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Does Time Distract?

Zachary A. Pashea

The purpose of this study was to determine if the implementation of placing a large clock in front of someone would affect their performance level on a timed task. Twenty-eight undergraduate students were asked to complete a word find. Fifteen of the undergraduate students were simply told when to start and stop working while the rest possessed knowledge of exactly how much time they had left by way of a large clock, which was placed in front of them. I hypothesized that participants with the large clock in front of them would find fewer words. The results revealed a statistically non-significant difference between the two distinct groups.

When students are asked to perform a task in a classroom environment, specific intangibles exist that may hinder the performance levels of the students. For example, if the students are instructed by a professor that they have a certain amount of time to complete the task, it is possible that the students' knowledge of exactly how much time is remaining may indeed affect the students' performance level on that particular task. When students are able to see every second click down, their anxiety level may increase in a dramatic manner, which in turn, could jeopardize their otherwise, acute mental focus. When the students begin to worry about the amount of time that is remaining to complete the task, their minds could also begin to seemingly give up. This could result in their once high concentration levels becoming distracted not only by the time, but by any other intangible that is present in the classroom, for example, a vibrating heating pipe.

There are a plethora of experiments that request for participants to complete a task and while doing so, the participants are timed. However, the fact that the participants are being timed could indeed affect their performance levels, especially if they possess knowledge of exactly how much time is remaining at any specific moment. The knowledge of how much time is remaining could be seen as a threat to students, which in turn could negatively affect their mental functioning. In a study targeted at analyzing the effects of test anxiety and evaluative threat, results illustrated that even if students possessed little or no test anxiety before having taken a test, all of these students performed worse under evaluative threat conditions (Hancock, 2001). When students feel as if they are under pressure to achieve something, their cognitive mindset may feel as if they are being threatened to do something. If this specific mindset develops, the level of concentration that was previously solely devoted to completing the task, may indeed switch over to worrying about how much time is left to complete the task. This is why students perform poorer if they feel threatened.

In an experiment such as completing a word find in a certain amount of time, if participants are aware of exactly how much time remains at any one instant, they may begin to lose the ability to think clearly. In two experiments, which analyzed whether time pressure could effectively prohibit the response level of participants completing a task, the results of both experiments indicated decreased levels of responding when the pressure of time existed (Crooks & Goodie, 2004). If participants are indeed affected in terms of their response level by a pressure instigator such as time, their ability to locate words in a word find could be diminished.

For individuals who perceive everyday situations as potentially threatening, these same individuals may be more inclined to perceive an evaluative situation, such as performing a task in a certain amount of time, as also threatening (Anton, de Man, Dale, Hall, Stout, & Vincent, 1991). The reasoning for this is that these individuals may have high emotional levels which in turn could allow them to perceive more situations as threatening. If these students do indeed view such an evaluative situation as threatening, their anxiety could also increase, which could deter them from producing a great performance. The knowledge of how much time is left to perform a task for these particular students may cause a feeling of numbness in that the students feel that their anxiety has now taken over their mental capabilities (Brewer, 2002). These students are now faced with two genuine battles in that, besides attempting to complete the task, the students must also mentally fight their anxiety levels so that their mental abilities are allowed to succeed.

In the particular case of students who are asked to complete a word find in a designated amount of time, if anxiety is increased due to worrying about how much time remains, these students may also allow their brains to experience another form of distraction. In order to complete a word find, students must analyze letters in a correct order to locate a word. The occurrence of distraction is possible if patterns of letters are perceived incorrectly, which will lead to words not being recognized (Brand-D'Abrescia & Lavie, 2007).

It is my objective to see if the individuals with the large analog wall clock placed in front of them will become mentally distracted by the amount of time left. This will, in turn, cause the individuals to worry about the time rather than fully concentrating on the

task at hand. For this reason, I hypothesize that individuals will find fewer words in the word find when they are in the presence of a large clock sitting right in front of them. Individuals who are unaware of how much time is remaining will be better able to concentrate on locating words, due to the absence of a major distraction and anxiety inducer, in the clock.

Method

Participants

Participants were 28 Lindenwood University undergraduate students. There were 21 freshman and 7 sophomore participants of which, 15 were women and 13 were men. The students were recruited by the Lindenwood University Human Subject Pool. These students received extra credit in their respective classes for their participation. Students signed their names on a sign-up sheet, which was posted directly under the Experiment Description Form on the bulletin board located directly across from the Human Subject Pool office (407) in Young Hall. All individuals correctly adhered to the Lindenwood University Human Subject Pool rules and were able to participate in the experiment. Three experimental sessions were conducted by a single male researcher.

Materials

The experiment took place in one single experimental room, Y105A, which was located on the first floor of Young Hall. The room was no larger than 11 x 12 feet. Also, the lighting was kept as bright as possible throughout the entirety of the experiment to ensure that the participants were able to see clearly. There was only a single researcher and a single participant in the room at one time. The purpose of this dependent measure was to make certain that the participants were not distracted by other people. Along with

these specific criterions, there was one desk in the room with two chairs. A large analog wall clock was used for the informed participants. A stopwatch was used by the researcher to time the uninformed participants Paper was used for the informed consent form, feedback letter, questionnaire, receipt voucher, and word find (Large Print Search and Find (David, 2006). The students were provided with a pen or pencil to use as writing utensil. Finally, the Windows SPSS software was used to categorize and analyze the data from the interviews and demographic surveys.

Procedure

Participants, one at a time based on the sign-up sheet order, walked into the designated lab room and were asked to fill out and sign the informed consent form. Then they were asked to look down at a sheet of paper on the desk, which included random twelve font letters, and tell the researcher what the letters were. It did not matter if the individuals were able to correctly read all of the letters, they were still able to participate in the experiment; however, all of the participants read every letter correct, This method was used to ensure whether the hypothesis would be true or not based on individuals with normal vision.

Next, the participants were asked to complete as much of a word find as they could in 10 minutes. Fifteen random individuals, unassociated with Lindenwood University, were given the word find to complete as a pilot test prior to the actual experiment. At the 10 minute mark, every individual was near completion. This is the reasoning for giving the participants in this experiment 10 minutes to complete the word find.

Thirteen of the individuals participating in the experiment had a large clock put on the desk in front of the word find, which told the individuals how much time they had to complete the word find. These specific participants knew exactly how much time they had, at any one moment, to complete the word find. The remaining 15 participants did not know how much time they had left at any certain time during the experiment. These individuals were told to start and then to stop when the allotted time is up. The time for these individuals was kept by the researcher. The researcher held a stopwatch under the table to ensure that the individuals would possess no idea as to how much exact time they had left to complete the word find. The order of what participants received which treatment was alternated at the beginning of the experiment.

After the time expired, the participants were then asked to answer a questionnaire based on whether knowing the exact time at any certain moment affected them in terms of being able to perform a task better or worse. Then the participants were given the feedback letter, their receipt was completed, and they were thanked for their participation.

Results

Words Found

In order to test the hypothesis of this study, an independent samples t-test was conducted. This t-test was conducted to determine whether the group participants were in (time-informed or time-uninformed) influenced the amount of words located in the word during the allotted time. The analysis of this particular t-test depicted a statistically non-significant result, $t(26)= -1.690$, $p>.05$.

Participant Time

Another independent samples t-test was conducted to determine whether a significant relationship existed between each group and the amount of time the participants used to complete the word find. Due to a problem with the homogeneity of the variance among the variables of time and words found, the degrees of freedom used for this particular analysis was adjusted to 18.184. The analysis of this particular t-test produced a statistically non-significant result, $t(18.184)=2.982$, $p<.05$.

Worrying About Time

After the word find, participants were asked to rate whether their everyday life as a student required them to worry intensely about time based on a completely disagree, somewhat disagree, indifferent, somewhat agree, or completely agree scale. Looking at the descriptive statistics, 64.3% of the students somewhat agreed with the statement, while the lesser majority of 21.4% completely agreed that their everyday life as a student required them to worry intensely about time. Also, 3.6% were indifferent and 3.6% somewhat disagreed with the statement. The remaining 7.1% completely disagreed with the statement. (See Figure 1 for a better illustration of the results for this particular question).

Time when Performing a Task

When asked about whether it is better to know exactly how much time at any one moment a person has left to complete a task, descriptive statistics showed that 39.3% somewhat agreed with the statement and 28.6% of the students completely agreed. Of the remaining participants, 17.9% of the students somewhat disagreed with the statement,

while 10.7% and 3.6% were indifferent or completely disagreed with the statement, respectively. (See Figure 2).

Concentration without Knowledge of Time

Concerning the statement of whether the student would be able to concentrate more on a task without the knowledge of how much time remained at any moment, 46.4% somewhat agreed with the statement, while 14.3% of the students were indifferent to the statement. In terms of disagreeing with the statement, the remaining 14.3% of the students completely agreed with statement. In terms of disagreeing, 7.1% somewhat disagreed, while 17.9% completely disagreed with the statement. (See Figure 3).

Enough Time

When told that there was enough time given to the students to complete the word find, 50% of students completely agreed with the statement. A smaller majority of 21.4% of the students somewhat agreed with the statement. In terms of disagreeing, 10.7% somewhat disagreed with the statement and 10.7% also completely disagreed with the statement. The remaining 7.1% were indifferent. See Figure 4.

Concentration Level Affected

Upon being asked to rate the final statement of whether their concentration level would be affected if they knew exactly how much time was left to complete a task, 39.3% and 35.7% of the students somewhat or completely agreed, respectively. Only 14.3% of the students somewhat disagreed with this statement. Only 3.6% of the students completely disagreed with the statement, while 7.1% were indifferent (see Figure 5).

Discussion

The main findings of this study did not support the hypothesis that the participants who were aware of how much time they had left to complete the word find would find fewer words than the participants who were simply told when their allotted time started and ended. When in the informed group, the vast majority of the participants were unable to finish the word find in the allotted time; however this same majority only needed three or fewer words in order to complete the task. The statistical analysis suggests that most students were unaffected by knowing how much time they had left to finish the task. These particular results could be due to a number of different things, but a few reasons in particular could shed a bright light on the reasoning for the rejection of the hypothesis.

Firstly, college students are of an age in which they have seemingly been performing time-based tasks for the most if not all of their academic career. Even in parochial school, students are given a certain amount of time to complete a task, such as a test. The typical academic day of students includes at least a few different subjects, which is blocked off in specific times. If students were given as much time as they wanted to complete a task, they would likely be unable to complete their daily academic class schedule. This experience over the years of being given an allotted amount of time to complete a task may easily have successfully conditioned college students to concentrate at high level no matter how much time is remaining.

Secondly, in this particular experiment, the task chosen for the students to complete was a word find, which possessed absolutely no level of worth when compared to the importance level of an academic test. The students who knew exactly how much

time they had left at any one moment, quite easily, may have not been feeling any real pressure whatsoever due to the fact that this particular word find meant nothing for their grades. Granted, the experimenters' hope and assumption was that students would give their best effort on the word find as if the results truly meant something to the students, but how can the experimenter be certain that the participants did take the task seriously? In one specific manner, the contents of a word find are quite similar to the questions left on a test, in which the student does not possess an answer to. At this point, the concentration level of the students could become affected if the knowledge of how much time is left is known to the students. This is the case in that, like searching for a word, the students is also searching his brain for an answer to a particular question or questions. But, if the students are not emotionally intertwined with the potential results of the task, their respective concentration levels may fail to become distracted even if the knowledge of little time remaining exists.

According to Brewer (2002), students may feel a sense of numbness when presented with a task to perform in a certain amount of time. It is not clear from the results of this study that the informed students did or did not feel pressure by knowing how much time was left at any moment. This inference can simply not be made. However, the results of the words found significance analysis suggest that even if the informed students possessed a heightened sensation of pressure due to the knowledge of time, their performance level was not significantly affected.

In terms of the uninformed group, the results depicted a vast majority of students who performed better when they did not know exactly how much time was left at any single moment. Again, one could suggest from the above reasons concerning the

informed group that maybe these undergraduate students have become accustomed to solely concentrating on the task at hand when faced with a timed task. Even though this precise ideology contradicts the finding by many authors, mentioned in this document, it remains impossible for one to prove anything more from this study besides the occurrence of a specific relationship, involving two variables. In this particular case, number of words found with knowing or not knowing how much time is left to complete the word find served as these two variables.

The results of the student surveys possess interesting implications. For example, the majority of answers reflected an overall ideology that it is better to know how much time is left to complete a task, but also this knowledge of time could somewhat affect the concentration level of students when performing a task. These findings essentially possess a canceling-out nature in that students are uncertain of which method would give an advantage to their performance level. For this precise reason, more studies such as this one need to be completed to aid in a better development of academic environments for students.

With that said, there exist methodical improvements for this study, which could possibly result in statistically significant findings. For example, a typical wall-clock was used in the timing of the informed individuals in this study. A digital clock could possibly have provided more accurate timing results for the informed participants. Also, the study took place in a room that possessed a liquid pipe above the head of the participant. It is seemingly impossible to characterize the noise of this pipe as a normal classroom sound, but in the interest of the researcher to keep the environment exactly the same throughout the duration of the study, a room change was not made. It would be

beneficial in this particular study if more students possessed the opportunity to take part. A larger population of participants could have provided a more thorough test of the hypothesis in this study.

In order to possibly understand whether an academic test would provide better results, it would be beneficial if the students participated in timed tasks which were of relation to their current academic studies. This method could possibly illustrate a concentration level change due to the fact that the scores on the task matter for the students' grades. It remains important for research pertaining to the possible distraction that time may serve on students' concentration levels to continue so that people are better able to understand what circumstances may possibly help or hinder the academic achievement level of students.

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Figure 1

Worrying about time

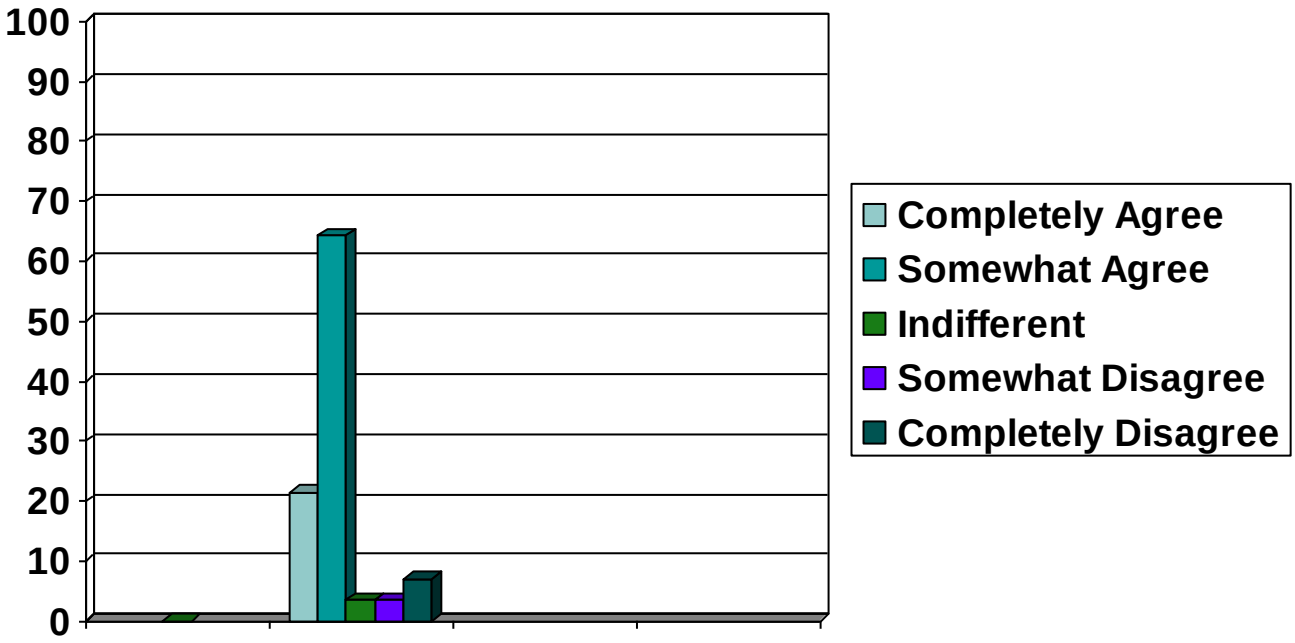


Figure 2

Time when performing a task

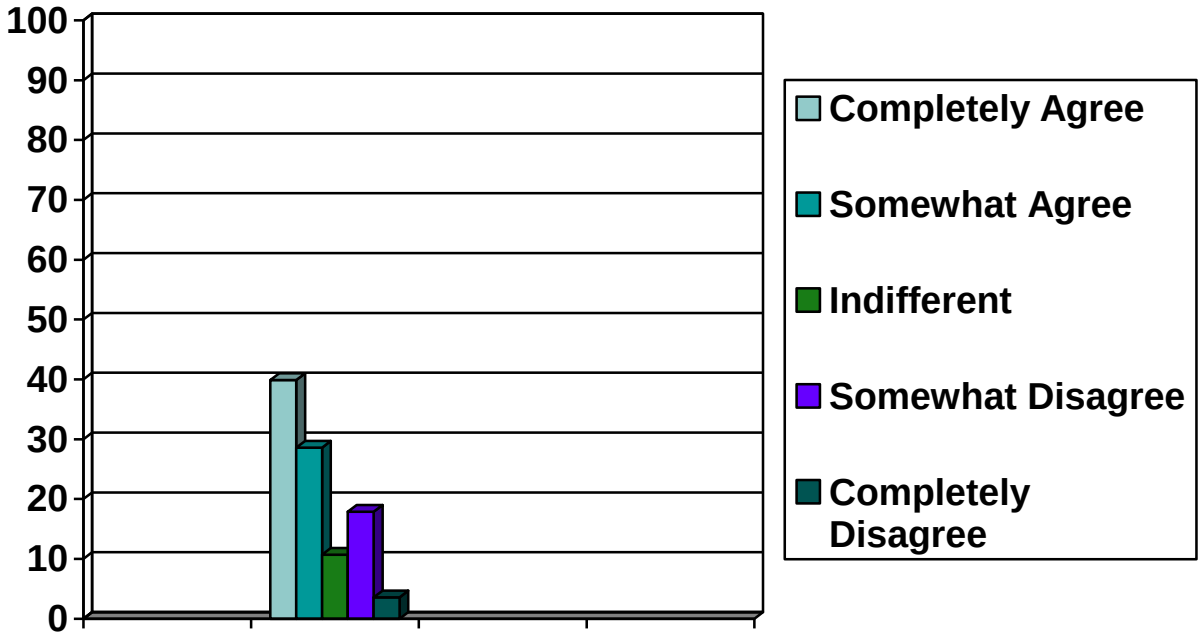


Figure 3

Concentration without knowledge of time

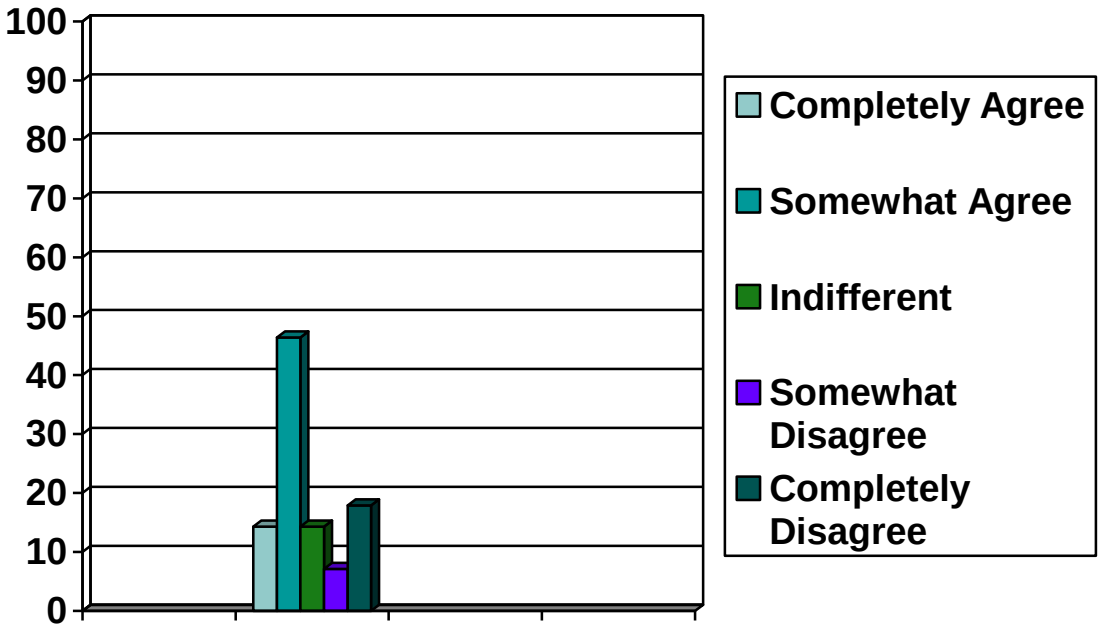


Figure 4

Enough time

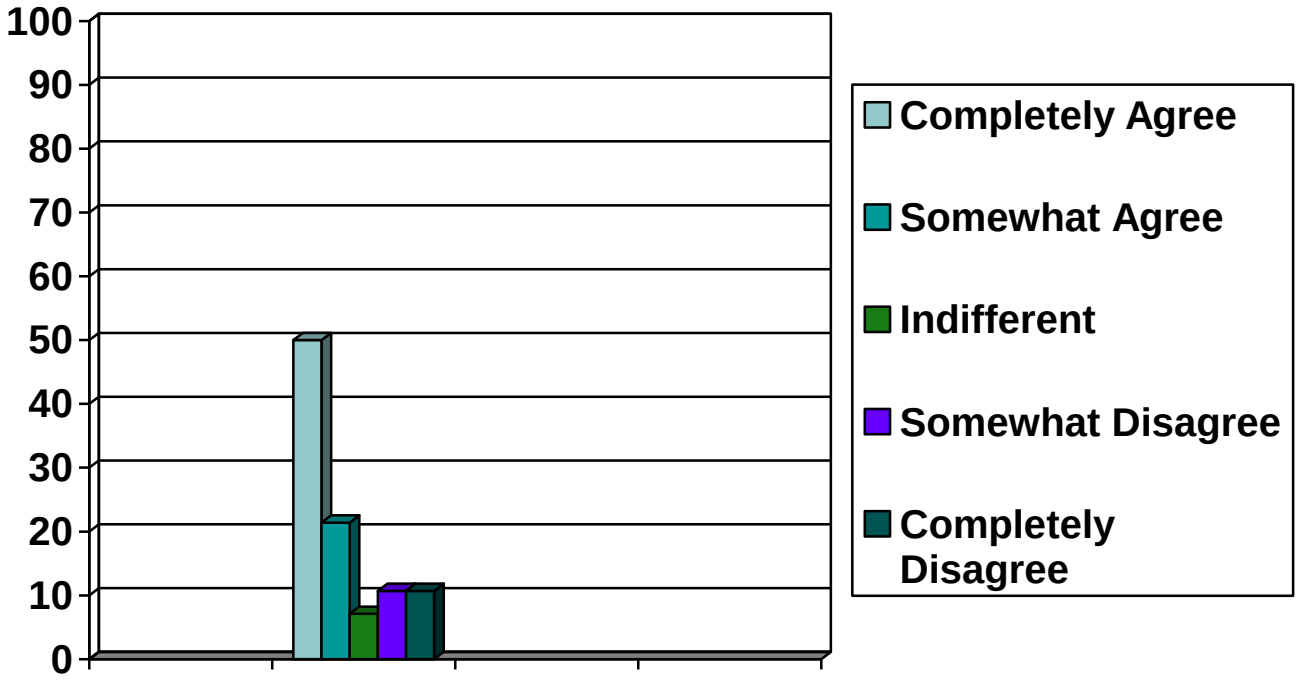
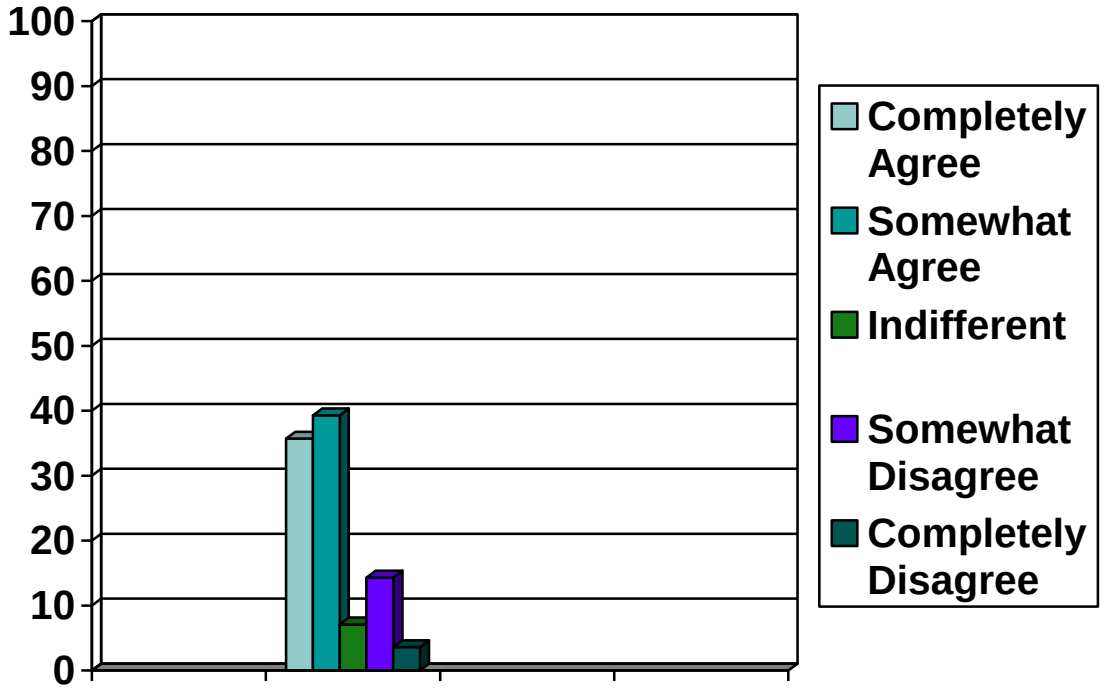


Figure 5

Concentration level affected



Appendix A

Eye exam

Individuals who wear glasses or contacts will be asked to read the letters below to ensure they are able to read the letters in the word find.

DKVJDKVLEOLS
KVKEOSVLEOSJA

Appendix B

Instructions 1

You will be given a word find to complete in ten minutes. I ask that you remove all timing devices from your body and view. I will tell you when to start and when to stop working. If you finish early, please tell me. Once the word find is over, you will be given a short survey to complete.

Instructions 2

You will be given a word find to complete in ten minutes. I ask that you remove all timing devices from you body and view. You will have a wall-clock placed in front of you, which will let you know exactly how much time you have remaining, at any one moment, to complete the word find. If you finish early, please tell me. Once the word find is over, you will be given a short survey to complete.

Appendix C

Word Find
Large Print Search and Find (2006)

DESK LUNCH
DISK MAIL
FIRE MEMO
FILE MEET
GLASS PAY
HIRE SUIT

C P F A T E M K E Y P W G L D
U L E W I N Y R S T B A E E O
K H I N U E S O I D N L E V U
K H I N U E S O I D N L P V U
K W K E S U G W V Y I D U E X
L A U N N A J L D F A S N L R
R A Y O D T R I A H C O K A K
J I B M F L H D S S H X P S W
X F V Y B U C A D P S E E B N
E S I A R O N E T S Z D C X H
Z B O R L U U I T H O I S S J
H K U Z E S L O O S X A S T J
B F B R M Y M S L N Y P O C Y
X F I J M E K I I V L K B A E
Z H R C M K E V A S H E P Y T
W W S D T M L T M S N S U I T

Appendix D

Questionnaire

Please rate your level of agreement based on a 1-5 scale.

1. Your every day life as a student requires you to worry intensely about time.

1 completely disagree
2 somewhat disagree
3 indifferent
4 somewhat agree
5 completely agree

2. When you perform a certain task, it is better that you know exactly how much time you have to complete the task at any specific moment.

1 completely disagree
2 somewhat disagree
3 indifferent
4 somewhat agree
5 completely agree

3. Students would be able to perform a task better if they did not know exactly how much time they had left to complete it in, so they could concentrate more about the task and less about the time.

1 completely disagree
2 somewhat disagree
3 indifferent
4 somewhat agree
5 completely agree

4. You had enough time to complete the task today.

1 completely disagree
2 somewhat disagree
3 indifferent
4 somewhat agree
5 completely agree

5. Your concentration level is affected if you know exactly how much time you have left to complete a task.

1 completely disagree
2 somewhat disagree
3 indifferent
4 somewhat agree
5 completely agree

Author Note

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I would like to thank your comments on earlier versions of this document.