

The Impact of Reading Habits on Scholastic Aptitude Measurements

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## Abstract

The purpose of this study was to determine whether reading habits would impact student performance on a measurement of scholastic aptitude. The measurement tool was the Preliminary Scholastic Aptitude Test (PSAT). This study involved the use of a correlational design to compare data from student responses to survey questions regarding their reading habits to their scores on the PSAT. There was a strong correlation between student reading habits and PSAT performance, though the small sample population consisted of a very specific type of student. Further research should be conducted to determine if the results from this study would extrapolate to all high school students; if so, the encouragement of extracurricular reading among high school students should be made a priority.

# CHAPTER I

## INTRODUCTION

### Overview

In many high schools there is a large push to get students into Advanced Placement (AP) classes. Part of the rationale for this effort is that the students should challenge themselves with a rigorous class load, but a less altruistic motivation for this push comes from the fact that high schools are judged in large part based on their AP numbers. With more and more students taking more and more tests, the amount of time spent preparing for the AP tests becomes staggering. Although having students who are willing to challenge themselves is not a bad problem for schools to have, there is some concern that the students could lose out on some alternative learning experiences because they are so focused on keeping up with their AP course work and studying for the exams.

One such form of an alternative learning experience would be choosing to engage in reading as a leisure activity. A student finishing a night of studying has a number of ways in which he or she could spend his or her free time that would seem to be more relaxing than opening a book. What is the point in using your imagination to picture the setting of a story when you could turn on the television and have the setting visually presented you? Why try to empathize with the characters in a novel when a quick check in with social media can instantly shed light on how your friends are feeling at that second? When does it make sense to work through the vocabulary of a technical manual in order to learn how to make or fix something when YouTube could give you the same instructions in pictures?

Given the amount of time students spend on their school work and the availability of instant gratification from a number of entertainment sources, it is understandable that students

would be less inclined to open a book. However, one is left wondering what the students are missing out on if they stop choosing to read in their leisure time and if there would be any benefit for schools to encourage students to read in their free time.

The interest of the researcher in this topic has grown from years of conversations with AP level students. It was his experience that the students who chose to read outside of the classroom are much more adept at carrying on a conversation than their peers who spend their free time pursuing other forms of entertainment. It seemed to the researcher that the readers are able to articulate themselves better and adjust to an impromptu line of questioning more quickly than their peers. Although time spent reading did not necessarily correlate to improved academic performance, this result was expected because the students could focus their study time on specific objectives when it came to what was being taught in class. However, interest in this idea of improved intellectual capacities due to leisure reading did not go away; instead, the researcher was just led to wonder if leisure reading would be beneficial to students when the measure of their success was not based on specific objectives and would force them to think on their feet.

### **Statement of Problem**

The purpose of this study was to determine the relationship between a student's leisure reading activities and his or her academic performance. The study investigated the topic by comparing student responses on a reading activities survey to their performance on the Preliminary Scholastic Aptitude Test (PSAT).

### **Hypothesis**

The amount of time students choose to read in their free time will have no relationship to their academic performance. Therefore, the reading habits of students will have no correlation to their performance on the PSAT.

## **Operational Definitions**

The variables of this study were the reading habits of a student as measured by their responses to a series of survey questions and scholarly achievement as measured by their performance on the PSAT.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

This literature review seeks to explore the relationship between brain function, intelligence, and the act of reading. Section one of the review focuses on the cognitive processes that are associated with reading. Section two of the review focuses on links between text exposure and academic performance. Section three looks into the benefits of choosing to read as a leisure activity as opposed to spending time on video games, television, or some other technological form of entertainment. The fourth section of the literature review deals with the impact of different types of text on the various facets of intelligence.

#### **Reading and Cognitive Processes**

According to Stanovich, West, and Harrison (1995) in their article about knowledge growth and acquisition, “reading is one of the primary mechanisms by which we exercise our intellectual faculties and increase our knowledge of the world” (p. 811). When one thinks about the reading process, it is easy to see how reading could be seen as practice for the brain. In general, comprehending a piece of text involves the process of first identifying symbols as words and then relating these symbols to others within sentences, paragraphs, and pages in order to construct meaning (“Literacy: Reading (later stages),” 2005). This process provides a great workout for the intellect.

Along with the cognitive practice that comes from comprehending a piece of text, skilled readers will also use the higher level cognitive skills of making inferences, interpreting the text in multiple contexts, relating ideas across multiple pieces of text, and evaluating the quality and relevance of the material that they are reading (“Literacy: Reading (later stages),” 2005). Each of these skills in and of itself is important for the development of the brain, but when

experienced readers consistently practice these skills in conjunction with each other and across multiple types of text, there are bound to be improvements in all areas of their cognitive development.

### **Text Exposure and Academic Success**

Taking the perspective that reading is cognitive practice for the brain, it would seem clear that increased exposure to text would lead to academic success, but external variables often make it difficult to isolate the impact of text exposure on academic success. However, according to Cunningham and Stanovich (1991), many independent tests have shown that “print exposure is a significant unique predictor of spelling, several measures of word and vocabulary knowledge, and general world knowledge. General ability does not account for the link between print exposure and verbal skill, nor does general ability in combination with phonological coding ability” (p. 270). This information is corroborated by Hall, Chiarello, and Edmondson (1996) who declare that “differences in exposure to information, particularly, written sources of information, is a significant contributor to differences in knowledge across individuals” (p. 305). The results of these studies are not surprising because, if reading is practice for the brain, more practice is bound to lead to improvements on knowledge-based academic tasks.

### **Leisure Time Activities**

In looking at reading as a positive use of leisure time, it is important to compare the impact of reading to other leisure time activities. Modern technology provides people with a multitude of ways to keep themselves busy in their free time. From television and video games to the vastness of the internet and social media, there are countless ways for people to keep their minds occupied. Though these modern forms of entertainment can seem very engaging, there is some question as to whether or not these activities are detrimental to the intellectual development

of the participant. In fact, research has consistently indicated that reading displays higher correlations with world and cultural knowledge than does television viewing (Stanovich et al., 1995).

One idea held by researchers, known as the inhibition hypotheses, suggests a negative correlation between television viewing and academic achievement because “viewing displaces time that children could otherwise spend on leisure reading and other activities that are thought to promote reading skills” (Ennemoser & Schneider, 2007, p. 349). However, there is also some support for what is known as the facilitation hypotheses which basically states that appropriate academic content in whatever the form could actually facilitate intellectual growth (Ennemoser & Schneider, 2007). There is some evidence supporting the facilitation hypotheses, namely “the prediction that *Sesame Street* viewing contributes to preschool children’s vocabulary development (which) was supported in a longitudinal study” (Ennemoser & Schneider, 2007, p. 350).

According to Mol and Bus (2011), “it is not difficult to show that more highly differentiated lexical knowledge can facilitate processing in a wide variety of psycholinguistic and cognitive domains. Vocabulary is thus a knowledge base that is important for certain aspects of cognition, and it is certainly tempting to attribute variability in vocabulary size to experiential differences” (p. 211). As logical as these conclusions may seem, it is still very difficult to separate the influences of text exposure or TV and video game exposure from a variety of other influences, such as socioeconomic status and parental involvement, that could impact the cognitive development of an individual.

Research has shown that text exposure can be a very effective predictor of intellectual ability in two instances. The first of these instances is the case of low-ability readers. Print

exposure is specifically important for low ability readers. Mol and Bus (2011) found that “basic reading skills of children in primary and middle schools with a lower ability level were more strongly related to print exposure as compared with high ability readers” (p. 287).

In a separate study, Stanovich and Cunningham (1993) sought to compare the impact of reading and television viewing on general knowledge measures and found that print exposure could, in fact, be predictive of general knowledge skills when initial cognitive abilities were factored out of the measures. According to that study, “there does appear to be differential exposure to information, primarily through the medium of reading, and this differential exposure is predictive over and above general cognitive ability. Not only was print exposure a significant unique predictor, but it was more potent predictor than the ability measures” (Stanovich & Cunningham, 1993, p. 224). As for television, Stanovich and Cunningham went on to say that “In cases in which television did display associations with knowledge measures, the relationships tended to be negative” (p. 224).

Although far from conclusive, the benefits of print exposure over television or video exposure with regard to cognitive development seem to be supported by academic research.

### **Reading Choices**

If reading is important to the cognitive development of an individual, then does the choice of reading material make a difference? This is the next logical question if one has already assumed that there is a direct correlation between print exposure and intellectual development.

The difference in reading choices of males and females has been well documented. One British study found that “Girls’ book-reading choices are overwhelmingly dominated by narrative fiction,” (Coles & Christine, 2002, p. 106) while boys share a “reading diet of often rather dense statistical and biographical information about soccer, the players, league tables,

transfer fees, computer games, prices and computer cheats. The sports magazines reflect the language and style of television sports coverage, and, in doing so, reinforce a common vocabulary and set of conversational topics that can be heard amongst boys in school playgrounds throughout Britain” (Coles & Christine, 2002, p. 104). While not surprising, these results shed some light on differences in academic performance in the area of reading across the genders because school curriculum is often more in line with the girls’ reading choices which have a focus that is more of an “inward-looking one: using literacy to cement values, create group cultures, and function as an aspect of social discourse” (Coles & Christine, 2002, p. 106)

While these findings make sense in relation to academic performance, they also call to mind the idea of multiple intelligences. Narrative fiction has a storyline in which the “plot, goals, and characters in the narrative might primarily be driven by the navigation and resolution of interpersonal interactions and relationships” (Fong, Mullin, & Marr, 2013, p. 373). The individual who chooses to read this type of text is bound to become very aware of the feelings of those around them and become adept at dealing with complex interpersonal situations. On the other hand, someone who decides to read nonfiction or statistic-based information, like the boys in the British study, is bound to increase his or her general worldly knowledge, and using this knowledge to engage in discourse can greatly increase communication skills. The benefits of reading different types of text lead one to wonder whether there is a perfect balance when it comes to reading choices and the development of a well-rounded intelligence.

### **Conclusion**

Research clearly indicates that the act of reading provides intellectual stimulation which will lead to improved cognitive development when compared to other forms of entertainment. Also, exposure to different types of text will help to develop the worldly knowledge of students

as well as their ability to empathize with the world around them. The question that begs to be asked is whether or not print exposure will have any measureable relationship to the scholastic aptitude of an individual student. The purpose of this study is to determine if the reading habits of an individual student could be used to predict his or her performance on a standardized test of academic achievement.

## **CHAPTER III**

### **METHODS**

This study examined the relationship of reading habits to scholastic achievement measured by performance on the PSAT.

#### **Design**

This study used a correlational design in which students enrolled in an AP-level science course completed a survey regarding their reading habits. The independent variable was the students' responses to the survey questions regarding their reading habits. The dependent variable was the students' performance on the PSAT that was taken during the fall of students' 11<sup>th</sup> grade.

#### **Participants**

The study took place at a large, four-year public high school located in a suburban setting. The participants in the study were all enrolled in an AP-level science course. The AP-level students were chosen partially out of convenience but also because they were overwhelmingly college-bound and therefore were motivated to do their best on the PSAT. The study included 44 males and 45 females. The ethnic breakdown of the participants was as follows: 58 Caucasian, 26 Asian, three Hispanic, and two African American. There were 88 juniors and one senior included in the group.

#### **Instrument**

The instrument for this correlational study was a five-question survey that provided information about the reading habits of the students as well as their attitudes toward leisure reading. The survey was created by the researcher, and it was not tested for reliability or

validity. The results of this survey were then compared to the PSAT scores (total, language, and math) for the individual students.

### **Procedure**

The students completed the survey outside the classroom setting using an online polling resource from Microsoft Excel. The researcher was then able to compare students' responses to their PSAT performance to analyze the impact of reading habits and attitudes on scholastic performance. The survey should have taken the students less than 10 minutes to complete. Since the students were responsible for self-reporting while taking the survey, there is no way of knowing whether or not the students were completely honest in their responses.

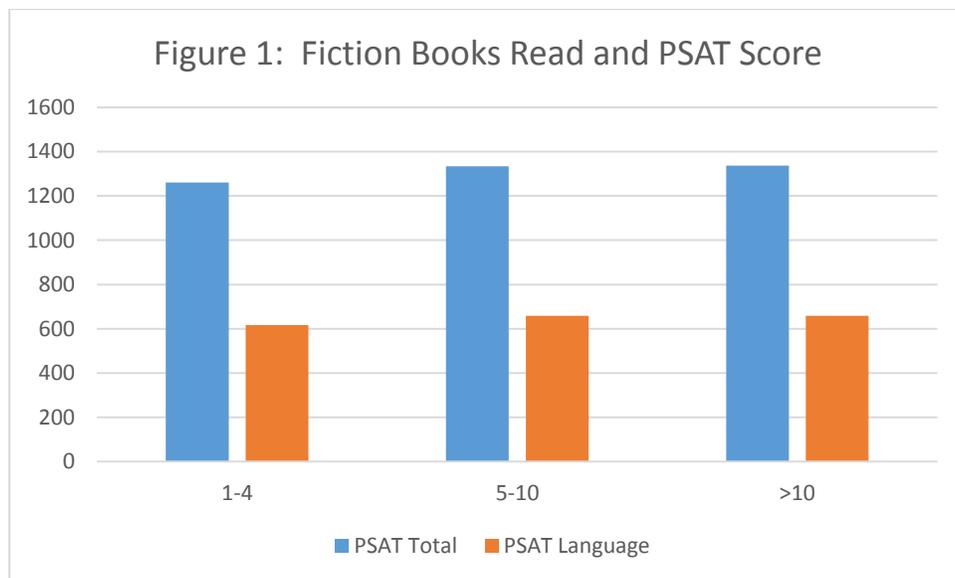
## CHAPTER IV

### RESULTS

A one-way analysis of the survey questions was used to determine whether there was a correlation between the student responses and performance on the PSAT exam. A post-hoc analysis was also used to evaluate any differences between PSAT scores for any of the particular responses to the survey questions. The findings from this statistical analysis are detailed below.

#### Relationship to Reading Fiction

The one-way analysis of variance (ANOVA) revealed that reading fiction had a significant impact on total PSAT score  $F(2,84) = 4.067, p < .05$ . Reading fiction also had a significant impact on students' language PSAT scores  $F(2,84) = 4.046, p < .05$ . Figure 1 shows how the mean PSAT score and language PSAT score improved when students reported reading five or more fiction books in the past year.

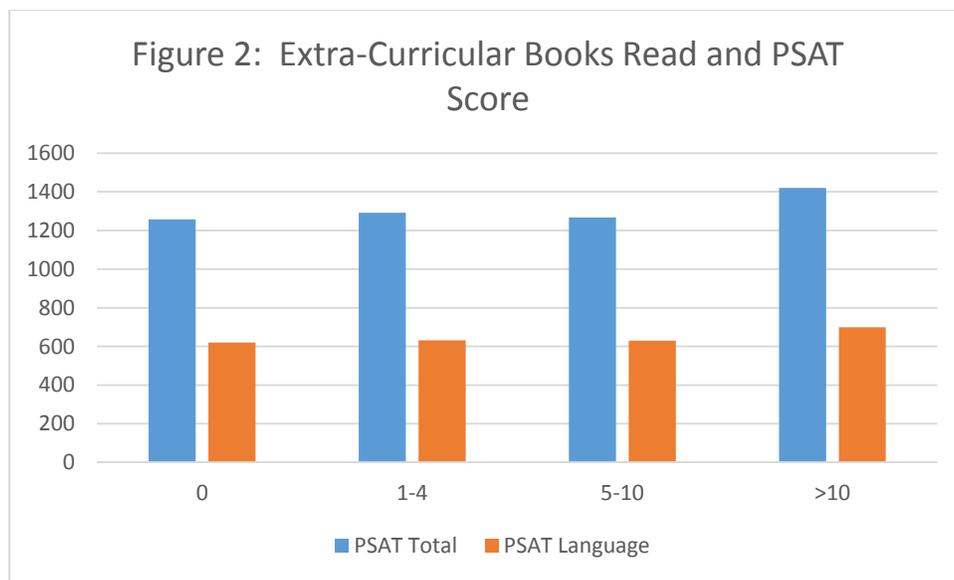


A post-hoc analysis of the difference in PSAT scores between the number of fiction books that were read indicated difference in PSAT scores for the students who reported reading more than five fiction books in the past year ( $M = 1334.35$ ) and the students who reported

reading one to four fiction books in the past year ( $M = 1260.68$ ). However, there was no significant difference in scores between the students who read five to 10 fiction books and the students who read more than 10 fiction books ( $M = 1337.50$ ).

### Relationship to Extracurricular Reading

Analysis of student responses to the question “In the last year, how many of the books you read were not assigned?” also showed a significant relationship between student responses and PSAT scores. A one-way analysis of variance indicated a significant relationship,  $F(3,84) = 5.227$ ,  $p < .05$  to total PSAT score. Extracurricular reading also had a significant impact on PSAT language scores [ $F(3,84) = 4.164$ ,  $p < .05$ ]. Figure 2 highlights the differences between the students who reported reading 10 or more unassigned books and the rest of their peers.



A post-hoc analysis of the scores for number of unassigned books read indicated a significant difference (LSD)  $p < .05$  between the students who reported reading 10 or more unassigned books ( $M = 1420.83$ ) and those who read zero ( $M = 1257.65$ ), 1-4 ( $M = 1292.17$ ), or between five and 10 ( $M = 1267.69$ ) unassigned books. However, there was no significant difference in PSAT scores between any of the other groups of respondents.

### Relationship with Attitude toward Reading

Another area where there appeared to be a significant relationship between student response and PSAT score was in the answers to the questions “What is the main reason you did not read more last year?” The analysis revealed a significant relationship to total PSAT score,  $F(3,83) = 3.646, p < .05$ . The attitude of the student towards reading also had a significant impact on PSAT language scores,  $[F(3,83) = 4.327, p < .05]$ .

For this question a post-hoc analysis of the difference in PSAT scores for the different groups showed a significant difference (LSD)  $p < .05$  between the students who felt they did not have the time to read more ( $M = 1321.53$ ) and the students who did not enjoy reading ( $M = 1195.45$ ). Although there were no significant differences between any other groups of respondents, Table 1 shows a drop off in the mean PSAT scores for the students who did not enjoy, or avoided, reading and the students who did not read more due to time issues.

Table 1

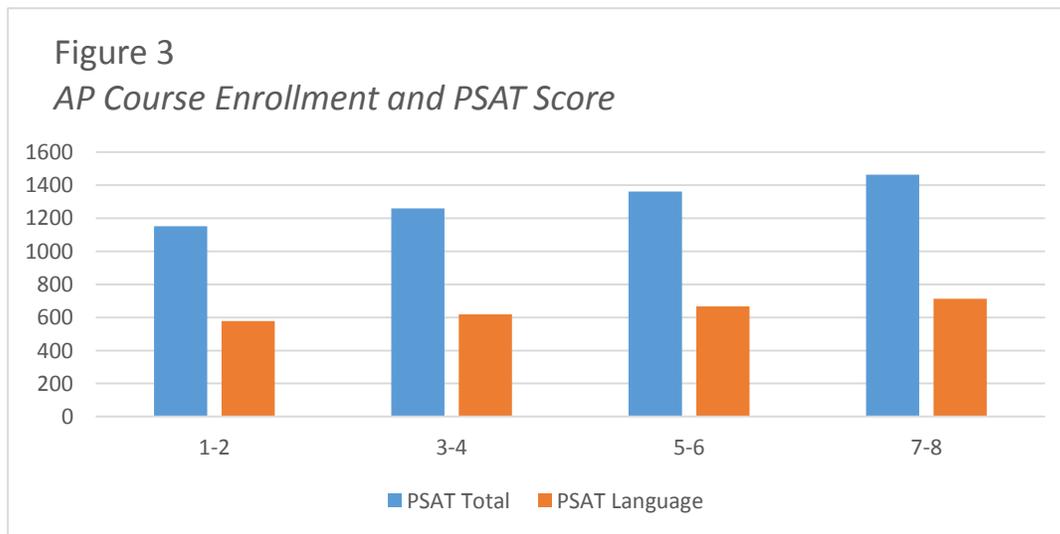
*Students’ Attitudes towards Reading and PSAT Scores*

<b>Student Response</b>	<b># of Responses</b>	<b>Mean PSAT Total</b>	<b>Mean PSAT Language</b>
I do not have time.	59	1321.5	651.7
I read too slowly.	6	1313.3	643.3
I do not enjoy reading.	11	1195.5	580.9
I prefer to view a video with the same information.	11	1264.5	610.9

### Relationship to Advanced Placement Course Enrollment

The one-way analysis also indicated that student enrollment in AP courses also had a significant relationship to PSAT score  $[F(3,84) = 10.076, p < .05]$ . AP course enrollment also had a significant relationship to the language PSAT scores of the students  $[F(3,84) = 6.295, p <$

.05]. Figure 3 shows the steady improvement in PSAT scores as the number of AP courses increases.



For these responses the post-hoc analysis of differences between groups showed no significant difference between the students taking five to six ( $M = 1361.51$ ) or seven to eight AP courses ( $M = 1463.33$ ). There was also no significant difference between the students taking one to two ( $M = 1152.5$ ) or three to four AP courses ( $M = 1258.75$ ). However, there was a significant relationship to the students who took five or more AP courses on both the PSAT total and language scores.

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to analyze the relationship between reading habits and scholastic aptitude. It was hypothesized by the researcher that the reading habits of a student would have no impact upon his or her performance on a scholastic aptitude test. In comparing students' responses to a reading survey with their performance on the PSAT exam, it was clear that reading habits and attitudes toward reading actually did impact student scores, thus rejecting the null hypothesis. It was found that the students who read more fiction, read more unassigned books, and listed time as their only constraint for not reading more performed considerably better on scholastic aptitude measurements than their peers who were less inclined to read.

#### **Implications of Results**

Given the clear link between performance on the PSAT and reading habits, every effort should be made to encourage students to read more; specifically, they should read more fiction. It should also be noted that educators and families should look for ways to help students find enjoyment in reading. The biggest indicators of improved PSAT performance were students' attitudes toward reading as described by their choice to read outside of their assigned curriculum and the indication that they would have read more if they had time.

#### **Threats to Validity**

The main threat to the validity of these findings is the fact that the researcher used a convenience sample consisting of only high achieving students who were all taking at least one Advanced Placement course. Survey responses were also able to link performance on the PSAT directly to enrollment in AP courses, so it is difficult to say whether it was the reading habits or the difficulty level of their classes that led to students' improved test scores.

### **Connections to Existing Literature**

Previous sections of this study referenced various ways in which the act of reading provided practice for the brain. From visualization of a scene to empathizing with the emotions of a character, reading activates a number of different parts of the brain. The results from this study indicate that the practice provided by reading does have a beneficial impact when it comes to scholastic aptitude testing.

### **Implications for Future Research**

In order to isolate the relationship between reading habits and scholastic aptitude, future studies should be opened up to a larger number of respondents in order to look for trends in a heterogeneous group. By first placing students into groups based on the rigor of their coursework and other purely scholastic measures and then analyzing the influence of their reading habits, the research would give a better reflection of whether or not the initial hypothesis was correct.

### **Conclusion**

If the results of this article are to be accepted and reading choices do lead to improved scholastic aptitudes, there are a number of new questions that need to be considered. How do we motivate kids to read more? How do we encourage kids to read more fiction? How can we instill a love of reading? When do kids lose interest in reading? Can we give kids more time to read?

While these questions are broad and far reaching, they are also very important points to consider if reading is as beneficial as the research from this study indicates. As technology continues to make an incredible amount of information and entertainment readily accessible, it is more important than ever for educators to find a way to build students' interest in reading. Although reading is more difficult than finding a video or playing a game, the benefits of the

mental stimulation experienced while reading a work of fiction cannot be ignored. Hopefully the findings from this review can be used as a starting point for convincing students that reading is a worthwhile endeavor.

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