Behavioral Research and Experimental Design
Assignment 2

Deadline: 8 October, 2023 (2359 Hours)

1. You are provided with data (in the form of a CSV file) from an observational study where three raters (Rater A, Rater B, and Rater C) independently assess the aggressiveness of 50 participants after a 30 minute session of the game "Getting Over It with Bennett Foddy" on a scale from 1 to 5. The higher the score, the more angry the participant was perceived to be. How can you determine the level of agreement among the ratings provided by Rater A, Rater B, and Rater C? Calculate this agreement measure, providing an interpretation of the result. [3M]

2. The given dataset contains responses from a questionnaire designed to measure various aspects of empathy. The questionnaire consists of 28 items, with responses provided on a 5-point Likert scale ranging from "Does not describe me well" to "Describes me very well." Designed to assess four distinct constructs, each of which consists of 7 items, the questionnaire measures the the following:

    (a) Perspective Taking: measures the tendency to spontaneously adopt the psychological point of view of others.

    (b) Fantasy: assesses respondents' tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays.

    (c) Empathic Concern: evaluates "other-oriented" feelings of sympathy and concern for unfortunate others.

    (d) Personal Distress: gauges "self-oriented" feelings of personal anxiety and unease in tense interpersonal settings.

    Analyze the dataset, which includes participant responses to the questionnaire, and provide a thorough examination of the questionnaires' internal consistency. You are encouraged to use appropriate measures to assess the reliability of measurement. [5M]

3. Imagine you are tasked with evaluating a questionnaire used to assess customer satisfaction at a local supermarket. After reviewing the questionnaire, please identify and explain at least 3 reasons why this questionnaire

may not be considered good enough for effectively measuring customer satisfaction. Provide specific examples or justifications for your points. [3M]

4. For each of the following experimental designs, choose the most appropriate sampling strategy, explaining why the selected strategy aligns with the experiment's goals and constraints. [4M]

   (a) You are conducting a medical research study to investigate the effectiveness of a new drug on patients with a specific medical condition. The study aims to collect data from patients in various age groups, as well as from different regions across the country.

   (b) A manufacturing company, which produces a large volume of items every day, wants to assess the quality of its products on the assembly line. They wish to ensure the sampled items are representative of the entire production process.

   (c) The IIIT administration wants to conduct a satisfaction survey among students to gather feedback on various aspects of campus life. Tasked with the initiative, you need to ensure that feedback is collected from students of different academic majors and years of study.

   (d) An e-commerce company wants to collect feedback from its customers regarding their online shopping experience. They have a vast customer base spread across the country and want to efficiently gather feedback without overwhelming customers with lengthy surveys.