Exercise
Introduction to Stochastics

22.04.25 · Session 1: Introduction

Recap: Quality Criteria

Objectivity

Definition: The extent to which results are independent of the person conducting the research.

Types:

- **Implementation Objectivity:** The outcome is unaffected by the person administering the test

- **Interpretation Objectivity:** Results are interpreted without personal bias

Reliability

Definition: Consistency and reproducibility of measurement results

Assessment Methods:

- **Retest Method** (repeat the same test)

- **Parallel Test Method** (two equivalent tests)

Measure: Reliability coefficient (correlation between measurements)

Recap: Quality Criteria

Validity

Definition: The degree to which a test measures what it claims to measure

Types:

- **Construct validity:** Does the test measure the concept that it's intended to measure?

- **Content validity**: Is the test fully representative of what it aims to measure?

- **Face validity**: Does the content of the test appear to be suitable to its aims?

- **Criterion validity**: Do the results accurately measure the concrete outcome they are designed to measure?
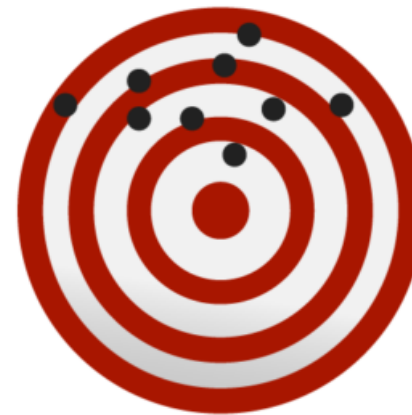
Recap: Quality Criteria

Reliability and Validity

Reliable
Not valid

Low validity
Low reliability

Not reliable
Not valid

Both reliable
and valid

https://www.makemyassignments.com/blog/reliability-vs-validity/

Title: *Tracing Emotional Progress in 19th-Century British Novels: A Computational Sentiment Approach*

Abstract:
This study explores emotional patterns in 19th-century British fiction using sentiment analysis, aiming to assess whether literary narratives from the era reflect a cultural tendency toward emotional resolution. The researcher compiled a digital corpus of 60 novels published between 1820 and 1890, sourced primarily from the Project Gutenberg archive. Each text was divided into equal-length segments (10 per novel), and a sentiment score was calculated for each segment using a lexicon-based tool. The tool outputs a polarity value ranging from -5 (strongly negative) to +5 (strongly positive). The researcher observed a common trend in which novels begin with lower sentiment values and conclude on higher ones, suggesting a narrative arc aligned with social and emotional resolution.

Key Features of the Methodology:
- The corpus was selected by the researcher based on familiarity and perceived popularity.
- The sentiment tool used was SentiLex 2.0, originally developed for customer review analysis in Portuguese, then machine-translated to English.
- No manual cleaning of the texts was conducted, and metadata such as prefaces and footnotes were included.
- Sentiment scores were averaged across segments.
- A sample of the novels (n=5) was manually reviewed to "verify" automated results.
- Graphs were generated to visualize the emotional arcs and outliers were excluded from final interpretations.

Discussion & Interpretation:
The researcher argues that the consistent upward emotional arc across novels reveals a culturally embedded value system favoring optimism and closure. The study is positioned as a model for how digital tools can be used to "objectively" understand literary affect and to move beyond traditional close reading.

Conclusion:
This project illustrates the potential of sentiment analysis to contribute meaningful insights into historical literature. It also claims that the emotional shape of fiction can be quantified and linked to broader societal values during the Victorian period.