Variables and Scatter Plots in Psychology: The Relationship Between Social Media Use and Mental Health

Selected Variables

I've selected two variables from the field of psychology: daily social media usage (measured in hours) and anxiety levels (measured using standardized anxiety scales). These variables represent significant areas of interest in contemporary psychological research. Social media usage has become ubiquitous in modern society, with the average person spending approximately 2.5 hours daily on social platforms (Twenge & Martin, 2020). Simultaneously, anxiety disorders remain among the most prevalent mental health conditions worldwide. The potential relationship between these variables offers valuable insights into how digital behaviors may influence psychological well-being.

Significance of Scatter Plots for This Data

Scatter plots provide an ideal visualization method for examining the relationship between social media use and anxiety levels. By plotting each participant's data point with social media usage on the x-axis and anxiety scores on the y-axis, patterns become immediately visible. This graphical representation reveals whether increases in social media consumption correspond with changes in anxiety levels.

Unlike bar charts or line graphs, scatter plots display individual data points rather than aggregated values, preserving the nuance and variation within the dataset. This characteristic makes scatter plots particularly valuable for psychological research, where individual differences significantly impact outcomes. Additionally, scatter plots facilitate the identification of outlier

participants whose patterns deviate substantially from the general trend—which may warrant further investigation.

Relationship Between Scatter Plots and Correlation

Scatter plots directly visualize correlation—the statistical relationship between two variables. The pattern formed by the plotted points reveals both the direction and strength of any correlation present. For instance, if the points trend upward from left to right (positive correlation), this suggests that higher social media usage corresponds with higher anxiety levels. Conversely, a downward trend (negative correlation) would indicate that increased social media usage corresponds with lower anxiety levels.

The correlation coefficient (r) quantifies this relationship mathematically, ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation). Research by Kross et al. (2013) demonstrated a moderate positive correlation ($r = 0.42$) between daily social media use and anxiety symptoms among young adults, visible as a discernible upward trend on their scatter plot despite some variability.

The tightness of the data points around an imaginary line running through them indicates correlation strength. Tightly clustered points suggest a strong correlation, while widely dispersed points indicate a weaker relationship. Scatter plots may also reveal nonlinear relationships (such as U-shaped patterns) that simple correlation coefficients might miss, providing researchers with valuable insights beyond what numerical analyses alone could offer.

Wordcount: 426

References:

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shablack, H., Jonides, J., & Ybarra, O. (2013). Facebook use predicts declines in Subjective Well-Being in young adults. *PLoS ONE*, *8*(8), e69841. https://doi.org/10.1371/journal.pone.0069841

Twenge, J. M., & Martin, G. N. (2020). Gender differences in associations between digital media use and psychological well-being: Evidence from three large datasets. *Journal of Adolescence*, *79*(1), 91–102. https://doi.org/10.1016/j.adolescence.2019.12.018