two environmental conditions (Table 1). The No Music Environment score was higher than the Music Environment Score (M = 30.56 vs. M = 26.49). This difference was significant, F (1, 332) = 193.60, p = .001. This rejected Null Hypothesis 1 and provided support for Alternative Hypothesis 1, which stated "There is a difference between reading comprehension scores completed in the environment without the music and those obtained with the lyrical music playing in the background

as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

Nearly three quarters of the students (74.5%) did less well on the reading comprehension test when it was completed while listening to lyrical music in the background (*M* = -4.07, *SD* = 5.35).

Table 1

Difference in Reading Comprehension Scores Based on Presence of Music. Within Subjects ANOVA Test (N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*
Condition	2772.94	1	2772.94	193.60	.001
Error	4769.56	332	14.32		
Total	7542.50	333			

The type of music played during this study (i.e., songs designated as top hot singles that were popular at the time of testing) had a more detrimental effect on the students' reading comprehension scores. Although many students reported that they typically listened to music while studying, and enjoyed the musical selections played during this study, scores obtained on their reading

comprehension tests were depressed while listening to music in the background.

Hypothesis 2

Null Hypothesis 2 stated that, "There is no gender difference regarding the reading comprehension scores completed in the environment without music and those scores obtained with the background lyrical music as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

To test this, a one-way ANOVA test was used (Table 2). Females in the sample had a greater decline in their scores under the Music Environment than the No Music Environment (M = -5.01) than did the males (M = -3.20). This difference was significant, F (1, 332) = 9.72, p = .002. This rejected Null Hypothesis 2 and provided support for Alternative Hypothesis 2, which stated "There is a gender difference regarding the reading comprehension scores completed in the environment without music and those scores obtained with the background lyrical music as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

Table 2

Comparison of Music Difference Score [a] *Based on Gender* (N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*
Gender	271.10	1	271.10	9.72	.002
Error	9264.87	332	27.91		
Total	9535.98	333			

[a] Difference = Music environment score - No music environment score

As shown in Table 3, no differences were found between the males and females for their No Music Score, F (1, 332) = 2.52, p = .11. As shown in Table 4, no gender differences were found for their Music Score, F (1, 332) = 0.00, p = .98. As Table 5 shows, the Total Music Preference Score was significantly higher (p = .001) for the females (M = 3.63 versus M = 3.16), F (1, 332) = 27.28, p = .001.

Table 3

Comparison of Reading Scores Based on Gender in No Music Condition (N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*
Gender	261.79	1	261.79	2.52	.11
Error	34438.63	332	103.73		
Total	3400.42	333			

Table 4

Comparison of Reading Scores Based on Gender in Music Condition (N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*
Gender	0.11	1	0.11	0.00	.98
Error	38147.28	332	114.90		
Total	38147.39	333			

Table 5

Comparison of Total Music Preference Score Based on Gender (N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*
Gender	18.09	1	18.09	27.28	.001
Error	220.07	332	0.66		
Total	238.16	333			

Preference of Individual Songs Played

Table 6 displays the music preference ratings sorted by the highest mean score. These ratings were given using a five-point Likert scale (1 = s*trongly disagree* to 5 = s*trongly agree*). Question 1 asked, "When I study, I like to listen to music." The mean rating was *M* = 3.71 on a five-point scale. The most popular songs in this study were "Grillz (*M* = 3.62)" and "Savin Me (*M* = 3.49)."

Table 6

Music Preference Ratings Sorted by Highest Mean Score (N = 334)

Rating	*M* [a]	*SD*
Q1 When I study, I like to listen to music	3.71	1.12
Q8 Grillz by Nelly	3.62	1.30
Q9 Savin Me by Nickelback	3.49	1.13
Q10 Over My Head (Cable Car) by the Fray	3.40	1.11
Q6 Walk Away by Kelly Clarkson	3.38	1.19
Q7 Move Along by The All-American Rejects	3.38	1.20
Q2 SOS (Rescue Me) by Rihanna	3.34	1.17
Q3 Bad Day by Daniel Powter	3.24	1.16
Q4 Unwritten by Natasha Bedingfield	3.19	1.18
Q5 What Hurts the Most by Rascal Flatts	3.14	1.15

[a] Rating Scale: 1 = *Strongly Disagree* to 5 = *Strongly Agree*

Hypothesis 3

Null Hypothesis 3 stated that "There is no relationship between amount of preference for studying with music and scores obtained on a reading comprehension test completed in either the environment without music or with music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

To test this, a series of point biserial correlations were performed due to the dichotomous and continuous variables (Table 7).

Table 7

Point Biserial Correlations for Selected Variables (N = 334)

	Difference [a]	No Music Score	Music Score	Gender [b]
Difference		-.17***	.34****	-.17***
Total Music Preference	.05	-.12*	-.09	.28****
Q1 When I study, I like to listen to music	.10	-.19****	-.13**	.16***
Q2 SOS (Rescue Me) by Rihanna	-.01	-.13*	-.13*	.36****

* p = .05, ** p = .01, *** p = .005, **** p = .001

[a] Difference = Music environment score – No music environment score

[b] Gender: 1 = *Male*, 2 = *Female*

Table 7 *Continued*

	Difference [a]	No Music Score	Music Score	Gender [b]
Q3 Bad Day by Daniel Powter	.10	-.03	.02	.20****
Q4 Unwritten by Natasha Bedingfield	.00	-.03	-.02	.36****
Q5 What Hurts the Most by Rascal Flatts	.06	-.02	.02	.24****
Q6 Walk Away by Kelly Clarkson	.01	-.09	-.08	.39****
Q7 Move Along by The All-American Rejects	.08	.01	.05	.07
Q8 Grillz by Nelly	.01	-.30****	-.28****	.05
Q9 Savin Me by Nickelback	.06	-.06	-.03	.05
Q10 Over My Head (Cable Car) by the Fray	-.02	-.03	-.03	.11*

* p = .05, ** p = .01, *** p = .005, **** p = .001

[a] Difference = Music environment score – No music environment score

[b] Gender: 1 = *Male*, 2 = *Female*

The student's total music preference score was negatively related to their reading comprehension score in the no music environment (r = - .12, p = .03). However, this preference score was not correlated with the reading comprehension difference score (music – no music) (r = .05,

p = .34) or the reading comprehension score in the music environment (r = -.09, p = .10). Given that only one of the three correlations was significant, only partial support was provided for Alternative Hypothesis 3, which stated that "There is a relationship between amount of preference for studying with music and scores obtained on a reading comprehension test completed in either the environment without music or with music playing in the background as measured by the Gates-MacGinitie Reading Tests, Fourth Edition."

Data suggests that the more a student reported studying to music and enjoying the musical selections played during this study, the lower their reading comprehension score under the no music environmental condition. Although this significance is weak (r = - .12, p = .03), it indicates that for approximately 1½% of the students in this study, those who preferred studying with the type of music played during this study, tended to comprehend better when music was playing in the background than when it was not. Further, females had a greater preference for listening to music when studying (r_{pb} = .28, p = .001). Although statistically significant, this data is of little practical value. In addition, females had

significantly higher music preference ratings for seven of the ten individual music preference ratings (Table 7).

Additional significant correlations were noted in Table 7. Students who were in more agreement with the statement, “When I study, I like to listen to music,” had lower comprehension scores in the no music environment (r = -.19, p = .001) and also in the music environment (r = -.13, p = .01). Although this is not a strong correlation, this suggests that students who like to listen to music, in general, while they are studying, did not score as well under both music and no music environmental conditions, as did the students who reported that they typically prefer not to listen to music while studying.

Students stating more agreement to the statement, “I like SOS,” had lower comprehension scores in the no music environment (r = -.13, p = .01) and in the music environment (r = -.13, p = .01). Students with more agreement to the statement, “I like Grillz,” had lower comprehension scores in the no music environment (r = -.30, p = .001) and in the music environment (r = -.28, p = .001). The song “Grillz” is considered to be a rap song, and the song “SOS” is more in the hip hop genre. Interestingly, the song that was rated by the students as

being the least favored song to listen to while studying was “What Hurts the Most” (*M* = 3.14, *SD* = 1.15), which is considered to be a country song.

Additional Findings

Table 8 displays the three-way ANCOVA test analyzing the difference in reading comprehension based on the testing environment. The overall model was significant (*p* = .001) and accounted for 7.6% of the variance in the dependent variable. For this analysis, the covariate used was the student’s music preference score, which was significant (*p* = .04).

Table 8

Three-Way ANCOVA Analyzing the Difference [a] *in Comprehension Score*

(N = 334)

Source	*SS*	*df*	*MS*	*F*	*p*	Partial Eta Squared
Full Model	722.77	8	90.35	3.33	.001	.076
Music Preference	118.75	1	118.75	4.38	.04	.013
Gender [b]	378.99	1	378.99	13.97	.001	.041
Grade	4.52	1	4.52	0.17	.68	.001
Order [c]	214.85	1	214.85	7.92	.005	.024
Gender X Grade	98.34	1	98.34	3.63	.06	.011
Gender X Order	35.61	1	35.61	1.31	.25	.004
Grade X Order	40.43	1	40.43	1.49	.22	.005
Gender X Grade X Order	0.79	1	0.79	0.03	.86	.000
Error	8,816.36	325	27.13			
Total	9,539.13	333				

[a] Difference = Music environment score - No music environment score

[b] Gender: Males (*M* = -3.04), Females (*M* = -5.35)

[c] Order: No Music - Music (*M* = -5.03), Music - No Music (*M* = -3.36)

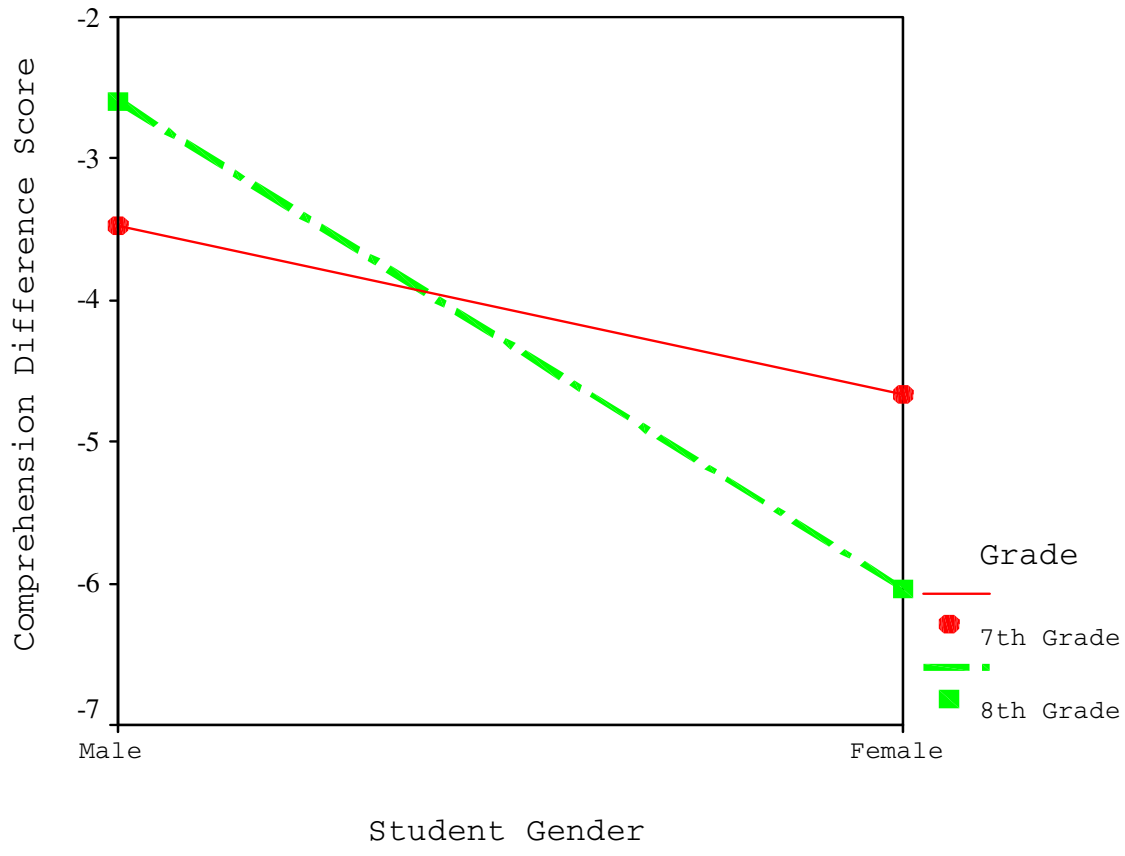
Significant main effects were found for gender, F (1, 325) = 13.97, p = .001, and for presentation order, F (1, 325) = 7.92, p = .005, but not for grade level, F (1, 325) = 0.17, p = .68.

Inspection of the mean difference scores found males (*M* = -3.04) to have significantly less decline in their reading comprehension scores than did the females (*M* = -5.35). The order of presentation was slightly more frequent for the music - nonmusic presentation order (51.8% vs. 48.2%). Students who tested when presented first with music then the no music (*M* = -3.36) showed significantly less decline in their scores than did the students who were first administered the testing with no music and later given music (*M* = -5.03).

No two-way interaction effects were found for gender X order, *F* (1, 325)= 1.31, *p* = .25, or grade X order, *F* (1, 325) = 1.49, *p* = .22. A weak correlation, F (1, 325) = 3.63, p = .06, Figure 1, was found based on gender X grade, suggesting a possible trend.

Inspection of Figure 1 shows how eighth grade males (*M* = -2.59) seemed to have less difference in their reading comprehension scores than did their seventh grade counterparts (*M* = -3.48), while for the females, the seventh graders (*M* = -4.66) appeared to have less decline in their reading comprehension scores then did the eighth grade females (*M* = -6.04). It should also be noted that the partial eta squared coefficient for this interaction effect

(Table 8) accounted for only 1.1% of the variance in the dependent variable and should therefore be seen as a tentative finding. No significant three-way interaction effect was noted, F (1, 325) = 0.03, p = .86 (Table 8).



[a] Difference = Music environment score - No music environment score

Figure 1. Comprehension difference score [a] based on student gender and grade level (N = 334).

Summary

In summary, three hypotheses were tested in this study. Both Alternative Hypothesis 1 (students had better reading comprehension scores under the no music condition, Table 1) and Alternative Hypothesis 2 (females had a greater decline in reading comprehension scores under the music environmental condition, Table 2) were supported. Alternative Hypothesis 3 (relationship between music preference and reading comprehension scores, Table 7) was only partially supported. In addition, a slight trend was noted (p = .06) in the interaction between the student's gender and their grade level.

CHAPTER 5:

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Enhancing the literacy development of all students is invariably given high priority in education reform. Much of the research on literacy focuses on young children learning to master the basic skills of vocabulary and comprehension. By junior high school, students are expected to comprehend increasingly sophisticated text. At the same time, young adolescents are at a developmental stage where identity with the peer group takes on supreme importance. There is evidence of a substantial gap between the formal literacy activities adolescents associate with school and the expressive and receptive literacy activities they engage in on their own (Luttrell & Parker, 2001). Often, two or more such activities are carried out simultaneously (Wilhelm, 2002).

For more than 2 decades, researchers have been investigating the impact of extraneous stimuli, in the form of music, television, or simply *noise* on intellectual activities. The results can best be described as inconclusive. Some researchers have concluded that

background music or speech has a deleterious effect on reading performance (Furnham & Strbac, 2002; Oswald et al., 2000), while others have found no significant impact (Boyle & Coltheart, 1996; Pool et al., 2003), and still others report a beneficial effect (Hallam et al., 2002). In one particularly relevant study, Patton et al. (1983) reported that virtually all students preferred doing homework with a radio, stereo, or television playing, despite their admission that a quiet room would probably be more conducive to studying. Nevertheless, they maintained their preference for a room with background stimuli for most homework tasks. There was one notable exception: the students agreed that a quiet room was preferable for a reading assignment.

Building on this line of research, the present study was designed to examine the impact of lyrical music on the reading comprehension of seventh and eighth grade students. The songs were deliberately chosen to reflect the music preferences of the target group. Lyrical texts figure heavily in the song compositions.

Several theoretical frameworks guided the study. One channel of thought is the cognitive processing involved in reading and listening to music. Pertinent concepts for

exploring the behavior of adolescents include attention (Pool et al., 2003), distractibility (Hygge, 2003), and self-discipline and self-regulation (Raffaelli et al., 2005; Zimmerman, 2002). An additional line of research, especially relevant to this age group is identity development and formation (Boehnke et al., 2002; and Irwin, 2003). This study included gender as part of identity formation, exploring whether gender differences would emerge in the music and nonmusic conditions. Also in line with issues of culture and identity, the study investigated the music and study preferences of the students.

The results supported the hypothesis that the students would perform differently when reading with and without background music. Three quarters of the students performed significantly less well on the reading comprehension test while listening to lyrical music. Additionally, the findings supported the second hypothesis that there would be gender differences in reading comprehension scores under the two environmental conditions. The girls showed a more marked decline in their reading scores in the background music condition than the no music condition than did the boys. The third hypothesis addressed the relationship between students' preferences and their reading

performance. Findings in this area were mixed. The students who typically study at home to music and enjoyed the selections played in the study defied the prevailing pattern by reading more effectively with music playing. Although significant, this accounted for only 1½% of the students in this study, and so this may be of little practical value. However, the general trend was that students who reported they prefer listening to music while studying tended to perform lower under both environmental conditions than students who prefer to study without music.

Interpretation of Findings

Researchers have used various perspectives to examine the relationship between listening to music and performance on cognitive tasks. According to Savage (2001), listening to the lyrics of popular music and comprehending written text involve cognitive processes that are similar but not necessarily competitive. From the perspective of Bourke et al. (as cited in Pool et al., 2003), such similarity intrinsically makes them competitive. Proponents of theories of *limited capacity* contend that people have limited mental capacities for processing information. Illustrating this perspective, Pool et al. propose that,

"combining homework and television, therefore, may lead to an overload of information that exceeds attentional capacity or resources, with the result that only part of the information can be processed and homework performance decreases" (p. 362).

There are two variations on this theme. Some authors maintain that attempting to accomplish two tasks simultaneously exceeds an individual's capacity for attention, which is the standpoint of Pool et al. (2003), while others such as Bourke and colleagues (as cited in Pool et al.), contend that the pivotal factor is not whether the cognitive capacity is exceeded but rather that performance declines when both tasks involve processing the same types of information. When listening to music, the brain processes lyrics and melody independently (Besson et al., 1998). Although cognitive processes involved in comprehending lyrical music and written text are not identical, the verbal component in both can effectively classify the two activities as competing cognitive demands. Adding to the complexity, Oswald et al. (2000) suggests there may be a significant distinction between *hearing* and *listening* in the distracting effects the authors observed for verbal speech (meaningful and meaningless) on cognitive

tasks. The implication is that individuals discriminately attend to external stimuli.

The research of Pool et al. (2003) differed from the present study in that the researchers used television soap operas as the prospective distraction for eighth grade students working on homework assignments. Listening to only the dialogue without the visual component did not prove distracting while watching the show had a detrimental effect. From the perspective of limited capacity, the synthesis of audio and visual elements produced a cognitive overload. Alternately, drawing on Oswald et al. (2000), the sound by itself might not have elicited the students' attention. In fact, Pool et al. suggested that the dialogue was simply not as attractive to the students without the visual imagery.

The results of the present study contradict the assumption of Savage (2001) and support the idea that the lyrical music and written text constituted competing stimuli. Three quarters of the students performed significantly lower on the reading test when listening to music—a substantial majority. In the context of the students' expressed preferences for the music used in the study, and for their study preferences at home, there is

also support for the notion that this effect is mediated by the degree of attention the students gave to the music. This is especially applicable when examining the performance of student subgroups.

The presence of music had a significantly more pronounced detrimental effect on the reading comprehension of female students compared to their male peers. From the perspective of theories of self-regulation, the reverse effect might be expected. Reviewing the literature on self-regulation, Raffaelli et al. (2005) reported that across age groups (ages 4-5, 7-8, and 12-13, respectively), girls show significantly higher self-regulatory ability than boys. Furthermore, the greater interest of girls in reading (Irwin, 2003) would suggest that the girls would be more focused on reading and less distracted by external stimuli.

At the same time, the girls in this study expressed a stronger preference for seven of the nine songs played during study as well as for studying while listening to music. Furthermore, in a slightly older sample (14 and 15 years of age), a substantially higher proportion of girls than boys (81% versus 48%) said that members of their peer group listened to music as a leisure activity (Tarrant, 2002). The discrepancy may be attributable to the

importance that adolescents of both genders attach to the activity of music listening. In view of these findings, the detrimental effect of music on the girls' reading performance may imply that the girls were more attracted to the music and consequently awarded it more attention, which detracted from their concentration on the written text.

An alternative possibility for the gender disparity lies in self-efficacy theory. Some sources suggest that girls have higher self-efficacy for reading than boys (Horner & Shwery, 2002; Pajares, 2002). High self-efficacy sometimes results in overestimation of one's capabilities. Therefore, it is possible that the girls overestimate their ability to read or study successfully while listening to music.

There was some interaction between gender and grade. Listening to music seemed to have a lesser negative impact on the reading scores of eighth grade boys than their seventh grade counterparts while the reverse effect was observed for girls; that is, there appeared to be less decline in the reading scores of seventh grade girls than eighth grade girls. However, the trend was slight and may be of no practical significance. It might simply have been an artifact of the sample.

An intriguing finding was that the order in which the students were exposed to music and silence affected their reading scores. The presence of music had a significantly less adverse effect on the reading comprehension of students who listened to music first compared to those who read first in silence and then in the presence of music. Any explanation for this effect is speculative. One possibility is that the students who listened to music first shared their experience with friends and classmates, which heightened anticipation for the second group. Thus they might have entered the study hall with a degree of arousal that was absent from the first music group. This assumption is consistent with theories that link listening to music with emotional states (Boehnke et al., 2002; Kellaris & Kent, 1992). It is also consistent with the social significance of music for adolescents (Sloboda, 2001), which raises the probability that the students shared their music listening experience.

The overall trend was that students who prefer to study with music and who expressed greater preference for the music selections played for the study scored lower on reading comprehension in both the music and nonmusic conditions. This pattern contradicts the study of Hong et

al. (2004), who reported that the most highly motivated and persistent students preferred to complete their homework with background music, as well as to move around and have a snack while doing homework. In contrast, students with lower motivation and persistence and tendencies to procrastinate preferred doing homework alone in a quiet room.

One way of interpreting the findings of Hong et al. (2004) is to surmise that both groups of students were aware of their particular needs. Specifically, the less motivated students might have recognized that they could be easily distracted and therefore chose an environment that would facilitate concentration. Furthermore, despite their preferences for music and movement, the homework practices of the more motivated students were actually highly organized. These students preferred structured homework assignments and tended to complete them in the same order, in the same place, and about the same time. The key to these practices is *strategy.*

The students in the present study, particularly those with stronger preferences for listening to music while studying, do not seem to be aware of the adverse effect that music has on their reading performance. They may be so

accustomed to reading and studying with music that it does not occur to them that they might comprehend reading material more effectively without the background distraction. These students (in fact, all students) could benefit from learning study skills and strategies to improve their focus and concentration.

Trautwein and Koller (2003) argue that research on homework should be more closely linked to conceptual frameworks of self-regulation. A common conclusion of educators who focus on junior high/middle school students is that students in this age group are underrepresented in research. Exploring self-regulation in children from age four through 13, Raffaelli et al. (2005) concluded that while self-regulation increases substantially from age 4 or 5 to age 7 or 8, there is little appreciable difference between middle childhood and early adolescence. In view of gaps in the literature, it seems more appropriate to suggest that less attention is given to specific or subtle differences in self-regulation that occur during the preadolescent stage of development.

Some distinctions between early adolescents and older adolescents have been observed that are relevant to the present study. It is tempting to say that the students

would benefit from metacognitive skills that would enable them to become more aware of their study habits and their impact on academic performance. However, based on research comparing the reading performance of seventh and 11th grade students, Peverly et al. (2002) concluded that metacognition was not as important for the performance of the younger students. For all students, total recall was significantly linked with metacognitive regulation of monitoring. At the same time, short-term memory had a stronger relationship to the reading comprehension of the seventh graders than the ability to reflect on their thought processes.

Nevertheless, mastering strategies that enhance study skills are advantageous to all students. Additionally, learning specific strategies could be especially useful for helping students who insist on studying to music to compensate for the potential distraction. To be most effective, such strategies must be matched to the students' developmental level, which returns to the relative neglect of young adolescents in research.

Zimmerman (2002) developed a model of self-regulation encompassing three phases corresponding to what occurs before, during, and after learning experiences: the

forethought or task analysis, goal-setting, and planning phase; the *performance* phase, which involves focusing one's attention and using specific strategies to perform a task; and the *self-reflection* phase, which involves self-evaluation. The model is conceptualized as a continuous loop in which self-reflection leads back to forethought for the next learning activity.

The research of Kitsantas (2002) is consistent with Zimmerman's (2002) model. Kitsantas's work on students' utilization of self-regulation in the context of test preparation and performance is informative although it was conducted on college students. Of particular relevance, Kitsantas charted the activities the students engaged in prior to taking a test. These activities included goal setting and planning, keeping records and monitoring preparation, rehearsing and memorizing, organizing material, seeking information and assistance, and of foremost significance to the present study, *environmental restructuring.* According to Kitsantas, it is essential to be aware of the effects of the social and physical environment on students' learning since such awareness prompts learners to seek help when needed and reorganize the environment to make it more conducive to studying.

Similar strategies are reported in research on younger students. A notable distinction is that younger learners require more guidance, support, and specific instructions to be able to carry them out effectively. This is one area where educators can take advantage of young adolescents' propensity for social interaction. Group sessions and peer coaching are among the techniques that should prove effective with this age group.

Quiocho (1997) observed that middle school students discovered their own ways of approaching reading tasks, adopting different strategies before beginning reading activities, while engaging in reading, and after completing the reading activities. For example, before embarking on reading they drew pictures and listened to the teacher, during reading they coped with distractions such as noise and boredom with the material, and after reading they reviewed what they read in a group or drew pictures to translate the text into imagery that captured the essence of the material. The literature indicates that students can benefit from both formal and informal strategies to enhance reading comprehension.

Gettinger and Seibert (2002) take issue with the idea of equating study skills with *strategies*. The authors

contend that students need a repertoire of skills they can deploy for different types of tasks. For example, drill, repetition, and practice approaches are appropriate for some types of tasks whereas other tasks require a structural approach to mastering new or complex material. The students surveyed by Patton et al. (1983) adapted their homework environment to the nature of the task (specifically, reading versus reading and writing or mathematics). Students who continue to read with music despite a negative impact on test performance may be unable to discern the effects of music or other environmental stimuli on different types of intellectual tasks.

Given the finding that most students who prefer listening to music while reading scored lower on reading comprehension under both environmental conditions, the possibility exists that it is not that the music distracts them from reading but that they rely on background music because they are already disengaged from the material. If this is the case, these students would clearly benefit from strategies for coping with boredom, as Quiocho (1997) observed in the middle school sample.

In addition to the relative neglect of junior high/middle school students in research on self-regulation,

much of the research on background stimuli and cognitive tasks is carried out on young adults. This is true of the studies conducted by Furnham and colleagues. In one study, Furnham and Allass (1999) reported that music had no significant positive or negative impact on performance, even when the music varied in complexity. In contrast, Furnham and Strbac (2002) found that music and background noise were equally distracting to college students involved in a reading comprehension tasks. The cognitive and emotional maturity of college students is obviously more sophisticated than junior high school students. However, research conducted with both groups share one common factor: results between studies tend to be inconsistent.

Sloboda (2001) contends that music has a unique place in the lives of young people that is both social and personal. A study conducted by Sloboda and colleagues, in which participants kept music diaries, demonstrated that music was an integral part of a vast array of daily activities ranging from mundane household tasks, to homework (among those for whom homework was relevant), to travel, to “hanging out” with friends. As with most research, this study was carried out with young adults. The findings seem applicable to adolescents with the condition

that adolescents' engagement with music must be understood from the perspective of identity formation, separation from parents, and relationships with peers (Boehnke et al., 2002).

The academic performance of adolescents cannot be separated from the social context in which they exist. The alleged *Mozart effect* reported a decade ago generated a line of research primarily involving classical music, which the brain processes differently from lyrical music (Besson et al., 1998). In this vein, Hallam et al. (2002) conducted experiments where students performed reading and computational tasks while listening to instrumental music. Carlson et al. (2004) extended the premise, adding relaxation exercises to music to examine whether this strategy would enhance reading performance.

Adolescents tend to hold stereotypical attitudes about classical music and about the relationship between music listening preferences and the personalities of their peers. Stålhammar (2003) found that students tend to associate music with "attitude, context, and environment" (p. 65). Classical music was linked with three distinct concepts. To one group of students, classical music evoked "school, control, and compulsion." Another group of students viewed

it from the standpoint of aesthetic and cultural features, while a third group reported listening to classical music to relax or calm down.

The students also related that they had different *spaces* for engaging with music (Stålhammar, 2003). In the *individual* space, they listened to music alone and/or through headphones, which allowed them to shut out the world. They sought this space when overwhelmed by strong emotions or when they wanted to relax or contemplate something. Individual space was distinguished from *internal* space, in which they listened to music with friends in a private setting. Finally, there was *imaginary* space, which was not as well defined but which seemed to relate to perceptions of identification, belonging, and acceptance by peers. In this space, the individual is typically surrounded by others but has the option to approach, interact, observe, or withdraw. The defining features are "style and attitude" (p. 67).

In short, there are several perspectives for examining the impact of listening to music on the reading performance of adolescents. Cognitive theories related to attention, distraction, and self-regulation form a viable basis for helping students learn skills and strategies to improve

concentration and overcome external stimuli. It is also at this stage that the concepts of self-identity and social group identification are paramount. Hence a developmental perspective is an important component of this line of research.

Implications for Social Change

Even more than in previous generations, adolescents today are bombarded with multimedia stimuli. This phenomenon has intensified concerns by parents, educators, and psychologists about what impact this has on academic performance. Research in this area needs to be reassessed to reflect the social and technological forces that influence adolescent behavior.

Homework research is one area that merits new lines of investigation. Time spent on homework is typically used as a proxy for academic engagement (Trautwein & Köller, 2003). However, time spent is not equivalent to concentration. While doing homework, students routinely engage in a number of activities that are not assessed by most studies. A more useful approach would be to focus on the *environment* in which students do homework, the presence or absence of competing activities, potential differences in the

environmental conditions under which students do different types of academic tasks, and differences among individual students and subgroups of students.

Furthermore, the narrow focus on *time spent* does not address motivation, attention, or ability. *Self-regulation* is an important construct for examining students' study practices (Kitsantas, 2002; Zimmerman, 2002). Given the predilection of a substantial proportion of students to carry out homework while listening to music, it is important to understand the strategies students employ to cope with distractions, as Quiocho (1997) observed. It is clear that much more research is needed that concentrates on the developmental level of young adolescents. Extrapolating from findings derived from college students can be difficult in view of marked differences in emotional and cognitive maturity. It is ironic that junior high/middle school students are at a vulnerable point in development yet they are systematically underrepresented in research. Theories such as Personal Construct Theory and Social Identity Theory are useful frameworks for extending understanding of adolescents' cognitive practices.

These topics are equally relevant to educators, cognitive scientists, developmental psychologists, and

social scientists. Synthesizing research from these disciplines provides an excellent basis for furthering understanding of the internal and external influences on adolescents' study habits with the goal of designing, implementing, and evaluating support systems and strategies uniquely tailored to the developmental needs and personal preferences of this age group. Schools and community organizations (such as afterschool programs, youth organizations, and technology centers) would benefit by having a sound research base for structuring programs, activities, and interventions.

Recommendations for Action

The results of this study are directly useful to educators, school counselors and psychologists, and educational psychologists. This study goes beyond most other research in this area by using direct assessment of students' performance and including gender as a variable. In addition, the study deliberately focused on lyrical music and the music was selected to reflect the actual music preferences of the target group. This focus is especially important in view of the disparity that many

students perceive between music they associate with school music instruction and music they listen to on their own.

The findings of this study can be used to raise teachers' awareness of the music and study preferences of their students and their prospective influence on academic performance. In recent years, the *middle school movement* has been hailed as a powerful force for change in the way young adolescents are taught. The current emphasis is on the development of the *whole child* rather than a narrow focus on academic performance. This study embeds students' reading performance within the culture of popular music. A summary of the major points of the study can be distributed to junior high/middle school teachers and school personnel through school districts, professional organizations, and professional development seminars.

Recommendations for Future Study

The results of this study do not necessarily conform to those reported by other researchers, and in fact, contradict some of the existing research. The association between music and intellectual performance is clearly a topic that merits further investigation, particularly among adolescents. Future research assessing the music and study

preferences of different groups of students and correlating the results with actual performance is a key direction for research. This study focused specifically on reading comprehension. Other researchers have explored mathematics and writing tasks. All these activities involve different cognitive processes, which can affect their interaction with background music.

This study raises issues of students' awareness of their study habits. The results strongly suggest that a sizable group of students (specifically, those who prefer to study while listening to music) are unaware of the extent they are distracted by music and may need to develop a repertoire of cognitive skills and strategies to reduce distractibility and improve concentration and attention. The most successful strategies tend to be highly individual and adaptable to the type of task at hand. This is a broad area for educational researchers concerned with helping adolescents gain skills that will benefit them in academic endeavors as well as in other activities in an environment where *multitasking* prevails.

Conclusion

On a topic where research findings have been perennially inclusive, the results of this study support the perspective that studying while listening to music detracts from the reading performance of adolescents. This study stands out in that the focus was on young adolescents (who are underrepresented in research), and the music was deliberately selected to reflect the musical genres popular with the target age group, and hence what they are most likely to listen to independently and with friends.

The reading performance of three quarters of the students declined significantly when listening to music. The fact that such a large majority was affected merits close attention. The detrimental effect on comprehension of material was more pronounced for students with a stronger preference for the music used in the study and for listening to music while studying in general. A striking implication is that these students are not aware of the amount of attention they are deflecting from study or its impact on their academic activities. This assumption is highlighted by the fact that most students who reported a preference for studying with music at home performed lower with and without background music than those who prefer to

study in quiet surroundings. The presence of a small group of students who read more effectively while listening to music helps to explain why research findings are inconsistent. It is possible these students have developed cognitive strategies that enable them to focus on study tasks despite competing background stimuli. Most students, however, require intervention to achieve this aim.

It is unrealistic to expect that adolescents will alter their study habits without interventions that consider their developmental level and social and personal preferences. The first essential step is helping students gain awareness of their present habits and what effects they have on their academic performance. Capitalizing on activities such as the journal keeping that is popular with many adolescents offers a channel for raising awareness of study habits and monitoring change over time. The powerful influence of the peer group can be harnessed into group interventions to enhance study skills and techniques. Cognitive theories of self-regulation and motivation augmented by theories of social and personal identity provide a valuable framework for enhancing the academic performance of young adolescents through strategies uniquely targeted to that age group.

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APPENDIX A

Survey

SURVEY

No. _____

Please circle the most correct answer for each item that best describes your feelings.

1. When I study, I like to listen to music.

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

2. When I study, I like to listen to Song #1, **SOS (Rescue Me)**, by Rihanna

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

3. When I study, I like to listen to Song #2, **Bad Day**, by Daniel Powter

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

4. When I study, I like to listen to Song #3, **Unwritten**, by Natasha Bedingfield

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

5. When I study, I like to listen to Song #4, **What Hurts The Most**, by Rascal Flatts

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

6. When I study, I like to listen to Song #5, **Walk Away**, by Kelly Clarkson

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

7. When I study, I like to listen to Song #6, **Move Along**, by The All-American Rejects

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

8. When I study, I like to listen to Song #7, **Grillz**, by Nelly, Featuring Paul Wall, Ali, & Gipp

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

9. When I study, I like to listen to Song #8, **Savin' Me**, by Nickelback

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

10. When I study, I like to listen to Song #9, **Over My Head (Cable Car)**, by The Fray

5	4	3	2	1
Strongly Agree	Agree	No opinion	Disagree	Strongly Disagree

APPENDIX B

Consent Form

CONSENT FORM

The Effect of Music on the Reading Comprehension of Junior High School Students
Walden University

You are invited to participate in a research study of The Effect of Music on the Reading Comprehension of Junior High School Students. You were selected as a possible participant due to your being in junior high this school year. Please read this form and ask any questions you may have before acting on this invitation to be in the study.

This study is being conducted by Stacey A. Anderson, a doctoral candidate at Walden University. Ms. Anderson has been employed as a School Psychologist with Yuma School District One for the past 14 years. Prior, she was a School Psychologist in West Virginia, and a Junior High Science Teacher in Ohio.

Background Information:
The purpose of this study is to test whether lyrical music playing in the background affects the performance of a reading comprehension test, and whether there is any difference in performance by gender or by preference.

Procedures:
If you agree to be in this study, you will be asked to participate in a two-day experiment. You will complete two forms of a reading comprehension test, one form under a nonmusic condition, and one form with lyrical music playing in the background. Each test will take approximately 35 minutes. The music to be played in the background during the experimental procedures will consist of top hit songs listed in Billboard magazine for the week in which the study is conducted. Nine of the top hot 100 hits will be selected for play based on the following: songs chosen will not contain fowl language or explicit lyrics depicting or eluding to sex, violence, or substance abuse. No songs containing the parental advisory label will be used in this study. Edited version labels may be used. Further, the top songs chosen from the Billboard charts are very similar to those listed in other top charts such as MTV charts, Rick Dees Weekly Top 40 charts, and American Top 40 with Ryan Seacrest charts. Specific song titles and the lyrics of the music to be played will be provided to parents upon request.

Voluntary Nature of the Study:
Your participation in this study is strictly voluntary. Your decision whether or not to participate will not affect your current or future relations with your teachers, classes, or school. If you initially decide to participate, you are still free to withdraw at any time later without affecting those relationships.

Risks and Benefits of Being in the Study:
There are no short or long term risks or benefits associated with participating in this study. In the event you experience stress or anxiety during your participation in the study you may terminate your participation at any time. You may refuse to answer any questions you consider invasive or stressful.

Compensation:
There will be no compensation provided for your participation in this study.

Confidentiality:
The records of this study will be kept private. In any report of this study that might be published, the researcher will not include any information that will make it possible to identify you. Research records will be kept in a locked file, and only the researcher will have access to the records.

Contacts and Questions:
The researcher conducting this study is Stacey A. Anderson. The researcher's faculty advisor is Gerald Fuller at Walden University gfuller@waldenu.edu. You may ask any questions you have now. If you have questions later, you may contact them via (928) 502-8140. The Research Participant Advocate at Walden University is Leilani Endicott, you may contact her at 1-800-925-3368, extension 1210, if you have questions about your participation in this study.

You will receive a copy of this form from the researcher.

Statement of Consent:

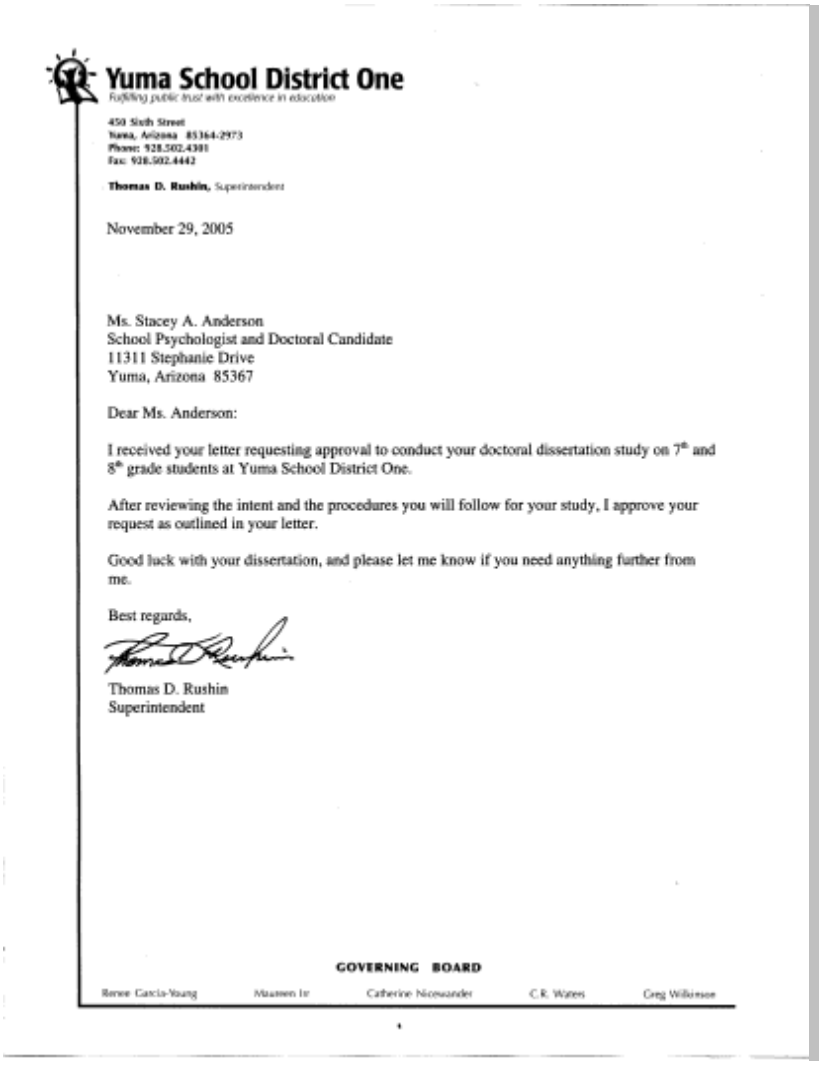
☐ I have read the above information. I have asked questions and received answers. I consent to participate in the study.

Printed Name of Participant

Participant Signature		Date
Signature of Parent/Guardian		Date
Signature of Investigator		Date

APPENDIX C

Letter of Approval to Conduct Experiment from School Board



Yuma School District One
Fulfilling public trust with excellence in education

450 Sixth Street
Yuma, Arizona 85364-2973
Phone: 928.502.4381
Fax: 928.502.4442

Thomas D. Rushin, Superintendent

November 29, 2005

Ms. Stacey A. Anderson
School Psychologist and Doctoral Candidate
11311 Stephanie Drive
Yuma, Arizona 85367

Dear Ms. Anderson:

I received your letter requesting approval to conduct your doctoral dissertation study on 7th and 8th grade students at Yuma School District One.

After reviewing the intent and the procedures you will follow for your study, I approve your request as outlined in your letter.

Good luck with your dissertation, and please let me know if you need anything further from me.

Best regards,

Thomas D. Rushin
Superintendent

GOVERNING BOARD

Renee Garcia-Young Maureen Ivr Catherine Nicevander C.R. Waters Greg Wilkerson

CURRICULUM VITAE

STACEY ANN ANDERSON
11311 STEPHANIE DRIVE
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EDUCATION:

Walden University, Minneapolis, MN.
Doctorate of Philosophy in Clinical Psychology, May 2007.
G.P.A.: 4.0 on a 4.0 scale.

The University of West Virginia College of Graduate Studies, Institute, WV. (Now known as Marshall University)
Master of Arts in Psychology, May 12, 1990. Emphasis in School Psychology.
G.P.A.: 4.0 on a 4.0 scale. Master's Honor Thesis.
Activities: Student Representative - North Central Association Steering Committee, Advisory Council of Students, and Board of Trustees; Graduate Assistant to Dr. David A. Sabatino, 1988-89; Graduate Assistant to Dr. Stephen L. O'Keefe, 1989-90, Human Development Center Manager.

Ashland College, Ashland, OH.
Bachelor of Science in Education, December 19, 1985.
Majors: Secondary Education, Biological Sciences, General Sciences.
Minor: Psychology.
G.P.A.: 3.55 on a 4.0 scale, Graduate Cum Laude.
Honors and Activities: Kappa Delta Pi, Dean's List, Student National Education Association (President), Caduceus Club, J.V. Cheerleader, Orientation Staff, Rathskeller employee, Student Ambassador Club.

CLINICAL PSYCHOLOGY DOCTORAL LEVEL COURSES TAKEN:

Professional Development
History & Systems of Psychology
Psychology and Social Change
Developmental Psychology
Biological Psychology
Psychology of Learning
Social Psychology
Tests and Measurements
Quantitative Analysis
Psychological Research Designs
Theories of Personality
Abnormal Psychology
Advanced Psychopathology
Therapeutic Psychology
Psychological Appraisals
Ethics & Standards of Professional Practice
Advanced Psychological Testing
Practicum
Health Psychology
Psychopharmacology
Organizational Psychology
Medical Crisis Counseling
Internship
Dissertation

EMPLOYMENT:

08/91 - Present
Yuma School District One, Yuma, AZ.
Full time School Psychologist, responsible for serving five PreK - 8 city schools.
Provide comprehensive psycho-educational assessments, including evaluations, observations, interviews, and typed reports; chair Initial and Three Year Re-evaluation, Multidisciplinary Evaluation Team, and Individualized Education Program committee meetings; provide crises consultations and interventions; participate in school-based child study (prereferral) teams; aid in designing, implementing, and evaluating interventions for students experiencing learning and/or behavioral difficulties, and for students who meet section 504 eligibility criteria; conduct functional behavioral assessments and manifestation meetings; collaborate with teachers to foster effective inclusion of students with disabilities and special needs; provide inservice training to teachers re: various assessment procedures, interpretations, and reporting policies; provide individual and small group counseling to enhance students' self-efficacy and adjustment; and supervise psychology interns.

09/97 - Present
Yuma County Accommodation School District #99, Yuma, AZ.
Part time School Psychologist, responsible for serving grades 7-12 at an at-risk school setting and juvenile and adult detention centers.
Provide comprehensive psycho-educational assessments; chair all exceptional student related committee meetings; provide crises consultations and interventions; participate in school-based prereferral teams; aid in designing, implementing, and evaluating interventions for students experiencing learning and/or behavioral difficulties, and for students who meet section 504 eligibility criteria; conduct functional behavioral assessments and manifestation meetings; collaborate with teachers to foster effective inclusion of students with disabilities and special needs; provide inservice training to teachers; and provide individual and small group counseling.

08/90 - 06/91
Kanawha County Schools, Charleston, WV.
School Psychologist, responsible for serving ten PreK - 12 county schools.
Provided psychological assessments, including evaluations, observations, and written reports; chaired Multidisciplinary Evaluation Team and Individualized Education Program committee meetings; provided crises consultations and interventions; and conducted consultations for drug and alcohol abusers.

06/90 - 09/90
Family Services of Kanawha Valley, Charleston, WV.
Sexual assault unit. Individual and group counseling with sex offenders, spouses of offenders, and survivors.

08/88 - 06/90
Kanawha and Jackson County Schools, WV.
Substitute teacher.

08/86 - 06/88
Crestview Local Schools, Ashland, OH.
Junior high Science Teacher, instructing 200 students daily.
Junior High Cheerleading Advisor, Junior High Student Council Advisor, Member - Effective Teacher Staff, and Intervention Staff.

12/87 - 06/88
Human Resource Bureau, Mansfield, OH.
Tutor.

PROFESSIONAL MEMBERSHIPS:

National Association of School Psychologists (NASP), American Psychological Association (APA), Psi Chi, American Psychological Association of Graduate Students (APAGS).

CURRENT CERTIFICATION:

Arizona Department of Education, School Psychologist

WORKSHOPS/SEMINARS/CONFERENCES ATTENDED:

Wechsler Intelligence Scale for Children – Third Edition (WISC-III) and the Wechsler Individual Achievement Test (WIAT) [Advanced Workshop]
Arizona Association of School Psychologists
Phoenix, AZ, September 24, 1992, 3 hours

An Introduction to the Kaufman Adolescent and Adult Intelligence Test (KAIT)
Arizona Association of School Psychologists
Phoenix, AZ, September 24, 1992, 3 hours

Cognitive-Behavioral Interventions for Children and Adolescents
Arizona Association of School Psychologists
Phoenix, AZ, September 25, 1992, 3 hours

Home-School Collaboration: Principles and Applications for America's Changing Families
Arizona Association of School Psychologists
Phoenix, AZ, September 25, 1992, 3 hours

Annual Convention of the Arizona Association of School Psychologists
Arizona Association of School Psychologists
Phoenix, AZ, September 26, 1992, 3 hours

Learning Disabilities Association of America Conference
Learning Disabilities Association of America
San Francisco, CA, February 24-27, 1993

NASP 1994 Annual Convention
Peer Relationship Problems in Childhood: Assessment and Intervention
National Association of School Psychologists
Seattle, WA, March 1, 1994, 3 hours

NASP 1994 Annual Convention
Best Practices in School-Based Assessment and Treatment of ADHD
National Association of School Psychologists
Seattle, WA, March 2, 1994, 6 hours

Sign Language Basics
Yuma School District One
Yuma, AZ, April 18 – June 13, 1994, 15 hours

Sign Language Basics II
Yuma School District One
Yuma, AZ, October 31 – December 12, 1994, 15 hours

Regional Conference
Surviving Tough Kids
Arizona Association of School Psychologists
Phoenix, AZ, February 17, 1995

Regional Conference
Therapeutic Interventions for School Psychologist's Stress Disorder (SPSD)
Arizona Association of School Psychologists
Phoenix, AZ, February 17, 1995

Supporting Communicative and Socioemotional Competence in Young Children with Autism and Pervasive Developmental Disorder
Southwest Human Development Training Department
Phoenix, AZ, March 6-7, 1997, 12 hours

Foster Parent Pre-Service Training
Arizona Department of Economic Security
Yuma, AZ, September 5, 1997, 16.5 hours

International Early Childhood Conference on Children with Special Needs
The Council for Exceptional Children's Division for Early Childhood
New Orleans, Louisiana, November 20-23, 1997

Challenging Behaviors: Positive Solutions, A Conference on Developing Behavior Plans
Arizona Department of Education Exceptional Student Services & the Arizona Prevention Resource Center
Phoenix, AZ, February 11-12, 1998, 11.5 hours

The Reauthorized IDEA Inservice Workshop
Yuma Elementary School District One
Yuma, AZ, March 11, 1998, 2 hours

The Reauthorized IDEA Discipline Workshop
Yuma Elementary School District One
Yuma, AZ, April 15, 1998, 2 hours

1998 30th Annual Conference
Distinguishing Second Language Differences from Disabilities: Basic Concepts and Recommended Practices
Arizona Association of School Psychologists
Mesa, AZ, November 5, 1998, 3 hours

1998 30th Annual Conference
Making Sense of the Senseless: Obsessive-Compulsive Symptoms (OCS) Unveiled
Arizona Association of School Psychologists
Mesa, AZ, November 5, 1998, 3 hours

1998 30th Annual Conference
Guidelines for Use of Psychotropic Agents in Children
Arizona Association of School Psychologists
Mesa, AZ, November 6, 1998, 3 hours

1998 30th Annual Conference
The Full and Individual Educational Evaluation and… The Re-evaluation Process According to IDEA '97
Arizona Association of School Psychologists
Mesa, AZ, November 6, 1998, 3 hours

Education on the Signs & Symptoms of Child Abuse, & The Correct Documentation & Reporting of Child Abuse
The Children's Justice Project with The Protocol Sub-Committee Child Abuse Training
Yuma, AZ, February 17, 1999, 1.5 hours

NASP 30th Annual Convention
Asperger's Disorder: A New Challenge for Schools
National Association of School Psychologists
Phoenix, AZ, April 7, 1999, 2 hours

NASP 30th Annual Convention
Divorcing Families & Stepfamilies: Today's Challenge
National Association of School Psychologists
Phoenix, AZ, April 7, 1999, 2 hours

NASP 30th Annual Convention
To Touch a Student's Heart & Mind: The Mind Set of the Effective School Psychologist
National Association of School Psychologists
Phoenix, AZ, April 8, 1999, 1.5hours

NASP 30th Annual Convention
Internalizing Disorders in Children & Adolescents: Linking Assessment to Effective Interventions
National Association of School Psychologists
Phoenix, AZ, April 8, 1999, 6 hours

Individualized Education Programs (IEPs)
Arizona Department of Education / Exceptional Student Services
Phoenix, AZ, August 12, 1999, 3 hours

Applied Behavior Analysis / Autism Training
Yuma Elementary School District One Staff Development
Yuma, AZ, September 11, 1999, 4 hours

Collaborative Compliance Program Review (monitoring Yuma School District One)
Arizona Department of Education, Exceptional Student Services
Yuma, AZ, January 24 – 27, 2000, 22 hours

File Maker Pro IEP Training
Yuma School District One
Yuma, AZ, September 9, 2000, 3 hours

The Continuum of Asperger's Syndrome / Autism, NVLD – Clinical Features – Diagnoses & Treatment
Continuing Education Programs of America
Burlingame, CA, December 1 & 2, 2000, 12 hours

Transition Training
State of Arizona, Department of Education
Yuma, AZ, February 16, 2001, 3 hours

Woodcock-Johnson III: What's New
Southwest Arizona, Special Education Directors, Yuma County
Yuma, AZ, September 26, 2001, 2 hours

Arizona IDEA, Individuals with Disabilities Education Act
Lorman Education Services
Phoenix, AZ, November 2, 2001, 6 hours

Autism Spectrum Disorders Training
AZ Department of Education, Exceptional Student Services, Southwest Area Special Education Directors, & NAU Yuma
Yuma, AZ, January 18 & 19, 2002, 15 hours

"Autism Spectrum Disorders: Behavior Solutions the Work" training
Arizona Department of Education
Phoenix, AZ, October 31, 2003, 8 hours

"Autism Spectrum Disorders: Behavior Solutions the Work" training
Arizona Department of Education
Phoenix, AZ, November 1, 2003, 4 hours

Early Childhood Institute
Building a Classroom Plan that Embraces Every Student
Southwest Human Development
Phoenix, AZ, November 13-14, 2003, 6 hours

Early Childhood Institute
The ABC's of ADD/ADHD
Southwest Human Development
Phoenix, AZ, November 13-14, 2003, 2 hours

Early Childhood Institute
Violence in the Headlines – What are Children Learning?
Southwest Human Development
Phoenix, AZ, November 13-14, 2003, 2 hours

Adaptive Communication Technology
Yuma School District One
Yuma, AZ, August 5, 2004, 4 hours

Team Building and Vision
Yuma School District One West Ed
Yuma, AZ, August 6, 2004, 8 hours

A Team Approach to Preschool Evaluations: Screening, Assessment, & Transition to School Age Services
Arizona Association of School Psychologists
Phoenix, AZ, September 27, 2005, 5.5 hours

A Team Approach to Preschool Evaluations: Screening, Assessment, & Transition to School Age Services
Arizona Association of School Psychologists
Phoenix, AZ, September 28, 2005, 6 hours

Autism Spectrum Disorders Workshop
Yuma County Schools
Yuma, AZ, February 5, 2005, 5 hours

Policies and Procedures In-Service
Yuma School District One
Yuma, AZ, August 5, 2005, 2 hours

Structured English Immersion (SEI) Provisional Endorsement
Yuma School District One
Yuma, AZ, August 8, 2005, 15 hours

Structured English Immersion (SEI) Provisional Endorsement
Yuma School District One
Yuma, AZ, August 9, 2005, 15 hours

Grade Level / Department Collaboration (301 in-service)
Yuma School District One
Yuma, AZ, August 31, 2005, 6 hours

First Teacher Program, Safe Schools, Healthy Students
Yuma School District One
Yuma, AZ, August 31, 2005, 2.5 hours

Preschool Curriculum and Assessment
Yuma School District One
Yuma, AZ, August 31, 2005, 3.5 hours

Grade Level / Department Collaboration (301 in-service)
Yuma School District One
Yuma, AZ, September 21, 2005, 1.5 hours

Legally Sound, Effective Response to Student Threats of Violence: An A.R.M.S. @ Approach Training
Yuma County Schools
Yuma, AZ, September 30, 2005, 6.5 hours

Grade Level / Department Collaboration / K-5 Math adoption (301 in-service)
Yuma School District One
Yuma, AZ, October 5, 2005, 1.5 hours

Grade Level / Department Collaboration (301 in-service)
Yuma School District One
Yuma, AZ, November 16, 2005, 1.5 hours

Critical Issues in Early Childhood Training
Arizona Department of Education, Early Childhood Education
Yuma, AZ, November 30, 1995, 6 hours

Young Children Experience Math (301 in-service)
Yuma School District One
Yuma, AZ, January 18, 2006, 1.5 hours

Allergy and Anaphylaxic Training
Yuma School District One
Yuma, AZ, January 25, 2006, 1 hour

Grade Level / Department Collaboration (301 in-service)
Yuma School District One
Yuma, AZ, February 8, 2006, 1.5 hours

Professional Developmental Day
I Can Do It! Classroom Management
Come to the Garden
The Rules to Follow When Children Will Not Follow the Rules
Yuma County
Yuma, AZ, February 17, 2006, 7.5 hours

ECERS Training
Arizona Department of Education, Early Childhood Education
Yuma, AZ, April 17, 2006, 3 hours

Move to Music, Assessing Children Encouraging Positive Behaviors in the Classroom, ECERS-R
Yuma Elementary District One
Yuma, AZ, August 17, 2006, 4 hours

How to Stay Out of Special Education Jail
Arizona Department of Education, Early Childhood Special Education
Yuma, AZ, September 8, 2006, 3.5 hours

Structured English Immersion (SEI) Provisional Endorsement
Yuma School District One
Yuma, AZ, September 11, 12, 14, 19, 21, 2006, 15 hours

Teaming for Successful Early Intervention Transitions
Arizona Department of Education, Early Childhood Special Education Unit
And the Department of Economic Security, Arizona Early Intervention Program
Mesa, AZ, October 16, 2006, 3 hours

The Creative Curriculum for Preschool Assessment System
Teaching Strategies Incorporated
Yuma, AZ, November 2-3, 2006, 12 hours

Professional Developmental Day
Integrating Anger Management and Coping Techniques in the Classroom
When one Falls, We all Fall: Creative Management in the 4-6 Classroom
Focus Wild Arizona
Yuma County
Yuma, AZ, February 16, 2007, 6.5 hours

INTERESTS:

Outdoor recreational activities, music, animals, and nature.

REFERENCES:

Available upon request.