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SOCIAL MEDIA, ANXIETY, AND READING ACHIEVEMENT IN ELEMENTARY STUDENTS

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STUDENTS

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Abstract:

The purpose of this study is to explore the relationship between perceived social media usage, academic achievement in reading, and anxiety. This study looked at a second grade classroom in ASFM consisting of 21 bilingual Mexican students, 11 boys and 10 girls. Perceived social media usage was measured using a survey, academic reading achievement was measured using Fountas and Pinell reading levels and anxiety was measured using the Children's Test Anxiety Scale (CTAS) by Wren and Benson (2004). Each variable was then analyzed on its own through the use of descriptive statistics and bar graphs; then, each dependent variable was compared against the independent variable using a t-test and scatter-plot. This study found that there is a positive moderate correlation between perceived social media usage and academic achievement in reading; as perceived social media usage increases so does the likelihood of higher reading scores. Additionally this study found a weak positive correlation between perceived social media usage and test anxiety scores; as perceived social media usage increases the likelihood of higher test anxiety scores increases as well.

Introduction to the Research Problem

The COVID-19 pandemic brought an increase in the use of social media, online communication and electronic devices. As use increases it is important to know the effects that social media can have on individuals, especially children who we know use the platforms despite age restrictions. The prevalence of social media has increased. The Pew Research Center (2021), has studied the use of social media and shows that in 2005, 5% of adults in the United States [U.S.] used a social platform and now 72% of the public engages in social media platforms. In the United States (U.S.), YouTube is the most popular social media platform with 81% of adults using the platform, Facebook falls in second with 69%, Instagram in third with 40% and Pinterest in fourth with 29% (Pew Research Center, 2021). Most research is based on U.S. adults, making this an interesting area of research.

Scholars have found a significant correlation between anxiety, stress and social media; one study specifically showed that one in five Americans find the use of technology as a source of stress (American Psychological Association, 2017). Experts have long studied the connection between anxiety, stress and academic performance. Anila and Dhanalakshmi (2016) claim that students who experience psychological problems such as anxiety, stress and tension often have difficulty concentrating on their studies, thus affecting their academic performance and the ability to control their emotions and feelings. Moreover, social research found a link between internet usage and a shift in reading abilities in adults. In his book, *The Shallows: What the internet is doing to our Brain*, Nicholas Carr concludes, "the neural circuits devoted to scanning, skimming and multitasking are expanding and strengthening, while those used for reading and thinking deeply, with sustained concentration, are weakening or eroding (Carr, 2011). Similarly,

Ziming Liu, in her research found a change in reading habits noting adult readers are now reading at a more superficial level. In their research, Carr and Liu focus on the internet as a whole and the effect on adults; for our research we took a closer look at social media specifically in regards to second grade students.

For this study we investigated private school students in Monterrey, Mexico aged seven to nine. While social media platforms contain age restrictions, as teachers, we know students still participate in the use of them. This claim is supported by other sources that find, a third of Tik Tok users may be under the age of 14 (Zhong, Frenkel, 2020). The purpose of this research is to help expand the claim that social media impacts academic performance, specifically reading scores, in children in elementary grade levels. Reading scores were measured according to the Fountas & Pinnell Benchmark Assessment Systems. This study gathers data on social media usage for students ages seven through nine years old at the American School Foundation of Monterrey [ASFM], and seeks to find a relationship between the usage of social media and reading levels and between the use of social media and anxiety.

As previously mentioned, there has been a lot of research conducted in teenagers and adult populations in regards to social media and academic performance, but there is not a lot of information about younger students, who despite age restrictions on platforms are still active users of various social media platforms. There is a gap in the literature which we hope our research fills as we focus on individuals whose relationship towards social media has not been explored in such depths especially with regards to an academic setting.

From our experience as educators we are aware and concerned by the high social media usage occurring in students at such an early age. Additionally, the pandemic brought on an increase in social media usage thus increasing the relevance of the topic.

Review of Literature

The effect of modern technology on our psychological well-being is a topic that has been studied by scholars since its early adoption into households. In 1998, during the rise of the world wide web, Kraut et al. studied the psychological well-being of individuals where the internet was being adopted into their households and concluded that internet use increased depression and loneliness (Kraut et al., 1998). A 2020 study found a correlation between the intensity of social media use and social media fatigue (Malik et al.); this study cites, Lee et al. to define social media fatigue as self-regulated and subjective feeling of tiredness that results from using social media platforms (2016).

The relationship between socio- emotional well being, specifically anxiety, and learning has been a popular area of interest for educators, psychologists, and social scientists. Ameringen et al. conclude that anxiety disorders are an important factor in determining academic achievement and dropout rates (Ameringen, Mancini & Farvolden, 2003). Narrowing focus to just anxiety and reading scores, Pollack et al. research shows that, students with higher academic competence had lower anxiety scores (2021). Most research surrounding social media and academics has looked at undergraduate and graduate students. Junco's longitudinal research concludes that time spent on Facebook was strongly and significantly negatively related to GPA (2012). This claim is supported by Kirthner and Karpinskis findings, stating that Facebook users reported having lower GPAs and spent less time studying than nonusers and similarly Shen's work looking at undergraduate biology students and all social media platforms comes to the same conclusion (2010, 2019). Research looking specifically at children has not been narrowed towards social media specifically, most research addresses mass media, and looks at screen time

including but not limited to TV and video games. A study by Berch et al. finds that children who watched larger amounts of bedroom screen time resulted in outcomes such as poor school performance (2017). A study by Casey et al. expands on this claim by categorizing and exploring the differences between types of mass media. In their study they found that, (2012) that searching for information is positively associated with higher reading scores while messaging, downloading movies and music are negatively associated with reading scores.

There is conflicting research about the effect of social media in reading abilities and habits. Rafiq et al. outline both the positive and negative effects of social media; on the positive side they note how the use of social media facilitates access to information while on the negative side they note it hinders study by being distracting (2020). Tenopir and Valentine suggest that the use and creation of social media content increases the amount of scholarly material read by scholars (2013). While other experts on the topic, Ghassemi et al. who focus their work specifically on reading levels and social media use for pharmacists and find no correlation between the two (2019). This study looks specifically at pharmacists while the population of this study is specifically elementary students.

Research Purpose and Questions:

Purpose

Previous research indicates a link between internet usage and social media in adult anxiety and internet usage and changes in reading habits. This study seeks to find how the latter influences elementary school students aged seven to nine. The purpose of this project was to explore how social media affects anxiety and reading levels. Our findings give educators and

parents information that allow them to make more informed decisions about guidelines they can set for students regarding social media.

Questions

1. Does the use of social media affect the reading level of students aged seven through nine at ASFM?

2. Does the use of social media increase anxiety in students aged seven through nine at ASFM?

Hypothesis

1. Students who use more social media have lower reading achievement than students who are less exposed to social media.

2. Social media increases anxiety in students aged seven through nine.

Variables

Independent Variable

Social media

Dependent Variables

Reading level and anxiety.

Definition of Terms

Anxiety

"Anxiety is an emotion characterized by feelings of tension, worried thoughts […] usually have recurring intrusive thoughts or concerns" (APA, 2021).

Reading Level

A variety of assessment tools to determine how well a student reads, and indicates which level of books they should read that are challenging enough for them to progress. The books are categorized into levels of difficulty (Scholastic, 2021).

Fountas and Pinnell

"The Fountas & Pinnell Benchmark Assessment Systems are accurate and reliable tools to identify the instructional and independent reading levels of all students and document student progress through one-on-one formative and summative assessments" (Fountas, Pinnell, 2021).

Social Media

"Websites and computer programs that allow people to communicate and share information on the internet using a computer or mobile phone" (Cambridge Dictionary, 2021).

Methodology

Subject Pool

This study was conducted in a second grade classroom at ASFM. The class consists of 21 bilingual Mexican students, 11 boys and 10 girls. We first asked permission from parents for their children to participate in the study (see Figure 1).

State University of New York
Parent Consent Form

Title of Study: DOES THE USE OF SOCIAL MEDIA AFFECT ACADEMIC
PERFORMANCE IN ELEMENTARY STUDENTS?

Researchers: Maria A. Julian Quintanilla
Mercedes Villarreal Hinojosa
Viviana Elizondo Marcos

Supervisor: Joan Della Valle

Description: Given previous research indicating a link between internet usage and
social media in adult anxiety and internet usage and changes in reading habits. This
study will seek to find how the latter influences elementary school students aged
seven to nine. The purpose of this project will be to explore how social media affects
anxiety and reading levels. Our findings will provide educators and parents with
information that will allow them to make more informed decisions about guidelines
they can set for students regarding social media.

I hearby give my permission for _____, a
minor to participate in the study "Does the use of social media affect
academic performance in elementary students?". I understand that no
personal information will be disclosed for research findings.

_____   _____
Parent or Guardian signature   Date

(Figure 1) Parental Consent Form

Instruments

Measuring reading levels

To measure academic performance we used reading scores. ASFM uses the Fountas and Pinnell benchmark assessment system. We used this already gathered data to measure students' reading ability since it is both validated and reliable.

Measuring social media usage

We conducted a survey that asked students to circle how much time they believed they spent on social media per week.

How much time do you spend per week on social media?

    a. 0min
    b. 0-20min
    c. 20-40min
    d. 40-60min
    e. 60-80min
    f. 80-100min
    g. 100-120min
    h. 120-140min
    i. 140-160min
    j. 160-180min
    k. 180-200min
    l. 200-220min
    m. 220-240min
    n. 240-260min
    o. 260-280min
    p. 280-300min
    q. 300+min

(Figure 2) Student Survey

Measuring anxiety

To gather information on student anxiety we administered the Children's Test Anxiety Scale (CTAS) by Wren and Benson (2004) (see Figure 3).

Item	1- almost never	2 -some of the time	3- most of the time	4 - almost always
1. I think I am going to get a bad grade.				
2. I think about what will happen if I fail.				
3. I worry about what my parents will say.				
4. I worry about failing.				
5. I worry about doing something wrong.				
6. I wonder if I will pass.				
7. I think about what my grade will be.				
8. I think most of my answers are wrong.				
9. I think about how poorly I am doing.				
10. I worry about how hard the test is.				
11. I think that I should have studied more.				
12. I wonder if my answers are right.				
13. It is hard for me to remember the answers.				
14. I look around the room.				
15. I look at other people.				
16. I stare.				
17. I check the time.				
18. I find it hard to sit still.				
19. I tap my feet.				
20. I play with my pencil.				
21. I try to finish up fast.				
22. I feel nervous.				
23. My heart beats fast.				
24. I feel scared.				
25. My head hurts.				
26. My face feels hot.				
27. I feel warm.				
28. My hand shakes.				
29. My belly feels funny.				
30. I have to go to the bathroom				

(Figure 3) Children's Test Anxiety Scale

This test consists of 30 items or phrases which students will answer according to a Likert scale (1- almost never, 2- some of the time, 3- most of the time, 4- almost always). The test measures anxiety across three dimensions (thoughts, autonomic reactions, and off-task behaviors). We chose this Anxiety Test because it was created to specifically measure anxiety in

students aged seven to nine. Additionally we found this test to be relevant for students today while other tests were outdated.

Data Collection Plan

We found the descriptive statistics for all three of our variables; reading levels, anxiety and perceived social media usage. We performed t-tests between variables and found Pearsons correlation between each pair of variables.

Findings

Reading Levels

RR NUMERICAL	
Mean	14.47619048
Standard Error	0.3492784918
Median	15
Mode	15
Standard Deviati	1.600595127
Sample Variance	2.561904762
Kurtosis	1.544612938
Skewness	-1.286573889
Range	6
Minimum	10
Maximum	16
Sum	304
Count	21
Confidence Leve	0.7285821524

Figure 5: Descriptive Statistics

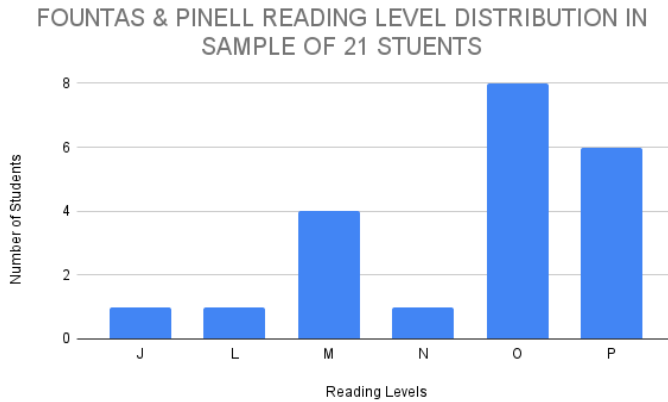FOUNTAS & PINELL READING LEVEL DISTRIBUTION IN SAMPLE OF 21 STUENTS

Figure 4: Bar Chart (Visualization)

In order to conduct descriptive statistics, for academic achievement in reading each reading level was assigned a number, A=1, B =2 and so on. Our study found, as seen in Figure 5, for our descriptive statistics, the median achievement in our sample is level O, the modal level is O, the minimum is level J and maximum is level P. The mean for the reading levels in our sample was 14.47, meaning that it is between reading levels N and O. In Figure 4, we can see a visual representation of our findings, each reading level is represented by the letter along with the amount of students in each reading level at the end of the year. According to Fountas and Pinell, students exiting second grade should be above a level M in reading, thus the results indicate most students in the sample meet an appropriate reading level.

Anxiety

ANXIETY	
Mean	49.71428571
Standard Error	2.456422929
Median	49
Mode	49
Standard Deviati	11.25674401
Sample Variance	126.7142857
Kurtosis	1.537758409
Skewness	1.149544078
Range	46
Minimum	31
Maximum	77
Sum	1044
Count	21
Confidence Leve	5.124008339

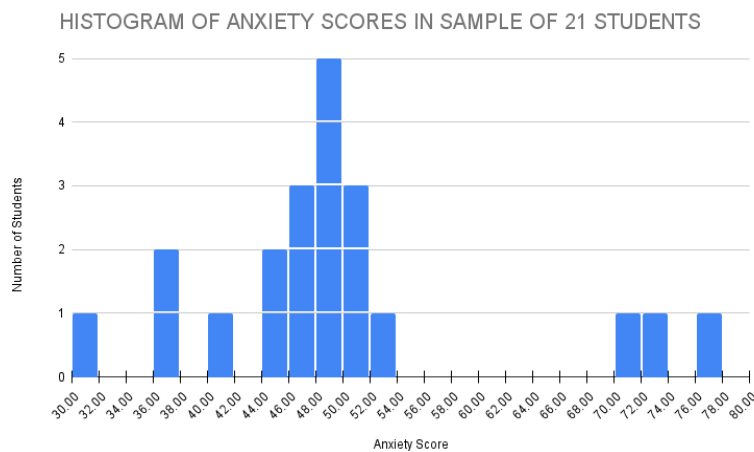*Figure 6:Descriptive Statistics*

Figure 7: Histogram (Visualization)

Our analysis of our anxiety survey shows, the mean is 49.71, the median and modal answers are both 49. There is a range of 46, where the minimum is 31 and the maximum is 77. We can see a visual representation seen in Figure 7, of the descriptive statistics shown in figure 6. In a study conducted by Wren and Benson (2004) ,who developed the Children's Test Anxiety Scale the median result for school aged children in the United States was 61.97, our results therefore revealed lower anxiety levels for students in our sample when compared to those in Wren and Benson's study.

Social Media

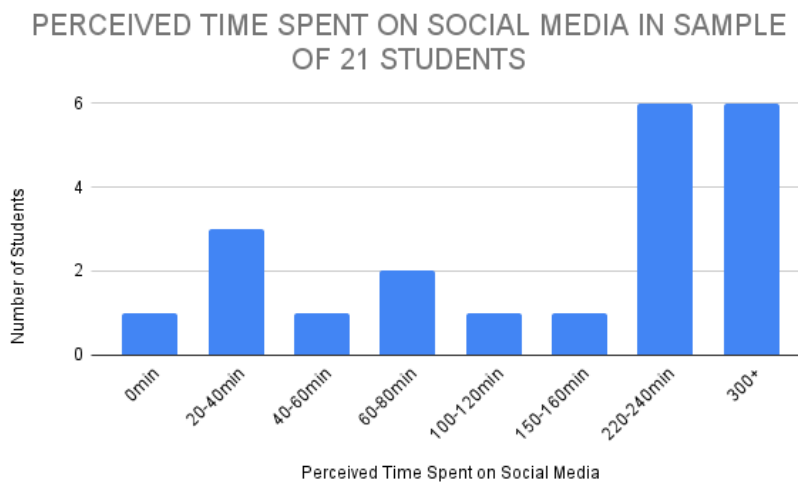| Social Media	
Mean	9.476190476
Standard Error	1.26042141
Median	12
Mode	16
Standard Deviati	5.77597652
Sample Variance	33.36190476
Kurtosis	-1.551303843
Skewness	-0.2831920695
Range	16
Minimum	0
Maximum	16
Sum	199
Count	21
Confidence Leve	2.629192938

Figure 8: Descriptive Statistics

Figure 9: Visualization

In order to conduct our descriptive statistics for perceived time spent on social media as seen in Figure 8, each time range was assigned a number 0 to 16. 0min =0, 1=0-20min, 2= 20-40min and so on. Our descriptive statistics show a mean of 9.47. A mean of 12 meaning 220-240 minutes per week. This means that students in this sample spend an average of 220- 240 minutes per week on social media. A mode of 16 means that several students in the sample spend more than 300 minutes weekly on social media. As seen in our Figure 9, visualization, the data is

skewed to the right, which means that there are more students that use social media weekly than

no social media per week.

Reading Levels and Social Media

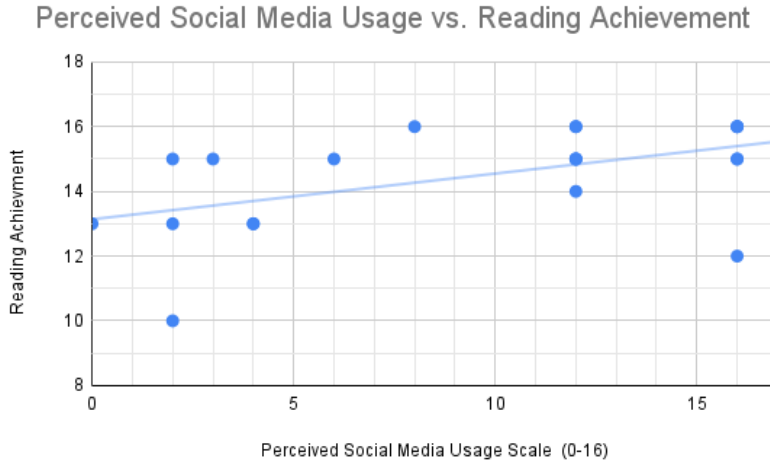| t-Test: Paired Two Sample for Means		
	Reading	Social Media
Mean	14.47619048	9.476190476
Variance	2.561904762	33.36190476
Observations	21	21
Pearson Correlat	0.509670614	
Hypothesized Me	0	
df	20	
t Stat	4.450990986	
P(T<=t) one-tail	0.000122621662	
t Critical one-tail	1.724718218	
P(T<=t) two-tail	0.000245243325	
t Critical two-tail	2.085963406	

Figure 10: t-Test

Figure 11: Scatter plot

To compare reading levels and social media usage we used a t-test as shown in figure 10.

Pearsons Correlation between reading levels and perceived social media usage is 0.509, this is a

moderate positive correlation. A value of $p < .001,$ shows there is a statistically significant

relationship. As seen in Figure 11, scatter plot, more time spent online, shows an increased

likelihood of a higher level of academic achievement in reading.

Anxiety and Social Media

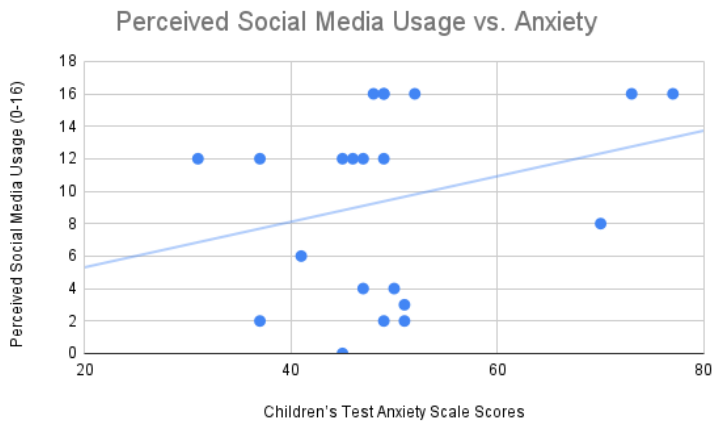| t-Test: Paired Two Sample for Means		
	Anxiety	Social Media
Mean	49.71428571	9.476190476
Variance	126.7142857	33.36190476
Observations	21	21
Pearson Correlat	0.2736575805	
Hypothesized Me	0	
df	20	
t Stat	16.52642806	
P(T<=t) one-tail	0.0000000000001989	
t Critical one-tail	1.724718218	
P(T<=t) two-tail	0.0000000000003978	
t Critical two-tail	2.085963406	

Figure 12: t-Test

Figure 13: Scatter plot

As seen in the Figure 12, t-test, our study found that a Perarson's Correlation is 0.27, meaning

that there is a weak positive correlation between anxiety and the use of social media. As the use of social

media increases the likelihood of higher test scores on the Children's Test Anxiety increases. A value of p

$< .001$ shows there is a statistically significant relationship.

Discussion

Hypothesis 1

Students who use more social media have lower reading achievement than students who are less exposed to social media.

● Our findings do not support our original hypothesis. As shown by a Pearson's Correlation coefficient of .509 there is a positive moderate correlation between reading achievement and social media usage. As the use of social media increases the likelihood of higher academic achievement in reading increases as well. This is a statistically significant relationship between reading level and social media shown by a p value of <.5.

Hypothesis 2

 Social media increases anxiety in students aged seven through nine.

● Our findings support our original hypothesis. A Pearson's Correlation Coefficient of 0.29 shows there is a weak positive relationship between social media use and academic achievement in reading. As the use of social media increases the likelihood of higher test anxiety scores in children increases as well. This is a statistically significant relationship between reading level and social media shown by a p value of <.5.

Other Project Considerations

Implications

The findings of this study don't support our first hypothesis. Our original hypothesis was that as social media use increases, reading academic achievement would decrease, our study proved the opposite. We urge scholars, parents and teachers to take this study as one of many works on the issue. While we did see a positive correlation between using social media and

academic achievement in reading in bilingual second graders at ASFM, we cannot generalize these results to all students or all aspects of academic achievement and well being. Our second hypothesis was supported through a weak positive correlation between social media usage and anxiety. As the use of social media increases the likelihood of higher test anxiety scores in children increases as well. Mental health impacts every area of our life. It is important for students, parents and educators to understand the detrimental effects of social media and mental health. Additionally, while no negative academic implication was found in this study, that does not mean there isn't one in other academic subject areas, or that one might not exist in other grade levels. Studies have shown that anxiety disorders are an important factor in determining academic achievement and dropout rates (Ameringen, Mancini & Farvolden, 2003). While no negative correlation exists between academic achievement and social media within our measured variables in our subject pool our study can't conclude that one might not exist.

We hope future research is able to better understand the relationship between social media and reading achievements and how the relationship between these variables strengthens or weaknesses over grade levels.

Limitations

One of the limitations we saw in our study was the inability to measure social media usage with more precision. Initially we had hoped to use statistics available on mobile devices, computers and tablets, yet we soon found out that due to our subject pool's age they don't have one personal device, instead share devices with siblings and borrow devices from parents. Our study rather than measuring actual time spent on social media measured perceived time spent on social media.

A second limitation was our subject pool size, 21 students out of all elementary students is not very representative neither of ASFM or schools world wide. Our small scale study prevents us from generalizing our findings to both the whole population of elementary students at ASFM and word-wide.

Finally the lack of random selection is a limitation in our study. Twenty one students sharing a classroom teacher, grade level, and school is not a randomized study. This limitation affects the validity of our study because it fails to account for biases when subjects are not randomly selected. With a highly specialized non-random sample our study lacks external validity.

We found our data for social media usage to be highly skewed to the right, therefore if we could redo our study, we would not cap our answer for weekly social media usage at 300+, but rather give students the ability to give a more exact answer.

Conclusions and Recommendations for Further Study

This study looked at a second grade classroom in ASFM consisting of 21 bilingual Mexican students, 11 boys and 10 girls to explore the relationship between, academic achievement in reading, perceived social media usage and anxiety. This study found that there is a positive moderate correlation between perceived social media usage and academic achievement in reading; as perceived social media usage increases so does the likelihood of higher reading scores. Additionally this study found a weak positive correlation between perceived social media usage and test anxiety scores; as perceived social media usage increases the likelihood of higher test anxiety scores increases as well.

We recommend future research explore the role of language further, especially, students consuming social media content in a different language than used at home and the same language as their reading level is being assessed in. For example, in our study, our subjects speak Spanish at home, are exposed to English on social media, and are being assessed in English. Could increased exposure to the English language be the reason we see this correlation? More research is needed to explore how exactly social media affects second language learners. Future research could expand on the literature by comparing effects across grade levels and exploring other subject areas.

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