Examining the Association Between Screen Time Exposure and Anxiety-Related Symptoms Among Adolescents

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Chapter 4: Results

Excessive digital screen-time (EDST) is a prevalent health care issue among adolescents, associated with negative effects such as insomnia, reduced cognitive development, feelings of loneliness, and a higher risk of mood disorders (Alsaigh et al., 2022; Cascio et al., 2023). The problem has been exacerbated by the advancements in technology, which have led to an increased use of electronic devices, including smartphones, tablets, and computers, in learning, communication, and information dissemination (Cascio et al., 2023; Pieh et al., 2025). According to the Centers for Disease Control and Prevention (CDC, 2024), 54% of teens in the US spend a minimum of 4 hours daily on screen-based gadgets. Consequently, diverse studies have been conducted to investigate the impact of EDST on adolescents' mental health outcomes. In addition, literature evidence indicates that there was a significant link between high screen time and mental health disorders, such as anxiety and depression (Nagata et al., 2024; Pieh et al., 2025; Schmidt-Persson et al., 2024).

The population of interest in this study was adolescents between 12 and 17 years. The demographic group was selected because teenagers spend 2 to 9 additional hours of screen time daily compared to adults; they also have increased susceptibility to anxiety disorders due to the rapid psychosocial and cognitive changes, such as increased self-consciousness and brain development (Shi, 2025; Trott et al., 2022). Thus, the purpose of this quantitative, cross-sectional study was to examine the association between higher screen time exposure and increased prevalence of anxiety-related symptoms among teenagers in the United States (US). This chapter contains a discussion of the data analysis procedures, demographic statistics, the statistical results, and a summary.

Data Analysis Procedures

Data for the study were retrieved from the National Center for Health Statistics and consisted of secondary information from the National Health Interview Survey conducted among adolescents in every US state from July 2021 to December 2023. The researcher cleaned and compiled the data on a Microsoft Excel spreadsheet to eliminate missing values, inconsistencies, and unnecessary information. The data were then transferred into the Statistical Package for the Social Sciences (SPSS) software version 28.0 for descriptive and inferential analyses. Descriptive statistics involved summarizing participants' demographic information, such as gender, race, and school enrolment, using frequencies and percentages. The analysis was crucial to determine the sample representativeness and generalizability to the target population (Rudolph et al., 2023). Pearson's correlational analysis was also selected to examine the following hypotheses:

H_0: There is no significant association between screen time exposure and the prevalence of anxiety-related symptoms among US adolescents.

H_1: There is a significant association between screen time exposure and the prevalence of anxiety-related symptoms among US adolescents.

A Pearson's correlation test is used to investigate the relationship between a dependent variable (DV) and an independent variable (IV) without establishing causality, which aligns with the study design and hypotheses (Janse et al., 2021). The DV was participants' anxiety-associated symptoms, while the IV was daily screen time. The results of the descriptive and inferential analyses were presented in tables and graphs to summarize and simplify the interpretation of the findings (Divecha et al., 2023).

Demographic Statistics

A sample of 111 adolescents was included in this study. A descriptive analysis of the demographic data showed that 50.5% were males and 49.5% females (see Table 1). The majority of the participants were Caucasian (49.5%) and African American (29.7%). In addition, 98.2% of the survey respondents attended either public or private schools; only 1.8% were home-schooled. Regarding accessibility to screen-based devices, all participants had an iPad, a smartphone, a computer, or a tablet, with 80.7% spending a minimum of 3 hours on these devices (see Table 1).

Table 1

The Demographic Characteristics of the Study Sample

Variables	Frequencies (*n*)	Percentages (%)
Gender		
Male	56	50.5
Female	55	49.5
Race		
Caucasian	55	49.5
African American	33	29.7
Hispanic	21	18.9
Asian American	2	1.8
School Enrolled		
Public	87	78.4
Private	22	19.8
Home Schooled	2	1.8
Accessibility to Screen-Based Devices		
Tablet/iPad	19	17.1
Smartphone, Tablet/iPad, Computer	34	30.6
Smartphone, Tablet/iPad	26	23.4

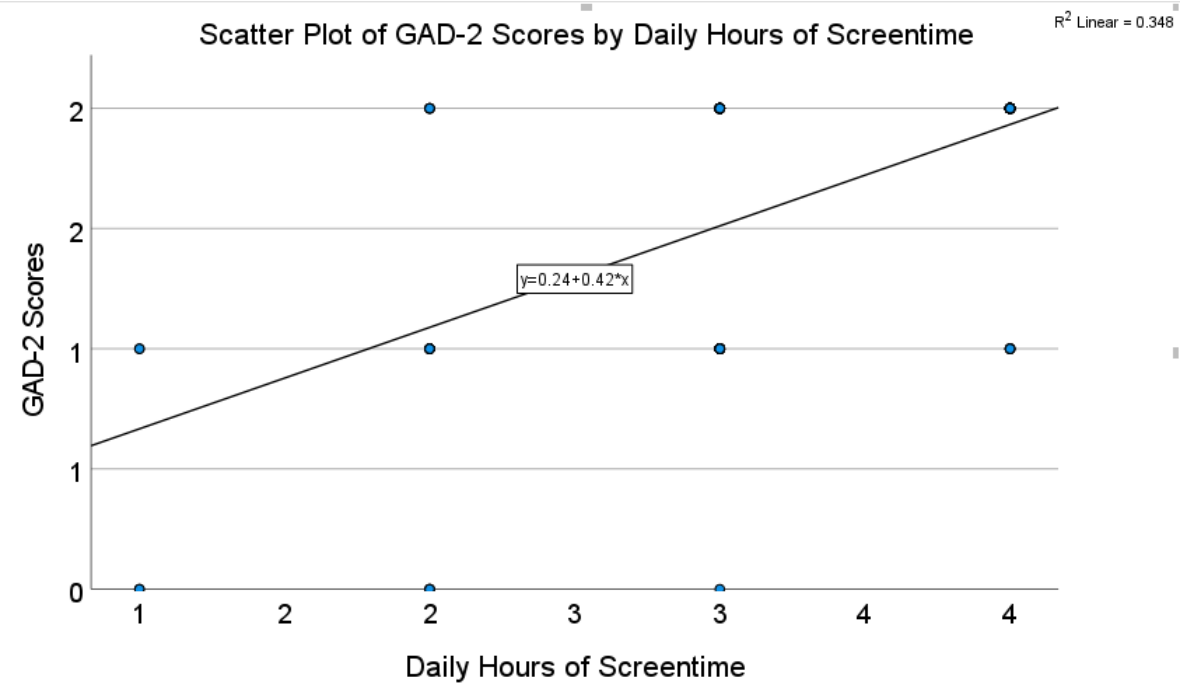
Smartphone, Computer	6	5.4
Tablet/iPad, Computer	20	18.0
Smartphone	3	2.7
Computer	3	2.7
Daily Hours of Screen Time		
1 Hour	4	3.6
2 Hours	17	15.3
3 Hours	43	38.7
More than 4 hours	47	42.3

The Statistical Results

Pearson's correlational analysis was selected to assess whether there is a linear association between screen time exposure and the prevalence of anxiety-related symptoms. Before the analysis, the assumptions of the test, including continuous measurement, absence of outliers, normality of the data, and linearity between variables, were evaluated (Sreedevi, 2022). In the first assumption, the researcher established that the IV and DV were continuous scale-level measures and could be represented using an infinite number of values within a given range (Beltran & Tarwater, 2024). In the second assumption, box plots were utilized to visually check for outliers. The graphs showed three outlying data points, beyond the expected range of variation in screen time (see Figure 1). However, no outliers were observed in the GAD scores for examining anxiety symptoms (see Figure 1).

Figure 1

Daily Hours of Screen Time and GAD-2 Scores Boxplots



In the third assumption, the researcher plotted histograms to test for normality. The graphs indicated that both the DV and IV had an asymmetrical non-normal distribution (see Figure 2). In the fourth assumption, a scatter plot was used to evaluate for a linear relationship between daily screen time and anxiety symptoms. The graph showed scattered data points that implied a non-linear association between the variables (see Figure 3). The assumptions for Pearson's test were violated; the project variables had a non-normal distribution and a non-linear association. In addition, the data collected for the IV had significant outliers, which can affect the accuracy and reliability of the results (Bocianowski et al., 2024). Consequently, the researcher conducted Spearman's rank correlation instead of Pearson's test to measure the relationship between the variables (Sreedevi, 2022).

The Spearman rank correlation coefficient is a non-parametric test used to evaluate the strength and direction of association between two variables (Bocianowski et al., 2024). The test is appropriate for non-normally distributed ordinal data with significant outliers (Temizhan et al., 2022). In addition, the Spearman rank test can be used to detect relationships between non-linear data (Bocianowski et al., 2024). In this study, the IV and DV were ordinal variables with a non-linear correlation.

Figure 2

Daily Hours of Screen Time and GAD-2 Scores Histograms

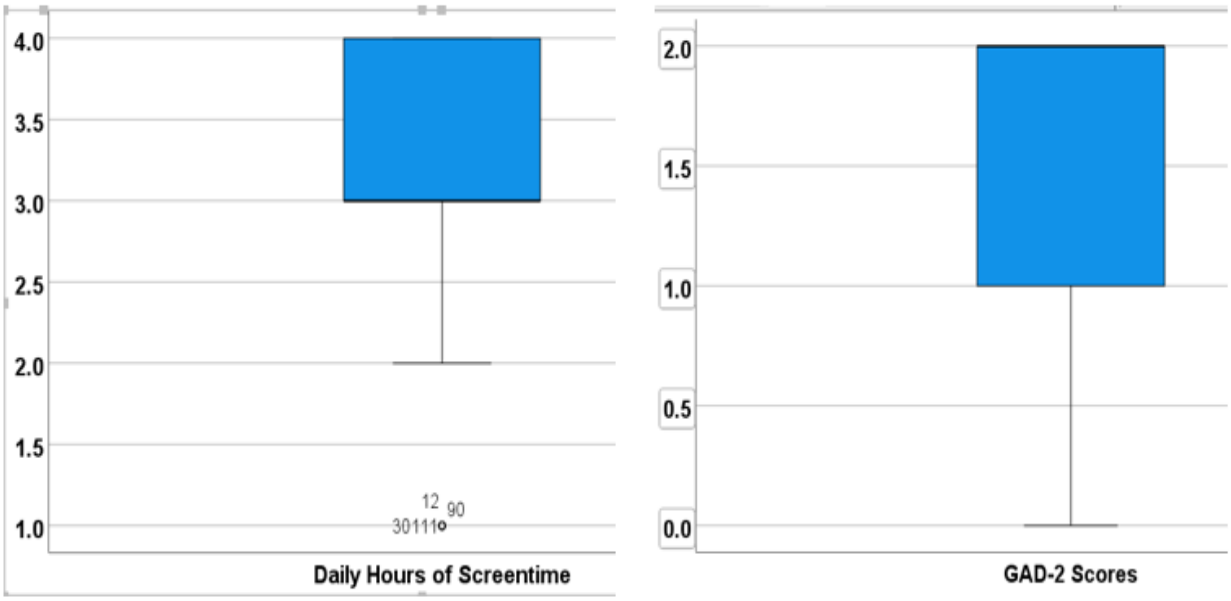
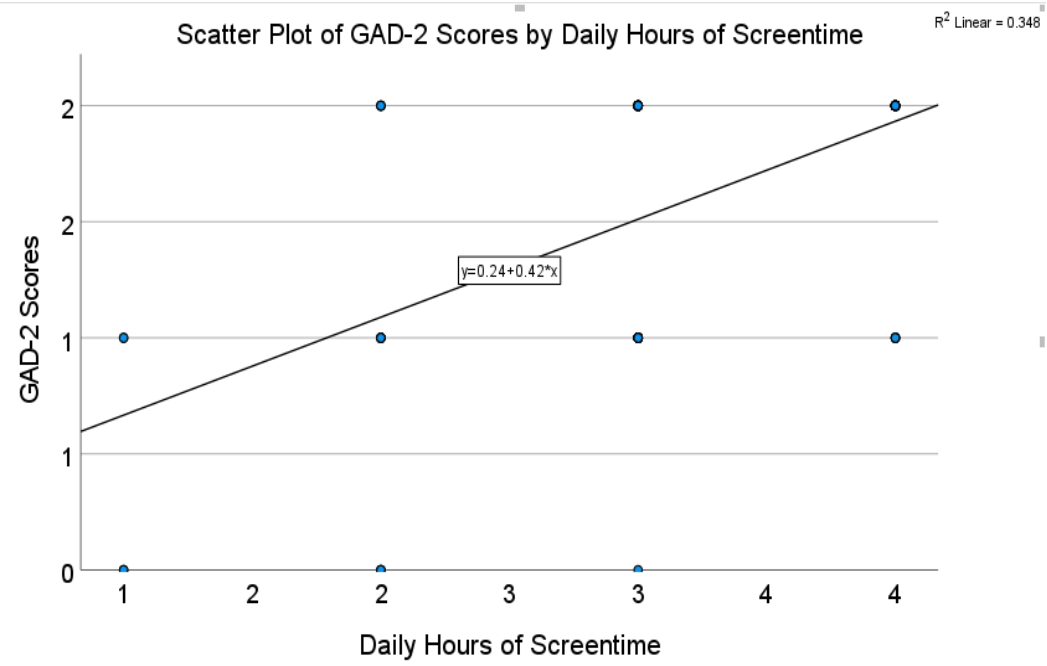


Figure 3

A Scatter Plot for GAD-Scores Against Daily Hours of Screen Time



Spearman's Rank Correlation Results

Spearman's correlation test results showed a strong, positive association between screen time exposure and the prevalence of anxiety-related symptoms, which was statistically significant *(r*(109) = .549, *p* < .001) (see Table 2). Consequently, the researcher rejected the null hypothesis and accepted the alternative hypothesis that there is a significant association between screen time exposure and the prevalence of anxiety-related symptoms among US adolescents.

Table 2

Spearman's Correlation Analysis for Daily Screentime and Anxiety Symptoms

	Variables	Daily Hours of Screentime
GAD-2 Scores	Correlation Coefficient	.549**
	Sig. (2-tailed)	<.001
	N	69

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Summary

The purpose of this quantitative, cross-sectional study was to examine the association between higher screen time exposure and increased prevalence of anxiety-related symptoms among adolescents in the US. A sample of 111 adolescents was analyzed using descriptive and inferential statistics via SPSS software version 28.0. The descriptive results showed that most participants were males (50.5%) and attended public schools (98.2%). In addition, 81% of the respondents spent a minimum of three hours daily on screen-based devices. Although Pearson's correlation analysis was the proposed inferential test for examining the null hypothesis, the researcher found that the IV and DV failed to meet the assumptions for the test. The variables had a non-normal distribution and a non-linear association. Significant outliers were also observed on the scatter plot, which can affect the accuracy of the results. Therefore, a Spearman's rank correlation was conducted. The analysis is appropriate for measuring the relationship between ordinal variables with a non-normal distribution and significant outliers. The results of the test showed a strong, statistically significant positive association between screen time exposure and the prevalence of anxiety-related symptoms *(r*(109) = .549, $p < .001$). The next chapter is the discussion, which will contain (a) the interpretation of the findings, (b) implications for practice, (c) recommendations, and (d) a summary.

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