

Help or Hinder: The Effects of Music on College Students' Reading Comprehension

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A decision many students face while at school is whether or not they choose to listen to music while studying or doing homework. Past research on this topic has yielded very mixed findings over the years. This study's aim is to examine the possible distracting effects of music, such as worsened reading comprehension skills and attention to detail. The participants in this study are 27 college students that were tasked with completing a reading comprehension examination in silence or while listening to either the lyrical version or instrumental version of a song. The data of the study were collected through an online surveying program. A between-groups ANOVA found no significant difference in scores of participants taking the test while listening to both forms of music and while in silence. This means exclusively studying with music in the background or in silence will not enhance comprehension. These findings support the idea that the decision to listen to music is up to the individual students' and their personal preference of studying habits.

Introduction

Students spend much of their time in school studying; it is an important element in the process of receiving a formal education. Technique preferences vary between students. One common decision for many students is whether to listen to music or not while studying (Umuzdaş, 2015; Calderwood, Ackerman, & Conkin, 2014). The question is then raised: Is it harmful or beneficial to listen to music while studying?

This is not to be compared to using music as a technique to aid learning, often found in classrooms of younger students. That is done by developing songs, rhythms, or rhyme schemes relating to learning material, which has shown to assist in memory recollection and have a positive relationship with learning (Scripp, 2002). The question and study at

hand is instead interested in the environmental and mental distraction that music may cause while performing an unrelated academic task. Since students and teachers alike are constantly trying to develop the most effective way to teach and retain knowledge, researching the impact of music on the retention of learning is advantageous to both parties. While the preference of the individual may still hold priority in terms of studying habits, potential findings of a more productive alternative may lead students and educators to reevaluate the learning and educational process.

Music and Noise

While the amount of time spent on studying has shown to be positively correlated with students' grades (Nonis & Hudson, 2010), research on the quality of the studying time with the presence of music or other background noises

has had mixed results in the past. Oswald, Tremblay, and Jones (2000) found significantly lower scores on reading comprehension tests when speech was played in the background. The undergraduate students in the study were attempting to recall sentences previously presented to them during a phase of acquisition when either silence, meaningful speech, or meaningless speech (the same recording as the meaningful speech group but played in reverse) was in the background. The participants made significantly more errors in the recognition phase when the meaningful speech played in the background during the acquisition phase.

Another important aspect of this research was the type of noise or music being played in the background. Hallam, Price, and Katsarou (2002) reported that performance on a memory task was better when listening to music perceived to be relaxed and calm. Yet, Cournoyer-Lemaire (2019) had participants memorize three lists of words while listening to stimulating or relaxing music and found no significant difference in the amount of words recalled. Insignificant results were also found with pink noise in the same memorization study.

Pink noise, a frequency similar to white noise, supposedly has more positive effects on improving memory (Benjafield, 2017). Pink noise was used due to the fact that white noise “tends to be perceived as unpleasant due to its increased intensity at higher frequencies” (Cournoyer-Lemaire, 2019, p. 26), and that past findings showing no significant difference between white noise and silence on cognitive performance or memory tests (Bottiroli, Rosi, Russo, Vecchi, & Cavallini, 2014). A different study found pink noise to show a negative effect on memorization at higher frequencies, as well as being reported as an annoyance to high school student

participants (Skarlatos & Georgiou, 2001). The distinction between pink noise and white noise was important to the present study because, in the past, pink and white noise have been used in a variety of neural related studies (Mertin et al., 2013; Leong et al., 2018). However, consistent findings for the effects of either have not been found. This has led the present study to instead opt for the examination of music. The differences of pink and white noise require a deeper understanding of how the tone, frequency, pitch, and tempo affect the brain. These factors did not particularly pertain to the current study, so the choice of noise was then focused towards the still not extensively studied effects of music. All of the past findings did not point towards a clear effect of listening to music while studying. This, in part, was due to the fact that past studies have used varying techniques and variables, if at all, to measure how noise and reading comprehension are related.

Past research must be analyzed when further researching the relationship between meaningful studying and music because of the contradictions that were presented from the results. There were certain areas which were adapted in order to focus on aspects that have not been tested in previous research, like the use of the instrumental version of the song without the lyrics. Another change was made to make the test simulate an individual’s actual studying scenario. Further studies will help distinguish whether or not noise music introduces an unneeded and detrimental variable to studying effectively, or the possibility that there are true benefits to having a background noise while trying to concentrate on learning. Past studies have had many differences in variables, comprehension and memorization tests, and forms of measurement, yet claim to be testing the same thing (Hallam, Price, &

Katsarou, 2002; Cournoyer-Lemaire, 2019; Oswald, Tremblay, & Jones, 2000). The varying findings show that research must become more specific in order to produce consistent outcomes. Greater consideration must be given to designing a realistic environment and task in order to qualify the findings as useful for students or persons looking to comprehend and retain information more effectively.

The present study took into account that listening to words in music could disturb and impede on one's mental concentration when attempting to read material they will be tested on (Oswald, Tremblay, & Jones, 2000). This was why the present study included a third condition, apart from the presence of music or silence while taking the test, which was listening to the instrumental version or lyrical version of the same song as the music-listening condition. This was done to test if any difference in reading comprehension was due to hearing the lyrics of the song and not solely music itself. The instrumental version did not include any lyrics, nor did it include any ad-libs, which are improvised or unrehearsed words or short phrases that may appear in between the lines on the final version of a song.

Each of these three groups were given the same reading comprehension test. The first group did not listen to any music during the test. The second group listened to the lyrical version of the song. Finally, the third group listened to the instrumental version of the song. The present study used problems from a previous ACT exam for multiple reasons, which will be examined in more detail in the methods section. The purpose of the study was to further examine whether the presence of lyrical music or the accompanying non-lyrical

instrumental hindered reading comprehension when answering questions based on a written prompt. With this in mind, it was hypothesized that subjects in the group not listening to music would receive a higher reading comprehension score than those who were listening to music with lyrics, while the group only listening to the instrumental will score in between the other two groups.

Methods

Participants

This research aims to shine further light on the effectiveness of the common practice of listening to music while studying. To help test for real life usefulness for the possible findings, all the participants involved were currently enrolled as undergraduate students at a large, Midwest university. This was done to be able to draw a relevant conclusion on whether or not listening to music while studying was a viable option to help comprehension, or if it was holding students back by causing an unnecessary distraction.

The test was sent to 30 participants via email and text message. 3 of these participants did not consent to taking the test. Of the 27 participants participating in the study, 12 of them identified as male, and the other 15 identified as female. Also, of the 27 participants, only 1 said that English was not their primary language. 19 of the participants identified as white, 7 identified as Asian/Pacific Islander, and 1 identified as Hispanic/Latino.

These participants were recruited in two separate ways. First, using convenience sampling, tests were distributed to individuals by the four authors of the study. Second, participants were recruited from a psychology class at the same

university. The individuals given the test from the authors were not compensated for their time and participation, but those from the psychology class were given in-class credit for the completion of the study, which affected their semester grade.

Materials

Each participant took the test on a computer that they owned and regularly did school-related work on. This was done to mimic a situation that the student might be put in while they are studying or testing on their own. It was assumed by the researchers that participants would be more comfortable taking an assessment on a device more commonly used to do a similar task. This was also done to help the external validity of the study by better generalizing the findings to real life situations. The test itself was constructed using the survey making program Qualtrics.

The test randomly placed each participant in one of the three levels of the independent variable: taking the test in silence, taking the test with the lyrical version of the song, or taking the test with only the instrumental version of the song. The first slide seen by participants was the informed consent form (see Appendix A). After, general demographics were collected with three questions (see Appendix B). Each level of the independent variable contained the same prompt and questions (see Appendix C). The prompt came from an ACT sample test provided on ACT.org and came with 9 multiple choice questions (e.g. “It can reasonably be inferred from the passage that which of the following is a cherished dream that Abshu expects to make a reality in his lifetime?”) to go along with the prompt (ACT, 2019). The prompt was a passage out of the 1998 novel *The Men of Brewster Place* by Gloria Naylor. What differed between the three versions of the test were the instructions and the version of the song, or lack

lack thereof, attached to the slide with the prompt and questions (see Appendix D & Appendix E). At the end of the survey, the same debriefing statement was given to each participant explaining the intent of the test (see Appendix F).

An ACT prompt was used for multiple reasons in this test. The ACT is a commonly used form of assessment to test high school students on four different topics, one of those being reading comprehension. It has shown to be an accurate measure of students’ competency of these topics, which was why it was implemented in this test instead of a new form of examination (Briggs, 2001). It was used because the university the participants were enrolled in required each student to take either the ACT or the SAT in order to apply for the school. These two tests are very similar in content and translation to college success, differing slightly in scoring and how sections are written (Coyle et al., 2014). This provides some familiarity to the participants because they have taken a similar type of test, albeit not the same exact version. After each participant completed the ACT portion of the test, they were asked the final question “Do you usually listen to music while you study?” (see Appendix G). This was added to determine if the preferred studying condition of the student affected their reading comprehension score based on the group they were assigned to. If participants that indicated they usually listened to music while study were assigned to one of the musical conditions, would they score higher than participants who indicated they did not usually listen to music? The same goes for participants who indicated they did not usually listen to music assigned to the silent test taking group.

For the two musical conditions of the test, the 1997 hip-hop/rap song “Miami” by Will Smith was used. While this song was not used for a

specific reason over every other possible song choice, it fit the criteria that the authors established as being important for this particular test. One of the most important elements of the song selection process was the fact that past research has shown reading comprehension scores to be higher when listening to lyrics of another language or using words that were not understandable (Martin, Wogalter, & Forlano, 1998). This is because participants can more easily tune out or ignore lyrics the brain does not give significant meaning to. So, the choice of song had to contain lyrics that were clearly spoken and understandable in English. Another element of the song selection choice was the genre. While the initial thought was to choose a genre that most people would enjoy, research on the topic showed that whether or not the participant liked the song did not show a strong positive or negative relationship with reading comprehension performance on an SAT test (Perham & Currie, 2014). So instead, attention was turned to finding a song with a positive and lighthearted message with an upbeat, quick tempo. Since the test was looking for the effect of the presence of music and lyrics itself, and not the genre or emotions portrayed by the music, it was determined that the choice of song was inconsequential if it followed the criteria explained earlier.

Procedure

Each of the 27 tests were remotely proctored by each participant individually. As soon as they opened the test on their computer, the Qualtrics program randomly assigned them to one of the three levels of the independent variables. The program was set to assign each of the three groups evenly. This would decide which version of the test they took. 8 participants were randomly assigned to the first group and did not listen to any music.

Seven participants were randomly assigned to the second group and listened to lyrical music during the examination period. The remaining twelve participants were randomly assigned to the third group and listened to the instrumental version of the song during the test (see Figure 1).

The first slide of the survey provided participants with the informed consent information and the option to consent to take the survey or not (see Appendix A). Next, consenting participants were moved to a demographics portion. Here, they filled out three basic questions regarding race and ethnicity, gender, and primary language (see Appendix B). After completing this section, participants were given the official instructions for the test.

The instructions for the lyrical music and instrumental music groups were the same, informing participants they must be in a distraction free room by themselves, taking the test on a computer or laptop (see Appendix E). It also explained the task they would be completing—reading a passage from the ACT and answering nine questions based on the passage. They were then told to listen to the music the entire time they were reading and answering questions. Finishing off the instructions, participants were told not to use outside resources to help them answer the questions, to answer each question to the best of their ability, and that they would have unlimited time to complete the test. The group that was not listening to music was given the same exact instructions, minus the one sentence telling them to listen to the music the entire time they took the test (see Appendix D). The instructions included removing all external distractions.

After reading the instructions and continuing on to the next slide, the reading

comprehension test began. Each of the three groups had slightly different slides for this section. Each group had the ACT passage and all nine of the multiple-choice questions underneath it. Each question had four possible answers, with only one of those answers being correct. Where the three versions of the test differed was on the top of the slide. The group assigned to take the test without listening to music had nothing else on this slide besides the passage and questions. The group assigned to take the test while listening to the lyrical version of the song were given a play button to press, which initiated a loop of the chosen song with the lyrics in it. The last group, the one assigned to listen to the instrumental version of the song, were given the same display at the top of the slide as the group listening to the lyrical music. However, this play button initiated the instrumental version of the song.

Participants were then asked one final question, regardless of which group they were assigned to. It asked, “Do you usually listen to music while studying?” and potential answers ranged from “never” to “always” (see Appendix G). While this answer did not count towards the final score, it was used to collect further demographic information about the participant and possibly make further connections to their scores.

After this final question, participants were given a debriefing of the test. This explained the true purpose of the test: if listening to lyrical or non-lyrical music had an effect on one’s reading comprehension abilities. All three levels of the independent variable were explained, and participants were given the contact information of one of the authors if they had further questions, comments, or concerns, or if they desired to know how they scored on the test portion, since that information was not given back in the survey (see

Appendix F).

Results

During the scoring of the reading comprehension test, each correct answer was valued at 1 point, whereas an incorrect answer was valued at 0 points. This led to a possible maximum score of 9, and a minimum of 0. Analyses of the between-groups ANOVA showed that the presence or absence of music during testing did not have a significant effect on reading comprehension scores ($F(2, 24) = .203, p = .817$). Thus, those who did not listen to music ($M = 5.50, SD = 2.204$), those who listened to the lyrical music ($M = 6.22, SD = 2.386$), and those who listened to the instrumental music ($M = 5.60, SD = 2.989$) did not score significantly different on the reading comprehension test (see Figure 2). The 12 participants identifying as male ($M = 6.17, SD = 2.691$) and the 15 participants identifying as female ($M = 5.47, SD = 2.386$) did not score differently enough to show an effect based on gender ($F(1, 25) = .512, p = .481$). The groups based on race and ethnicity were too small to run a valid ANOVA.

Discussion

The present study hypothesized that individuals listening to music, lyrical or instrumental, would perform statistically worse on the reading comprehension test than those not listening to music. However, results from this study did not support this prediction. While some past research found participants listening to music to score the highest (Oswald, Tremblay, & Jones, 2000) and some found participants not listening to music to score higher (Skarlatos & Georgiou, 2001), supporting data were not found in this present study. Due to the fact that the overall hypothesis of the present study was not supported by the results and no significant differences were found, this study does not provide evidence for

research in favor of, or in opposition to, listening to music while studying or taking comprehension examinations.

Similar results to the present study were found in some previous research (Bottiroli, Rosi, Russo, Vecchi, & Cavallini, 2014). These conclusions show that there is no beneficial or harmful relationship between listening to music and reading comprehension scores. While reading comprehension scores were higher in the group that listened to lyrical music, which seems to support some the findings of research in favor of listening to music (Martin, Wogalter, & Forlano, 1998; Hallam, Price, & Katsarou, 2002), there was not enough of a difference between scores of participants listening to lyrical music and those who did not. This means that the differences in score were most likely due to individual differences between the participants and not the presence—or lack—of music being played during the examination period. The differing scores were merely due to chance and not the independent variable.

One of the biggest limiting factors in the present study was the lack of control over where, when, and how each participant took the test. Due to limited time, resources, and participants, the authors conducting the study was not able to individually test each participant by bringing them into a controlled setting. Each participant was given free choice to take the test at a time and location that was most convenient to them, with instructions only telling them to take it in a quiet room by themselves. This lack of control for each participant testing setting could have led to a variety of changes and variability in the results. There also should be attention checks added to future studies to make sure participants are fully reading the passages. Participants could easily guess on each answer in order to simply finish the study in a short amount of time.

Another factor limiting the external validity of the study was that, with only a limited number of participants, scores may not reflect the general population of college students. Translating the results to larger populations would be difficult. This is why future research must use a wider range of participants from different educational levels, schools, genders, ethnicities, and ages. The present study's primary issue was that the sample size was not large enough. Along with this, the survey was not set up correctly within the program to obtain an equal sample size for each group. Instead, it was only programmed for each participant to have an equal chance at being assigned to one of the three groups. This led to differences in group size that were not intended.

An additional restraint to the present study was the fact that there was only a single test administered. To best translate to real life findings, future research would conduct a similar type of study over a longer duration of time, with multiple, more highly controlled, examination periods. This should include actual periods of study material, as opposed to the present study's method of only proctoring a test and not giving participants the opportunity to study the material they were going to be tested on.

This study is not claiming to be the final answer to this debated topic, so further research is needed. Since past results have been very mixed and usually shorter term (Martin, Wogalter, & Forlano, 1998; Hallam, Price, & Katsarou, 2002; Bottiroli, Rosi, Russo, Vecchi, & Cavallini, 2014; Oswald, Tremblay, & Jones, 2000), a long-term study should logically be the next step. A study, possibly taking place over an entire semester of a college class, that has students studying with or without music each time. Results from that form of study could provide a better idea as to how music affects the comprehension of students. Since it is unlikely that professors will allow students to listen to music while taking a test in fear of possible

cheating, a study on students' test performance after studying with or without music would better support this topic.

What can be taken away from this is that there is no clear answer to whether listening to music can help or hurt your comprehension skills while studying; it depends on personal preference. If a student enjoys listening to music while studying, and continually receives high grades on tests that they are happy with, current research does not indicate a harm in continuing the habit. However, if a student always listens to music, but is often finding themselves receiving less than adequate grades, maybe they should consider changing their studying habits in search of a method that works better for them. There is a lot that goes into the effectiveness and comprehension of material of one's studying, so there is no clear-cut answer for the best way to study; some students require more focus and more rigorous effort, while others only need a short time to look over notes. In all, every student is going to find successes and failures in different types of studying. It is up to the individual to discover what works best for them through testing different methods of studying.

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Figures

| | Male | Female |
|----------------------|------|--------|
| No Music | 3 | 5 |
| Lyrical Version | 6 | 3 |
| Instrumental Version | 3 | 7 |

Figure 1. Table showing the gender demographics within each of the independent variable groups.

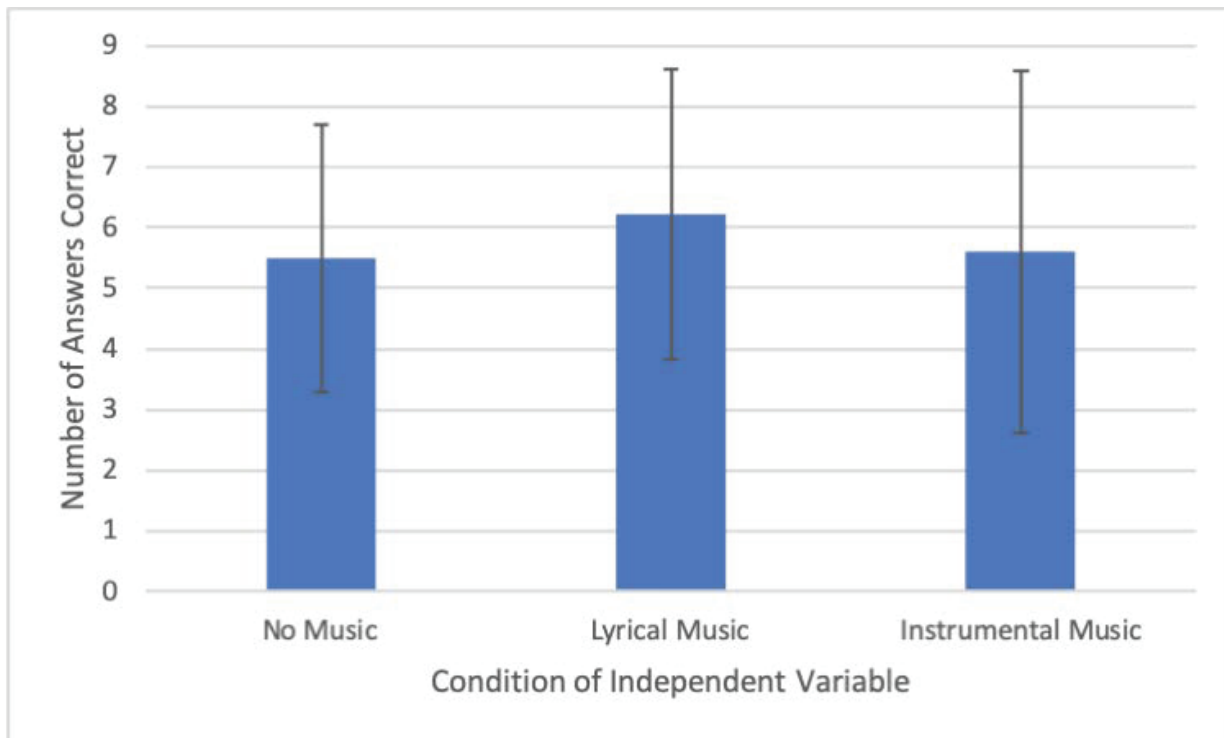


Figure 2. Mean scores on the ACT reading comprehension test for groups that did not listen to music, listened to lyrical music, and listened to instrumental music. Error bars represent standard deviation.

Appendix A: Informed Consent Form

You are being asked to participate in a study as part of a class project in a research methods course in the Department of Psychology at the University of Minnesota. In this study, you will be asked to read a reading prompt and answer comprehension questions. If you choose to participate, no identifying information will be gathered from you, so it will be impossible to identify you as a participant. If you choose to participate, you may stop participating at any time. You may withdraw your data at any time, including after you have completed the study. You may ask me questions before or after you complete the experiment. I also can tell you how to contact the course instructor if you have any questions for him.

Do you consent to participate in this study?

- a) Yes
- b) No

Appendix B: Demographics

Please specify your Race/Ethnicity.

- a) White
- b) Hispanic or Latino
- c) Black or African American
- d) Native American or American Indian
- e) Asian / Pacific Islander
- f) Other (specify) _____

What is your gender?

- a) Male
- b) Female
- c) Other (specify) _____

Is English your primary language?

- a) Yes
- b) No

Appendix C: Prompt and Questions

The Men of Brewster Place

Clifford Jackson, or Abshu, as he preferred to be known in the streets, had committed himself several years ago to use his talents as a playwright to broaden the horizons for the young, gifted, and black—which was how he saw every child milling around that dark street. As head of the community center he went after every existing grant on the city and state level to bring them puppet shows with the message to avoid drugs and stay in school; and plays in the park such as actors rapping their way through Shakespeare's *A Midsummer Night's Dream*. Abshu believed there was something in Shakespeare for everyone, even the young of Brewster Place, and if he broadened their horizons just a little bit, there might be enough room for some of them to slip through and see what the world had waiting. No, it would not be a perfect world, but definitely one with more room than they had now.

The kids who hung around the community center liked Abshu, because he never preached and it was clear that when they spoke he listened; so he could zero in on the kid who had a real problem. It might be an offhand remark while shooting a game of pool or a one-on-one out on the basketball court, but he had a way of making them feel special with just a word or two.

Abshu wished that his own family could have stayed together. There were four of them who ended up in foster care: him, two younger sisters, and a baby brother. He understood why his mother did what she did, but he couldn't help wondering if there might have been a better way.

Abshu was put into a home that already had two other boys from foster care. The Masons lived in a small wooden bungalow right on the edge of Linden Hills. And Mother Mason insisted that they tell anybody who asked that they actually lived in Linden Hills, a more prestigious address than Summit Place. It was a home that was kept immaculate.

But what he remembered most about the Masons was it seemed there was never quite enough to eat. She sent them to school with a lunch of exactly one and a half sandwiches—white bread spread with margarine and sprinkled with sugar—and half an apple. When Abshu dreamed of leaving—which was every day—he had his own apartment with a refrigerator overflowing with food that he gorged himself with day and night. The Masons weren't mean people; he knew he could have ended up with a lot worse.

Abshu lived with these people for nine years, won a scholarship to the local college, and moved out to support himself through school by working in a doughnut shop. By this time his mother was ready to take her children back home, but he decided that since he was already out on his own he would stay there. One less mouth for her to worry about feeding. And after he graduated with his degree in social work, he might even be able to give her a little money to help her along.

One thing he did thank the Masons for was keeping him out of gangs. There was a strict curfew in their home that was rigidly observed. And church was mandatory. “When you're out on your own,” Father Mason always said, “you can do whatever you want, but in my home you do as I say.” No, they weren't

Appendix C: Prompt and Questions

mean people, but they were stingy—stingy with their food and with their affection. Existing that way all the time, on the edge of hunger, on the edge of kindness, gave Abshu an appreciation for a life fully lived. Do whatever job makes you happy, regardless of the cost; and fill your home with love. Well, his home became the community center right around the corner from Brewster Place and the job that made him most fulfilled was working with young kids.

The kids who hung out at the community center weren't all lost yet. They wanted to make use of the tutors for their homework; and they wanted a safe place to hang. His motto was: Lose no child to the streets. And on occasion when that happened, he went home to cry. But he never let his emotions show at work. To the kids he was just a big, quiet kind of dude who didn't go looking for trouble, but he wouldn't run from it either. He was always challenged by a new set of boys who showed up at the center. He made it real clear to them that this was his territory—his rules—and if they needed to flex their muscles, they were welcome to try. And he showed many that just because he was kind, it didn't mean he was weak. There had to be rules someplace in their world, some kind of discipline. And if they understood that, then he worked with them, long and hard, to let them see that they could make a difference in their own lives.

Questions

1. The point of view from which the passage is told can best be described as that of:
 - a) a man looking back on the best years of his life as director of a community center in a striferidden neighborhood.
 - b) a narrator describing his experiences as they happen, starting with childhood and continuing through his adult years as an advocate for troubled children.
 - c) an unidentified narrator describing a man who devoted his life to neighborhood children years after his own difficult childhood.
 - d) an admiring relative of a man whose generosity with children was widely respected in the neighborhood where he turned around a declining community center.
2. It can reasonably be inferred from the passage that which of the following is a cherished dream that Abshu expects to make a reality in his lifetime?
 - a) Establishing himself financially so as to be able to bring his original family back under one roof
 - b) Seeing the children at the community center shift their interest from sports to the dramatic arts
 - c) Building on the success of the community center by opening other centers like it throughout the state
 - d) Expanding for some, if not all, of the children the vision they have of themselves and their futures

Appendix C: Prompt and Questions

3. It can reasonably be inferred from the passage that Abshu and the Masons would agree with which of the following statements about the best way to raise a child?
- For a child to be happy, he or she must develop a firm basis in religion at an early age.
 - For a child to be fulfilled, he or she must be exposed to great works of art and literature that contain universal themes.
 - For a child to thrive and be a responsible member of society, he or she must develop a sense of discipline.
 - For a child to achieve greatness, he or she must attach importance to the community and not to the self.
4. The fourth paragraph (Indicated by *) establishes all of the following EXCEPT:
- that Abshu had foster brothers.
 - that the Masons maintained a clean house.
 - how Mother Mason felt about the location of their house.
 - what Abshu remembered most about his years with the Masons.
5. It can reasonably be inferred that which of the following characters from the passage lives according to Abshu's definition of a life fully lived?
- Mother Mason
 - Father Mason
 - Abshu as a child
 - Abshu as an adult
6. Which of the following statements about the children entering the community center is supported by the passage?
- They had unrealistic expectations that Abshu toned down in the course of informal conversations.
 - In Abshu's eyes, they were all gifted.
 - In Abshu's eyes, the children who were likely to succeed were the ones who gave him the most trouble at the outset.
 - They were prepared to believe in each other more than in themselves.
7. It can reasonably be inferred from the first paragraph that in obtaining outside funding for the community center, Abshu could be characterized as:
- thorough in seeking out potential sources for financial backing.
 - reluctant to spoil the children with charity.
 - excited about having the children write grant applications.
 - determined to let the children decide how the money would be spent.

Appendix C: Prompt and Questions

8. Which of the following statements about Abshu's attitude toward his mother's choices early in his life is supported by the passage?

- a) Abshu wishes he could get over the bitterness he feels toward her for allowing him and his siblings to be placed in foster care.
- b) Abshu is worried that his mother is troubled by her decision to place her children in foster care and wants to comfort and support her now that he is a grown man.
- c) Abshu wonders if she might have made a better decision about letting him and his siblings go into foster care, even though he understands why she did it.
- d) Abshu wants to apologize for having been ungrateful as a child to his mother, who was only doing what she felt was best for her family.

9. According to the passage, which of the following most closely identifies Abshu's definition of a life fully lived?

- a) Happiness in your work and love in your house
- b) The pursuit of your goals and the realization of your dreams
- c) Togetherness with your family and the sharing of laughter
- d) Working in the community and striving for equality

Appendix D
Form A: No Music

Instructions

Before you begin this study, make sure you are in a quiet environment by yourself. Take this test on a computer or laptop. Turn off your phone and take away all external distractions around you. You will be asked to read a passage from an ACT test and answer 9 multiple choice questions. You will have an unlimited amount of time to finish these questions. Please answer these questions to the best of your ability. Do not use any outside resources to aid your answers. Thank you for your participation!

Appendix E
Form B: Music and Instrumental

Instructions

Before you begin this study, make sure you are in a quiet environment by yourself. Take this test on a computer or laptop. Turn off your phone and take away all external distractions around you. You will be asked to read a passage from an ACT test and answer 9 multiple choice questions. Please listen to the music while you read the passage and answer the questions. You will have an unlimited amount of time to finish these questions. Please answer these questions to the best of your ability. Do not use any outside resources to aid your answers. Thank you for your participation!

Appendix F: Debriefing Statement

The purpose of this study was to test whether or not lyrical music, instrumental music, or silence affected reading comprehension abilities. If you have any further questions, please email kaul0044@umn.edu.

Appendix G: Additional Questions

Do you usually listen to music while studying?

- a) Always
- b) Most of the time
- c) About half the time
- d) Sometimes
- e) Never