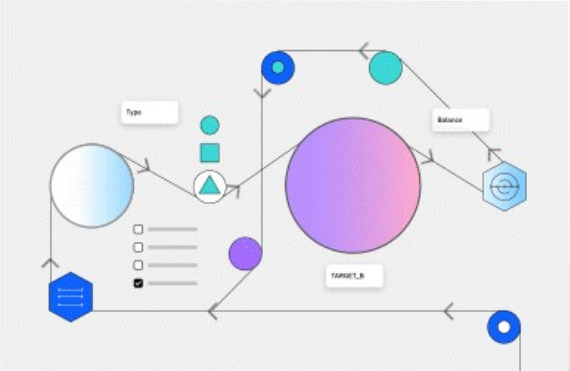
AI SPSS Process Presentation

From Data to Decisions: Automating Insights with SPSS and AI

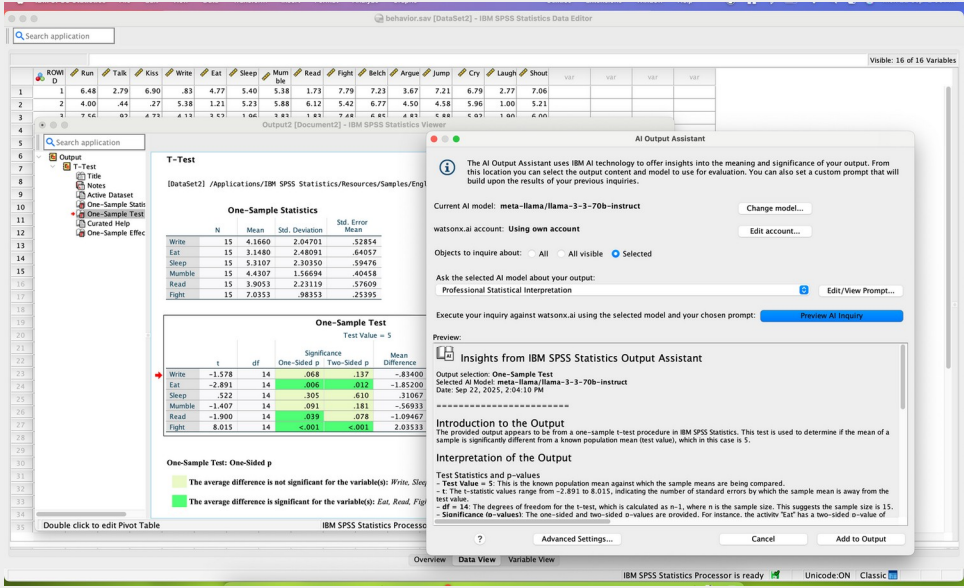




Curated by Brandon, Zaheer, Melissa, Syed

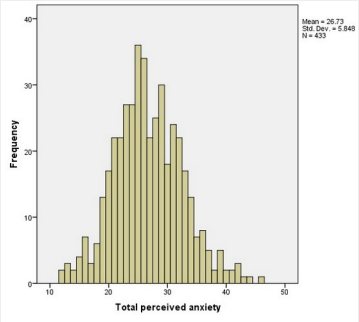
What is SPSS and its process?

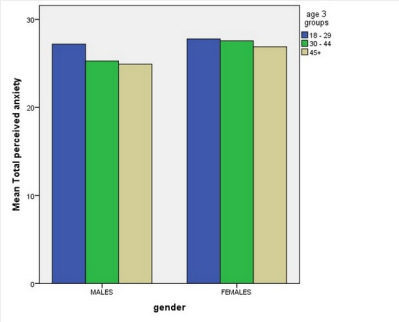
- IBM® SPSS Statistics software is a quantitative data analysis tool that assists researchers in the statistical analysis of collected data.
- It allows for in depth data access and preparation, analytical reporting, graphics, and modelling.
- The purpose of the software is to integrate the whole quantitative data analysis process: planning, data collection, analysis, identifying trends, reporting, producing accurate forecasts.

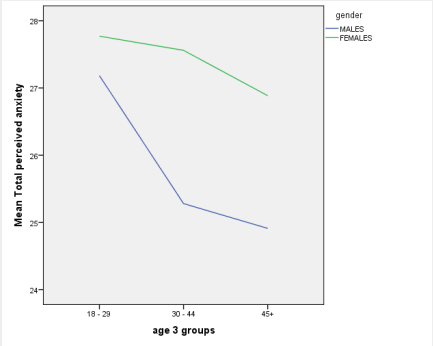


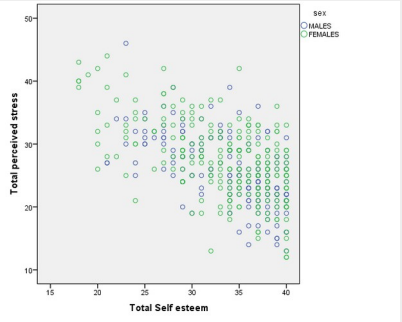
Why SPSS is Widely Used

- **User Friendly:** This software is simple and easy to use with it's point and click user interface and accessible analysis tools.
- **Reliability:** Used in many researches, professions and industries, and it can perform different types of analytics.
- **Flexible:** It can handle large, small, and complex datasets to analyze patterns with various methods.



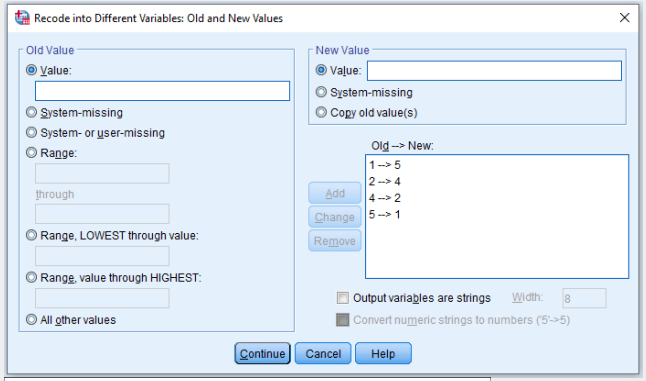


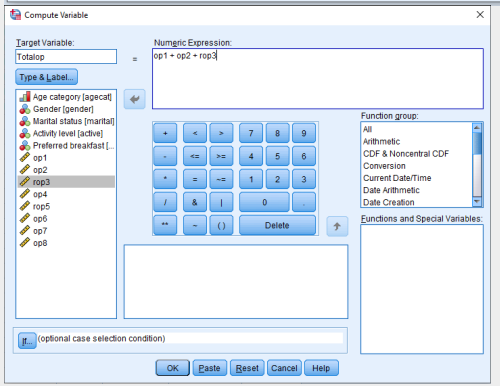




SPSS Functions: AI in Data Preparation

- **Data Management:** Allows large datasets that can be transformed and organized for analysis.
- **Descriptive Statistics:** Gives a summary of characteristics for dataset with features such as the mean, median, mode, standard deviation, etc.
- **Predictive Analytics:** Allows the creation of predictive models with methods like regression and clustering.
- **Visualization:** Creation of graphs, charts, plots, and other types of visuals to see how the data will look.





Correlation Analysis with IBM SPSS

Correlation coefficients provide a numerical summary of the direction and strength of the linear relationship between two variables.

- **Direction:** Do they increase together or in opposite directions?
- **Strength:** How strong is the relationship?

Types of Correlation Coefficients

Pearson product moment correlation

- Used for continuous variables like income or age.
- Assumes linear relationship and normal distribution.

Spearman RHO

- Used for ranked or ordinal data like satisfaction ratings.
- Does not assume normality which is good for nonparametric data.

Direction of Relationship

- Positive (+): As one variable increases, the other increases.
- Negative (–): As one increases, the other decreases.

Correlations

		Age	Total perceived anxiety
Age	Pearson Correlation	1	-.249**
	Sig. (2-tailed)		.002
	N	150	150
Total perceived anxiety	Pearson Correlation	-.249**	1
	Sig. (2-tailed)	.002	
	N	150	150

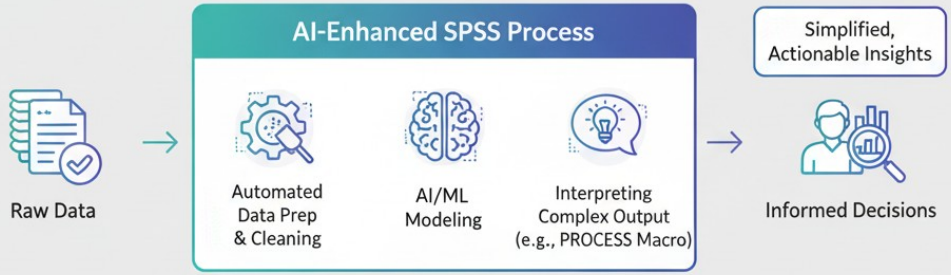
**. Correlation is significant at the 0.01 level (2-tailed).

How AI Intervenes with the SPSS Data Analysis

Data Preparation & Cleaning: AI algorithms automate the identification and handling of missing values, outliers, and complex data transformations before core analysis begins.

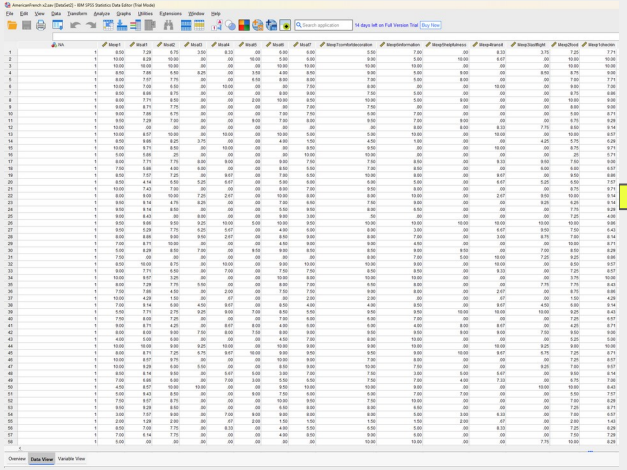
Enhanced Modeling: AI/Machine Learning techniques available within or linked to SPSS are used to create more robust Predictive Models and identify subtle patterns.

Interpreting Complex Output: Large Language Models can be applied to complex statistical output results to generate clear, concise, and non technical interpretations of significant findings.

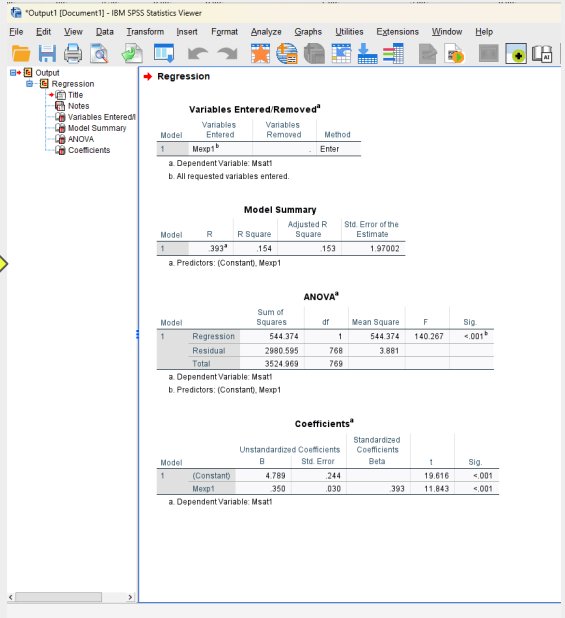


Group SPSS PROCESS Analysis (Simulated)

We confirmed all the data we need in the AmericanFrench X2.sav file. This image shows the raw numbers for our key variables, including Mexp1 and Msat1, which are central to our model.



Next, we ran a simple test to check for a basic relationship. The output confirms that Mexp1 is a strong, statistically significant predictor of Msat1. This means Mexp1 has a real impact on Msat1.



The complete analysis tests a Mediation Model using these three variables:

Independent (X): → Mexp1
Mediator (M): → Mexp7comfordecoration
Dependent (Y): → Msat1

The Analytical Goal is to determine if the effect of Mexp1 on Msat1 runs through the mechanism of Mexp7comfordecoration, and AI is vital for instantly reading the complex results and giving us a simple business decision.

The core finding determines M is the true mechanism that makes X successful at driving Y. Since the analysis shows the effect runs through M, managers know that simply providing a good X isn't enough; they must ensure M is excellent.

How AI Makes PROCESS Actionable

The Challenge of Complexity

- **SPSS's Value:** SPSS is a reliable and user friendly platform essential for the entire quantitative research lifecycle, handling large and complex datasets.
- **The Problem:** Traditional statistical output, especially from advanced tests like the PROCESS macro, is too technical for rapid business decisions.

The AI Powered Solution

- **AI's Role:** The integration of Artificial Intelligence is the key advancement, moving data from pure analysis to actionable strategy.
- **Automation Focus:** AI enhances the process by providing automation in data management and, crucially, by applying Large Language Models to read that technical output and generate clear, simplified insights immediately. This is our solution to the complexity problem.

Key Takeaway: Reliable Answers

- The future of data analysis successfully combines the reliable, traditional statistical power of SPSS with the predictive and interpretative capabilities of AI.
- This integration gives marketers fast, clear answers about causal mechanisms, allowing for smarter, data driven resource allocation. It's about using the best of both worlds to get reliable answers and make better decisions.

Conclusion and Key Takeaways

Foundation of Reliability: SPSS is the indispensable foundation for robust data analysis.

Strategic Shift: The integration of AI ensures marketing groups get fast, confident answers about causal mechanisms leading to directly to actionable marketing strategy.

The Future: The synergy of SPSS and AI leads directly to smarter, data driven resource allocation.

