

The Effects Of Songs In The Foreign Language Classroom On Text Recall, Delayed Text Recall And Involuntary Mental Rehearsal

Claudia S. Salcedo, Southeastern Louisiana University, USA

ABSTRACT

Music represents an integral part of the human culture, and particularly language and communication. Music can be a powerful tool in the learning experience. The purpose of the present study is to investigate whether English native-speaker students learning a foreign language can benefit from integrating music into the curriculum. Students' text recall was measured after listening to songs and text passages. Delayed recall and involuntary mental rehearsal (din) were also measured. Results showed text recall was better in the song condition than text passage. Also, treatment condition did not affect delayed recall; however it impacted involuntary mental rehearsal. Implications and suggestions about future applications of music in the curriculum are also explored.

Keywords: music, foreign language, memory, text recall, songs, din occurrence

INTRODUCTION

*M*usic is universal in human; culture and all cultures on this planet have music. Language and communication are also universal and they share a connection with music. Livingstone (1973) provided anthropological evidence that Homo sapiens sang (non-linguistic vocalizations) before speaking and Jespersen (1925, as cited in Murphey, 1990) and Rousseau (1968) both postulated that song preceded speech. Infants' crib language resembles singing more than speech; therefore, it is not surprising that adults naturally adjust to infants and small children with musical *motherese* features. Further, according to Howle (1989), lullabies are more than simple nursery songs; in fact they serve to set musical patterns to words the child hears but does not yet comprehend. This language-music structure provides an early formation of listening skills and language facility through cradlesongs and nursery rhymes suggesting that the rhythm can make the words memorable. Historically, songs were used to make the work easier. Work songs were the answer to group efforts such as rowing, marching, and harvesting (Wilcox, 1996). Even before the written word, stories of war and odes of praise were passed along from tribe to tribe by songs and minstrels would use music to bring literature to the crowds (Larrick, 1991).

The familiar adage, that music soothes the savage soul, comes from the interpretation of the Biblical verses in Psalms 33: 2, 3 (King James Version) in which music was used for mood-altering purposes. Music has been shown to have physiological benefits including lowered anxiety, heart rate, pain, and blood pressure, as well as improved respiratory rate, recovery, and tension relief. Listening to music has been shown to "cause changes in blood pressure, blood flow, posture, respiratory rate, pulse rate and general activity" (Bancroft, 1985, p. 7).

There are numerous indications that people believe in music as a tool to teach as seen by the increase in methodologies that now use songs to teach a foreign language. Before singing was considered acceptable as a classroom methodology, Richards (1975) developed a method called "El español por las canciones" ("Spanish through songs"). The method consisted of a three-step approach for children entailing learning first new words through comprehension exercises, not translation. Secondly students were exposed to the song to understand its

content and vocabulary. Finally, the written song was accompanied by writing exercises or grammatical explanations.

A method employed in foreign language teaching to alter mood is Suggestopedie (Suggestopedia). Lozanov, psychotherapist and physician introduced it in 1978. The technique uses classical music with the goal to relax the student, which is believed to be an essential element for the learning process to take place. Moreover, the music produces a state of mind that makes the brain relaxed yet receptive to inputs; in fact music provides an entire brain stimulation and activates subconscious resources all necessary for acquisition and greater retention of vocabulary and language structures (Williams, 1983; Botha & Puhl, 1988). The application of this method in the United States has reported a reduction in language learning time by one-third or more. In another application, Bancroft (1983) reported that 75 to 80% of the students tested on remedial reading gained a year or more on the Spache oral and silent reading subtests after only 14 weeks in a musical program. Practical uses of music are told, such as the singer Mel Tillis who loses his stutter while singing and a boy who loses his stutter while reading with music (Martin, 1983).

Although music is considered a valuable tool it is often relegated to recreation and entertainment status (Falioni, 1993). A survey of two decades of journals for foreign language teachers shows only a few articles on the subject compared to multitudinous articles on other methodological ideas. In 1972 Coe stated that in the area of songs there have been no controlled experiments; very little has changed through out the decades as few have tried to measure how effectively songs can be employed in foreign language teaching.

The present study intends to investigate how students can benefit from learning a foreign language when music is added to the curriculum. Results would expand on the research regarding the melody-text integration in relation to memory and also add to the current theories of second language learning. Shifting the focus of teaching method from spoken or read texts to a musically based material would provide students with the opportunity to practice second language production through entertaining and culturally rich songs. The introduction of songs in the classroom may aid in the retention of texts, while producing an involuntary internal mental repetition that may stimulate language acquisition. It would be ideal to measure empirically the specific benefits of music to language learning and it may ultimately affect the prevailing attitude in the foreign language community.

MUSIC AND LEARNING

In the past Gardner (1985) has proposed the use of music as a problem-solving tool suggesting that all individuals without brain damage possess some degree of musical intelligence. Tapping the musical intelligence in the classroom combines the theory of multiple intelligences with actual classroom learning. Application of music in foreign language classes could allow teachers to use the students' musical intelligence and their musical interests to achieve mastery of language skills.

Overy (1998) reported a study where children were exposed to a curriculum emphasizing music instruction over language and mathematics. Results showed that students in the music instruction group improved in language and reading, yet no worse at mathematics than students who had spent more time on these subjects without the additional music instruction. Learning to listen for changes in pitch in music may promote the ability to sound out new words. Therefore, there seems to be a correlation between language and music reading abilities. Some very early studies (Cooley, 1961; Dalton, 1952; Hutton, 1953; Maze, 1967, and Wheeler & Wheeler, 1952) showed varying degrees of correlation, all positive, between language reading ability and music reading ability even when children presented learning difficulties. Additionally, Hurwitz, Wolff, Bortnick, and Kokas (1975) found that the development of reading skills in young children involved in a music program tended to accelerate over a prolonged period of time.

In a 1971 study, Nicholson investigated whether music study could improve reading readiness skills of slow learner children when exposed to a curriculum including different amounts of music. Scores obtained from the Metropolitan Readiness Test and the Botel Test of Reading Achievement showed that the students whose curriculum used music in higher amounts had a statistically significant improvement over students in other conditions reported; specific improvements were apparent in the form of increased attention span and discrimination for paired groups of

letters. Douglas and Willatts (1994) reported correlations between musical abilities and reading achievement by measuring vocabulary, reading, and spelling as well as some musical skills (e.g., ability to detect slight differences among rhythms). The authors found a significant correlation between rhythm performance and both reading and spelling. Additionally, overall significant improvement in reading was apparent in students exposed to music compared to the control group, offering evidence that music instruction can lead to an improvement in reading.

Other evidence of music facilitating learning is found in Mohanty and Hejmadi (1992) who tested for ability to learn the names of body parts and creativity in three different conditions; verbal instruction only, verbal instruction with the addition of music and non training group. After treatment, all experimental groups exhibited higher test scores than the control group with the greatest improvement in learning for the group who received verbal instruction with the addition of music. Thus, improvement in cognitive abilities can result from a variety of training experiences; however, empirical evidence suggests that music is one of the most effective of these treatments.

According to Frith (1985), children usually learn to read in three stages; (1) visually recognizing words, (2) learning the correspondences between visual parts of words (“graphemes”) and their spoken sounds (“phonemes”), and then (3) achieving visual recognition of words without going through the earlier stages. Children “sound-out” syllables and words while they are learning to read. Frith suggested that music seems to facilitate reading by improving the phonemic stage. If students have similar 1,2,3 stages in learning to read a foreign language as stated by Music and Cognitive Achievement (2000), the second phase (phonemic) being imperative, then music might help not only with increased pitch discrimination, but also with the sound-symbol phonemic correspondence for the language being taught.

Among other approaches that couple teaching foreign languages and music is the “Singlingual Method,” (Langenscheidt publishers) consisting of a book and audio which employs useful German phrases from everyday speech set to well-known tunes and allows students to create their own. The Audio-Singual Method, developed by Kind (1980), employs familiar songs to teach the English language. According to the author, the method is effective because the tunes employed are familiar, which offer a satisfying feeling of recognition to the learner who can overcome fear of the unknown often associated with learning a second language. Testing such methods at American and European schools seemed to suggest its effectiveness in teaching foreign languages more rapidly with greater recall. Anton (1990) suggested another approach known as the Contemporary Music Approach (CMA) in which a song is used as a memory prompter. With CMA, different styles of music and rhythms are correlated with the various grammar lessons based on the belief that a certain beat reminds students of the song, and the song in turn reminds them of the grammar. Of a pool of students exposed to the CMA approach, 98% felt it was helpful in learning Spanish and 92% reported playing the songs for family and friends thus accomplishing the goal of the national foreign language standards: Communities - show evidence of becoming life-long learners by using the language for enjoyment and enrichment (CT - 1 - B4, CT - 1 - D4, CT - 2 - B4, CT - 2 - D4, CT - 2 - E4).

MUSIC AND THE BRAIN

The anatomic structure of the brain and its functions can offer evidence of why music can be beneficial to learning. The left hemisphere of the brain expresses thoughts in words, while the right hemisphere of the brain controls actions, problem resolution, memory, and emotions. Most learners use the right hemisphere of the brain to process music, and since most instruction relies heavily on left-brain approaches, music opens an opportunity to learners who have a strong right brain orientation (Borchgrevink, 1982). As Guglielmino (1986) stated, “Songs bridge the [brain’s] hemispheres, strengthening retention through a complementary function as the right hemisphere learns the melody, the left, the words” (p. 20). Anton (1990) found that “when a learning activity combines both left and right hemispheres simultaneously engaged in a particular activity, an ideal learning situation is established and the most productive learning occurs” (p. 1170). This ideal learning situation facilitates flexible thinking and helps to explore new ways of expressing ideas. This would seem to indicate that music possesses an invaluable key to incorporate the whole brain in the learning process. This theory may provide principles to design more effective learning experiences. By using a variety of input methods including music, there may be more opportunities for students to connect to their present knowledge base and add new knowledge. Music not only helps to store bits of information, but it is a mean by which the brain releases that same information for use.

MUSIC AS MEMORY AID

Recalling unfamiliar words can be burdensome to most learners; however, music may ease the process. Wallace (1994) compared immediate and long-term recall of spoken texts to texts learned with music. Results of the study indicated that recall was significantly greater with music than for the spoken condition. On the other hand, when the music was too difficult or the melody remained unlearned, it impaired recall. The study suggests that simple musical song can transform ordinary text into information that is effectively retained and recalled when needed. In addition, melody provides sequential information, line and syllable length information, chunk linking, and rhythmical information that have the potential for making accurate reconstruction of the text. Wallace states that music's power to facilitate text recall lies in the interconnections of the musical characteristics to the text. Further, when music and text are encoded together, some components of the melody will cue or echo the parallel component of the text. When comparing recall ability, Wallace found that spoken text was the least frequently recalled, followed by rhyming text, and melodic text being the easiest to remember.

Prickett and Moore (1991) assessed Alzheimer's disease patients for recall of familiar and new material, both sung and spoken. Patients recalled the words to songs markedly better than they recalled spoken words, including rhymed speech or newly presented information. McElhinney and Annett (1996) replicated Prickett and Moore's study on a non-Alzheimer population. Results showed that recall was significantly higher when the material was presented in the song format compared to the read-aloud format, suggesting that songs effectively aid recall. The present study confirmed a memory advantage for students in two of the songs presented in this research.

MUSIC AND FIRST OR SECOND LANGUAGE ACQUISITION

Language researchers agree (Fiske, 1993; Heller & Campbell, 1981; Sloboda, 1985; Swain, 1986) that there seems to be some sort of symbiotic relationship between the underlying principles and the mental processing of language and music at the Meta level. It has been asserted that infants learn their native language by principles that make sense of aural information; therefore, it seems reasonable to approach second language acquisition in a similar way (Jackendoff, 1994). Since music is also acquired through the aural sense, musical activities are suggested to aid in first or second language acquisition. Lowe (1995) investigated whether including a music program would reinforce both the learning of music as well as the learning of a second language in second-grade students learning French abroad. Results showed that the group who received the additional music lessons performed significantly better than the control group in all music tests and in oral grammar and reading comprehension as well. The findings concluded that the study of music and foreign languages are mutually beneficial.

INVOLUNTARY MENTAL REHEARSAL

The term involuntary mental rehearsal or *din*, as used in psychology, refers to a phenomenon occurring after a period of contact with a foreign language in which the new information repeats without the speaker's intentional effort. This rehearsal may aid recall and production. When this repetition occurs after listening to songs that playback in our heads, I term the phenomenon the "musical *din*." Krashen (1983) defined the *din* as a form of involuntary rehearsal and hypothesized that such mental playback could be an indication that the natural language acquisition process is taking place. Numerous studies (Bedford, 1985; de Guerrero, 1987; Krashen, 1983; McQuillan & Rodrigo, 1995; Parr & Krashen, 1986) have confirmed that the *din* is widespread among second language learners.

According to Krashen (1983), the *din* is triggered by the stimulation of the Language Acquisition Device (LAD) which stimulation requires two corollaries. Firstly, the *din* must be set off by comprehensible input; secondly, the input must include information the learner understands along with a piece of information the learner has not yet acquired but is ready to acquire; (+1). He further believes that the *din* occurs less frequently in advanced learners who have already acquired the majority of the target language because input containing novelty information is more rare. As suggested by several authors (De Guerrero, 1987; Salcedo & Harrison, 2002; Rodrigo, 1995; Krashen, 1985), the beginning of the *din* ranges from immediate to two hours.

Murphey (1990) argued that the language din is more effectively triggered by music; such occurrence was named the Song Stuck In My Head Phenomenon (SSIMHP). In a different way from the din, with the SSIMHP involuntary rehearsal of language from music may be triggered with much smaller amounts of input time (or even be triggered by output). As a consequence, it could be postulated that music and songs may initially play an associative and facilitating role in engaging and stimulating the LAD (Murphey, 1990). He says the song lyrics in written form can be used to reinforce what is heard aurally and promote a deeper activation of the SSIMHP. Songs seem to offer an advantage in memorizing phrase constructions more easily and they tend to “stick” in the student’s head like a hammering tune we cannot stop humming (Bartle 1962; Murphey, 1990).

Salcedo & Harrison (2002) confirmed this repetition happened after being exposed to songs. Their findings indicated that music and singing are strong primary sources of input that activates the musical din and thus provides extended mental interaction with the material that may have a profound effect on the second language acquisition process.

PURPOSE OF THE STUDY

The purpose of this research was to report on the subject that music and text may be learned together as one unit by comparing recall of words learned in spoken form with words learned through song. In addition, the study reported on the occurrence of the din. The effects of foreign language instruction with added songs is examined in three principal areas: (1) the students’ ability to recall song lyrics heard through song versus recall of the same song lyrics heard through text passages, (2) the students’ delayed recall of song lyrics, and (3) the occurrence of the din (musical din) for students exposed to songs as compared to the amount of din occurrence for students exposed to song lyrics recorded as spoken text.

Based on the reviewed literature several research questions were formulated.

1. Is there a significant increase in text recall when that text is learned through the use of songs?
2. Is there a significant difference in delayed text recall when text is learned through song as compared to those learning through spoken recordings?
3. Is there a significant difference in the occurrence of involuntary mental rehearsal (din) after listening to song rather than text?

RESEARCH DESIGN

The present study is a quasi-experimental research design inspired by McElhinney and Annett’s study (1996), however, the current study is a 3X3 factorial design; three trials were used and participants were tested on three variables. Subjects were assessed in text recall by counting the total number of words that were correctly written in the blanks that replaced deleted words. A one-way ANOVA test was performed in order to test for significance of the means of treatment in regard to the dependent variables between the classes. The construct presented a fixed effects model, since specific treatments were considered, such as song, text, and din.

SUBJECTS

Subjects for this study were 94 students; 33 male and 61 female students with ages ranging from 17 to 41 with a mean age of 22. Students were enrolled in four beginning-level college Spanish classes at a large university in the southern United States. All beginning level students enrolled as novice learners are presumed to be at a similarly low language-proficiency level; however, data from those students who had previously taken high school Spanish classes for three years were removed from the statistical results unless at least six years had passed since the previous classes were taken. Although time spent in a Spanish-speaking country was suspected to indicate non-novice learners, the results did not reveal any advantages for those who had lived more than six months in a Spanish-speaking country. The selection of participants to the study was accomplished in such a way as to fulfill the randomization criteria. The cohort group was formed through the regular university registration process and made more homogeneous by deletion of those students not considered beginners because they had indicated previous experience with Spanish. The classes that were assigned to a particular teacher made the whole class assignment into the comparison groups of the study.

MATERIALS

Audio material needed for the study included the recording of three songs in Spanish, together with a professionally recorded CD of the identical song lyrics that were recited in spoken form by native speakers. Song one was “*Somos Novios*” by Luis Miguel. The second song chosen was “*Ud.*” also by Luis Miguel and song 3 was “*Milagro*” by Gloria Estefan. In order to test recall of song lyrics, a cloze test was created replacing every seventh word with a blank. One cloze test was given for each song used during the semester. A questionnaire was used at the end of the semester in which all students from group A, B, and C were asked to respond regarding the occurrence of the phenomenon called involuntary mental rehearsal or *din*; what activities might have accompanied this occurrence and whether the student was able to control the *din*.

PROCEDURE

Two comparison groups and a control group were used. In order to avoid variances in environment, teaching methodology, or student-teacher rapport, the class teacher administered the music treatment as part of regular class time during six class periods. The instruction in all classes remained the same throughout the semester except for the addition of the treatment. Group A, “the music group” listened to a commercially recorded song in Spanish. Group B, “the text group” listened to the same song in the format of recorded speech. For each of the songs, a native speaker of the same gender and nationality as the song’s recording artist was used to record the spoken lyrics. Group C served as the control group. Treatment occurred at the same intervals for all classes. Students were able to view the words of the song during class time, and were aided in the comprehension of the lyrics, but were not allowed to take written lyrics out of the classroom. The spoken text group had the option of reading aloud, while the song group had the option of singing aloud with the songs.

At the end of the six treatments a cloze test was administered to all groups. Students filled in as many missing items as they recalled and scoring consisted of counting the total number of correct items entered. Delayed recall was tested using the same cloze test of song 1 after a two-week delay for groups A and B. The control group also took the cloze test even though they had not been exposed to the lyrics in any form. Their scores were used to omit any items that could be consistently guessed due to the context of the surrounding language. Students were given a post-treatment questionnaire reporting the occurrence of involuntary mental rehearsal.

STATISTICAL PROCEDURES

An ANOVA test was performed to analyze data gathered on the variables of the 3X3 design and to observe the interaction effect among these variables. The SAS program performed the Least Significant Difference (LSD) test with the Bonferroni adjustment to make pair-wise comparisons between the treatment groups. SAS default was at 5% level of significance. A chi-square categorical analysis was also performed to determine significance of percentage comparisons. A frequency amount was calculated based on the percentage of *din* occurrence from each class.

It bears mentioning that the treatment during the fall semester began on only days before a major hurricane. In response to the disaster classes at the university were suspended and some students were absent from the next few classes; even after return to class the instructor reported a somber tone to the classroom. To ensure the results of the study were not affected by the event, the researcher decided to compute a covariate correlation between the total scores on the text recall and the frequency of exposure to treatment.

RESULTS

Research question 1: is there a significant increase in text recall when this text is learned through the use of songs? Data obtained from three songs were used to analyze the results. Due to missing values, 76 of the 94 total observations were used in the analysis of song 1. The ANOVA showed no significant difference for song 1 ($p = 0.0861$); however, the pair-wise comparison (t-test) showed a significant difference between the music class, and the text class ($p = 0.0504$). Results showed a significant difference between the music class and the text class; therefore, it can be concluded that there is a significant difference between the groups when comparing text recall for song 1.

For song 2, recall was tested for all groups. Of the total, 64 observations were used for this analysis. The statistical analysis showed a significant difference between the groups ($F = 2.97, p = 0.0387$).

Although the t-test showed a significant difference between the control group and all other groups, the outcome was not relevant, since the control group received no treatment. Although the music class performed better than the text class for song 2, the scores did not lead to a statistically significant difference. Based on the results, it can be concluded that there is no significant difference between the treatment groups in terms of recall for song 2.

The same groups were examined for recall of song 3. Of the 94 total students, 56 were used in this analysis. The F-value from SAS output was 2.64, and the p-value from the corresponding test was 0.0590. Text recall results for Song 3 showed that the music class performed significantly better than the text class, demonstrating a significance of 0.0345. It can be concluded that there is a significant difference between the groups when comparing text recall for Song 3.

Research question 2: is there a significant difference in delayed text recall of students who heard text in song as compared to those who heard text in the form of recorded speech. Groups A and B were administered the cloze test for song 1 after a two week delay to determine the amount of memory retention. In this test, *as in all the tests*, the music group performed better than the text group; however, this difference did not reach significance ($F = 0.94, p = -0.3989$). It may be concluded from the results that there is no significant difference between the groups when comparing for the variable of delayed text recall, on the basis of song 1.

Research question 3: is there a significant difference in the occurrence of involuntary mental rehearsal (din), after listening to song rather than text? For this question, all students were given a post-treatment questionnaire and asked to report on the occurrence of involuntary mental rehearsal (din or musical din). The definition of this phenomenon was explained to all groups. Comparison results showed a marked difference between the musical group (A), and the text group (B); Group C was not given the questionnaire since the questions pertained to the specific activities done during the semester, and group C had been not been given any of these activities. Therefore, 44 subjects who completed the survey were included in the analysis. Limitations include sample size since some students chose not to report on the question about the din, therefore with a small sample size each observational unit carries more weight toward the total results. Students from the groups that received the song treatment reported a much higher occurrence of the din phenomenon than did students from the text group. In the musical class, 66.67% of the students reported experiencing the din; the text class reported only 33.33%. Nominal data for categorical analysis as the dependent variable can take only two values, yes or no. The chi-square test of independence was performed to evaluate statistical significance. Results of the chi-square test showed that there was a significant difference between the classes (X^2 value 7.2209, (df, 44= $p < 0.0270$). These results offered strong evidence to conclude that there is a significant difference between the groups when comparing the phenomenon of din occurrence.

DISCUSSION

The goals of this study were to examine the effect of music on text recall, delayed text recall, and the occurrence of the din phenomenon as reported by students after treatment of Spanish language song lyrics. The answer to Research Question 1, “Is there a significant increase in text recall when that text is learned through the use of songs?” varied with the song. There was a significant increase of text recall for the music group in Songs 1 and 3. No significant test results were reached for Song 2. Results of this variable were intended to add research knowledge in regard to the integration of melody and text in memory.

The theory of melody-text integration as discussed by Serafine, et al. (1984, 1986) stated that the melody and the text of songs are learned together as one integral unit. According to that scenario, the song is stored in memory as one unit, and the melody will serve as a memory trigger for the text. Results of the present study seem to lend support for that theory as test results for song 1 and song 3 reached significance when testing for the amount of items recalled. The scores from the students in the music group were significantly greater than the scores from the students in the text group. The findings for song 2, however, cannot support or dispute this theory since they did not reach significance between the comparison groups. Reasons for the lower student scores could be due to the song chosen. The song, *Usted*, is a romantic ballad written in 1951; the lyrics provide rich yet antiquated vocabulary, and

poetic text with complicated syntax structures. The smooth singing style of the singer and the accompanying orchestra provide a wonderful piece for enjoyment, however the text may have been too difficult for beginning level students to retain, given the length of exposure time. It should be noted that the greatest significance appeared in Song 3, the last song of the semester. By the end of the semester, beginning students may have a better grasp of the language, comprehended more of the words, and therefore were able to retain more of the lyrics. The cloze tests for Song 1 and 2 were administered to students during the class immediately following treatment. Students should have been given the tests on the day listening treatment ended rather than providing a short delay period. It is possible that such a delay might have hindered recall; in addition six treatments might not have been sufficient for students at this level of Spanish proficiency to store the song in long-term memory. For Song 3, however, the instructor was reminded to administer the recall test on the same day of the last listening treatment, thus making the recall task more immediate; likely another reason for the strong recall significance in Song 3.

The response to research question 2, “Is there a significant difference in delayed text recall of students who learned the text with song, as compared to those who learned the text with spoken recordings?” was negative. The findings showed no difference in delayed text recall between the groups, indicating that neither the music students nor the text students retained the material long enough for storage into long-term memory. The studies by Bygrave (1995) and Hurwitz, et al. (1975), indicate that the time between treatment and the delayed recall task of only two weeks may have been too short. Bygrave’s study showed an improvement in the receptive vocabulary skills of the students participating in the music program; however, the music’s effect on retention was not apparent until the test given seven weeks after the posttest. These findings appear consistent with studies by who found that the development of reading skills in young children involved in a music program tended to accelerate over a prolonged period of time. This suggests that a longer period of time may be needed for a significant music effect to show.

In Question 3, “Is there a significant difference in the occurrence of involuntary mental rehearsal (din) when taught with song rather than text?” the results reported were significantly different when the material is taught with song rather than text. Students from the classes that received the musical treatment consistently reported a higher occurrence of the din than did those from the classes exposed to text only. In addition, students from the musical class commented on the Song Stuck In My Head Phenomenon. Many reported that they had no control of the repetition and could not get the song out of their head. Many students commented that the chorus of the song was the part of the song that most often stuck in their heads. More study is needed to determine if this is due to the fact that the chorus is repeated several times during a song or due to the students’ comprehension of the phrases in that particular chorus which then facilitated its repetition in the mind. The advantage that music has in increasing the din occurrence appears clear. As postulated by Krashen (1983), the din may be an indication that language acquisition is taking place. In the present study, din was increased by the use of song; therefore, it is to the student’s advantage to increase stimulation of the language acquisition device by having more instruction in the form of songs. How the din may affect specific aspects of second language acquisition needs more investigation.

RELATION OF RESULTS TO PREVIOUS STUDIES

Text recall results from the present study showed recall was greater in the song condition for all songs, while the song group scored significantly higher than the text group for Songs 1 and 3. These results were similar to those by Wallace (1994) who indicated that recall was significantly greater with music than for the spoken condition, suggesting that songs effectively aid recall.

The present study’s treatment and results are similar to those by Prickett and Moore (1991) and McElhinney and Annett (1996) that showed recall was significantly higher when the material was presented in the song format compared to the read-aloud format. The studies employed familiar words while other text recall studies excluded the texts with antiquated language or difficult idiomatic expressions. These expressions could not be excluded in the present study since they were naturally occurring in the song and in order to maintain speaker continuity. Native speakers used to record the audio were matched with a singer of the same nationality and gender. Thus some words were unfamiliar and poetic, which, although assisted somewhat by the instructor, could have been incomprehensible for beginning Spanish language students.

Popular songs by bilingual artists were not used in order to avoid interference between English and Spanish. In fact, Serafine, et al. (1984, 1986) in discussing chunking bits of information with the tune in memory argued that students had experienced interference with these familiar songs from the English words already learned. If the brain had stored the music and the text as one unit, the tune of familiar songs would have brought to remembrance the connected vocabulary, and thus would have been a hindrance to the learning of new vocabulary.

Din results seen in this researcher's studies are comparable to those from other researchers (Bedford, 1985; de Guerrero, 1987; Krashen, 1983; McQuillan & Rodrigo, 1995; Parr & Krashen, 1986). Combined totals of the studies by Bedford (1985), Parr and Krashen (1986), and de Guerrero (1987) show the extent of din among language learners; of a total of 581 second language learners, 74% said they experienced the din. The present study also indicated that this phenomenon is widespread and occurs in foreign language learners, regardless of which method of input they experienced. Contrasts were seen, however, between the different input methods. Din occurrence reported from the music class was significantly higher.

IMPLICATIONS FOR FOREIGN LANGUAGE TEACHERS

The findings of the study herein added to the empirical knowledge the effect of songs in the foreign language classroom. The findings indicated that music has a definite pedagogical value. Results showed an advantage in memory recall results for two of the three songs analyzed. When the Language Acquisition Device (LAD) activates a din in order to practice language elements for acquisition, the presence of the din therefore is an indication that natural language acquisition is taking place. Results reported here demonstrated that there is a much greater occurrence of the din when it is activated by music than with text. Since this musical din provides prolonged practice with the language the use of music and songs to present material appears to be a more efficient way to trigger mental rehearsal that may in turn be a more effective method to stimulate the language acquisition process.

The use of songs could replace excessive readings, which would not only relieve some language performance anxiety but also possibly improve the long-range potential for better pronunciation. Songs provide a way for beginning students to repeatedly hear the native pronunciation in a natural occurrence until they are comfortable enough to produce speech. In the case of songs, students would hear the correct sounds rather than their own strong non-native pronunciation that is heard when they read.

FUTURE RESEARCH SUGGESTIONS

This study should be replicated with a larger sample size, more language levels, and a pre-test placement exam.

Tests of learning mode dominance should be added to investigate whether aural, visual, or kinesthetic students would benefit the most from the music/language integration. Further, data collection should be carried out with students in the higher levels of Spanish classes. Longer exposure time for each song so that more words may be stored in long term memory. The occurrence of the din should be tested after each song rather than at the end of the semester in order to determine which type of song is more efficient in activating the din.

CONCLUSIONS

The majority of the studies investigating the effect of music in the classroom deal with content information in the students' native language. In only a few studies, including the present study, students are not only dealing with a foreign language, but also with some difficult and poetic language. As second language educators we try to provide students with the skills to understand authentic communication. A song is an ideal marriage of poetry and music, and is "one of the most authentic expressions of people, their feelings, and their everyday life" (Delière & Lafayette, 1985, p. 412). Music can empower students with a real world communicative advantage. After all, a song tells a story set to music; therefore, one has examples of authentic speech yet is slowed, rhythmic, and repetitious. The goal of this study was to show that students would benefit from the addition of musical activities to the classroom experience. The majority of students from the two song classes that heard songs reported that music was a positive addition to the classroom and felt that they benefited from the experience.

ACKNOWLEDGEMENTS

The author would like to thank Giorgia Scorsone for proofreading this article.

AUTHOR INFORMATION

Claudia S. Salcedo received a Ph.D. from Louisiana State University with a major in foreign language instruction and a minor in educational technology. She taught Spanish at Louisiana State University, the University of Hawaii, Chaminade University of Honolulu, Tripler Army Medical Center, Hawaiian Mission Academy, and Aurora Community College. She teaches at Southeastern Louisiana University and is the director of the foreign language resource center and the English Language Learning lab. She received grants for travel, professional development, classroom material creation, and technology grants. She is a study abroad advocate and has taken groups to Costa Rica, Mexico, and Ecuador.

REFERENCES

1. Anton, R. J. Combining singing and psychology. *Hispania*, Vol. 73, pp. 1166-1170, 1990.
2. Bancroft, W. J. The Lozanov Method and its American adaptation. In J. Oller & P. Amato (Eds.), *Methods that work*, Newbury House, Rowley, MA, 1983.
3. Bancroft, W. J. Music therapy and education. *Journal of the Society for Accelerative Learning and Teaching*, Vol. 10, No. 1, pp. 3-19, 1985. (ERIC Document Reproduction No. ED 285 414)
4. Bartle, G. Music in the language classroom. *Canadian Modern Language Review*, Vol. 19, No. 1, pp. 11-13, 1962.
5. Bedford, D. A. Spontaneous playback of the second language: A descriptive study. *Foreign Language Annals*, Vol. 18, pp. 279-287, 1985.
6. Borchgrevink, H. M. Prosody and musical rhythm are controlled by the speech hemisphere. In M. Clynes (Ed.), *Music, mind, and brain: The neuropsychology of music* (pp. 151-157). Plenum, New York < New York, 1982.
7. Botha, H. L., & Puhl, C. A. A Comparison of Krashen's L2 acquisition/learning theory and Lozanov's suggestopedia. Institute for Language Teaching. (ERIC Document Reproduction No. ED 207 336), 1988.
8. Bygrave, P. L. Development of receptive vocabulary skills through exposure to music. *Bulletin of the Council for Research in Music Education*, Vol. 127, pp. 28 -34, 1995.
9. Coe, N. What use are songs in FL teaching? *International Review of Applied Linguistics in Language Teaching*, Vol. 10, No. 4, pp. 357-360, 1972.
10. Cooley, J. C. A study of the relation between certain mental and personality traits and ratings of musical abilities. *Journal of Research in Music Education*, Vol. 9, pp. 108-117, 1961.
11. Dalton, R. S. A study of the relationship existing between music reading ability and language reading ability. Unpublished Master's thesis. Syracuse University: Syracuse, New York, 1952.
12. Deliére, J., & Lafayette, R. C. La Clef des chants: thèmes culturels et techniques pédagogiques pour l'enseignement de la civilisation par la chanson (Songs are the key: Cultural themes and pedagogical techniques for teaching via song). *The French Review*, Vol. 58, pp. 411-425, 1985.
13. Devereux, G. A. Commercial background music: its effects on workers attitudes and output. *Personnel Practice Bulletin*, Vol. 25, pp. 24-30, 1969.
14. Douglas, S., & Willatts, P. The relationship between musical ability and literacy skills. *Journal of Research in Reading*, Vol. 17, pp. 99-107, 1994.
15. Falioni, J. W. Music as means to enhance cultural awareness and literacy in the foreign language classroom. *Mid-Atlantic Journal of Foreign Language Pedagogy*, Vol. 7, pp. 97-108, 1993. (Eric Document Reproduction No. ED 355 796)
16. Fiske, H. Music and mind: The concept of mind in music cognition. *Canadian Music Educator*, Vol. 34, No. 3, pp. 15-26, 1993.
17. Frith, U. Beneath the surface of developmental dyslexia. In K. E. Patterson, J. C. Marshall & M. Coltheart (Eds.), *Surface dyslexia* (pp. 301-330). Hove: Lawrence Erlbaum Associate Ltd., 1985.
18. Gardner, H. *Frames of mind: the theory of multiple Intelligences*. Basic Books, New York, New York, 1985.

19. de Guerrero, M. The din phenomenon: mental rehearsal in the second language. *Foreign Language Annals*, Vol. 20, pp. 537-548, 1987.
20. Guglielmino, L. M. The affective edge: using songs and music in ESL instruction. *Adult Literacy and Basic Education*, Vol. 10, pp. 19-26, 1986.
21. Heller, S. & Campbell, W. Psychomusicology and psycholinguistics, parallel paths or separate ways? *Psychomusicology*, Vol. 1, No. 2, pp. 3-14, 1981.
22. Kind, U. *Tune in to English*. Regents Publishing Company, New York, New York, 1980.
23. Howle, M. J. Twinkle, twinkle little star: It's more than just a nursery song. *Children Today*, Vol. 18, No. 4, pp. 18-22, 1989.
24. Hurwitz, I., Wolff, R. H., Bortnick, B.D., & Kokas, K. Nonmusical effects of the Kodály music curriculum in primary grade children. *Journal of Learning Difficulties*, Vol. 8, No. 3, pp. 167-174, 1975.
25. Hutton, D. A comparative study of two methods of teaching sight singing in the fourth grade. *Journal of Research in Music Education*, Vol. 1, pp. 119-126, 1953.
26. Jackendoff, R. *Patterns in the mind: language and human nature*. Basic Books, Harper Collins, New York, New York, 1994.
27. Krashen, S. *Principles and practice in second language acquisition*. Pergamon Press, Oxford, 1982.
28. Krashen, S. The din in the head, input, and the second language acquisition device. *Foreign Language Annals*, Vol. 16, pp. 41-44, 1983.
29. Krashen, S. *The input hypothesis: issues and implications*. Laredo Publishing Company, New York, New York, 1985.
30. Krashen, S. & Terrell, T. D. *The natural approach: language acquisition in the classroom*. Alemany Press, San Francisco, California, 1983.
31. Larrick, N. *Let's do a poem!* Delacorte Press, New York, New York, 1991.
32. Mohanty, B., & Hejmadi, A. Effects of intervention training on some cognitive abilities of preschool children. *Psychological Studies*, 37, 31-37, 1992.
33. Richards, R. G. Singing: a fun route to a second language. *The Reading Teacher*, Vol. 29, No. 3, pp. 283-285, 1975.
34. Rousseau, J. J. *Essai sur l'origine des langues: ou il est parlé de la mélodie et de l'imitation musicale* (Essay on the origin of languages: Where is melody and music imitation discussed?): Guy Ducros, Bordeaux, 1968.
35. Livingstone, F. B. Did the Australopithecines sing? *Current Anthropology*, Vol. 14, Nos. 25-29, pp. 1-2, 1973.
36. Lowe, A. S. The Effect of the Incorporation of music learning into the second language classroom on the mutual reinforcement of music and language. Unpublished doctoral dissertation, University of Illinois, Urbana-Champaign, 1995.
37. Lozanov, G. *Suggestology and outlines of suggestopedy*. Gordon and Breach Publishing Company, New York, New York, 1978.
38. Martin, M. SUCCESS! Teaching spelling with music. *Academic Therapy*, Vol. 18, No. 4, pp. 505-507, 1983.
39. Maze, N. M. A study of the correlations between musicality and reading achievement at first grade level in Athens, Georgia. Unpublished doctoral dissertation. University of Georgia, Athens, 1967.
40. McElhinney, M., & Annett, J. Pattern of efficacy of a musical mnemonic on recall of familiar words over several presentations. *Perceptual and Motor Skills*, Vol. 82, pp. 395-400, 1996.
41. McQuillan, J., & Rodrigo, V. A reading din in the head: Evidence of involuntary mental rehearsal in second language readers. *Foreign Language Annals*, Vol. 28, pp. 330-336, 1995.
42. Murphey, T. The song stuck in my head phenomenon: a melodic DIN in the LAD? *System* Vol. 18, pp. 53-64, 1990.
43. Nicholson, D. L. Music as an aid to learning. Unpublished doctoral dissertation. New York University, New York City, 1971.
44. Overy, K. (1998). Discussion note: Can music really "improve" the mind? *Psychology of Music*, 26, 97-99.
45. Parr, P., & Krashen, S. Involuntary rehearsal of second language in beginning and advanced performers. *System*, 1 Vol. 4, No. 3, pp. 275-278, 1986.
46. Prickett, C. A., & Moore, R. S. The use of music to aid memory of Alzheimer's patients. *Journal of Music Therapy*, Vol. 28, No. 2, pp. 101-110, 1991.

47. Salcedo, C. S., & Harrison, L. G. The effects of song on text recall and involuntary mental rehearsal in foreign language learning. In M. Cherry (Ed.), *Joint Conference of the Southern Conference on Language Teaching and the Louisiana Foreign Language Teachers' Association: Cyberspace and foreign languages: Making the connection* (pp. 91-102). Valdosta: Furman University, 2002.
48. Serafine, M. L., Crowder, R. G., & Repp, B. Integration of melody and text in memory for songs. *Cognition*, Vol. 16, pp. 285-303, 1984.
49. Serafine, M. L., Davidson, J., Crowder, R. G., & Repp, B. On the nature of melody-text integration in memory for songs. *Journal of Memory and Language*, Vol. 25, pp. 123-135, 1986.
50. Sloboda, J. *The musical mind: The cognitive psychology of music*. Oxford Science, New York, New York, 1985.
51. Swain, J. The need for limits in hierarchical theories of music. *Music Perception*, Vol. 4, pp. 121-148, 1986.
52. Wallace, W. T. Memory for music: effect of melody on recall of text. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, Vol. 20, pp. 1471-1485, 1994.
53. Wheeler, L. R., & Wheeler, V. D. The relationship between music reading and language reading abilities. *Journal of Educational Research*, Vol. 45, pp. 443-446, 1952.
54. Wilcox, W. B. Music cues from classroom singing for second language acquisition: Prosodic memory for pronunciation of target vocabulary by adult non-native English speakers. Unpublished doctoral dissertation, University of Kansas, Wichita, Kansas, 1996.
55. Williams, V. *Teaching for the two-sided mind*. Prentice-Hall, Englewood Cliffs, New Jersey, 1983.