Idiographic Assessment

Lecture Overview

- What are the limitations of traditional group designs?
- What are time series designs?
- What are the advantages and limitations of time series designs?
- What are the different types of time series designs and examples of their application?

Problems With Traditional Group Designs

- Practical problems associated with requiring large groups of subjects
- Ethical concerns about no-treatment controls
- Inability to generalize the findings from group means to the individual case

Problems With Traditional Group Designs

- Not suited for the treatment evaluation of a single case
- Has contributed to the dichotomy of researcher vs. practitioner

Labels Used to Describe Time Series Designs

- Single-subject designs
- N of one designs
- Intensive designs

Advantages of Time Series Designs

- Uniquely suited for evaluation of treatment for a single case (goodness of fit)
- Can be used to test treatments of rare disorders that would not lend themselves to traditional group designs
- Avoids the legal and ethical problems associated with withholding treatment (control groups)
- Well-suited for studying process of change
- Provides options for practitioners to be researchers

Why Don't Clinicians Use Time Series Designs More Frequently?

- Not taught in many training programs
- Not aimed at the practicing clinician
- They are associated with behaviorism
- Few outlets for single-case clinical research
- Clinical agencies fail to provide support for scientific work

Elements of Time Series Designs

- Use of *repeated* measurements
- Variability is assessed across time
- Independent and dependent variables are carefully specified while other variables are held constant
- Employ a flexible format that can be altered midstream
- Use "replication of effect" to establish internal validity

Parameters of Time Series Data

- Level (Intercept)
- Slope (trend)
- Variability

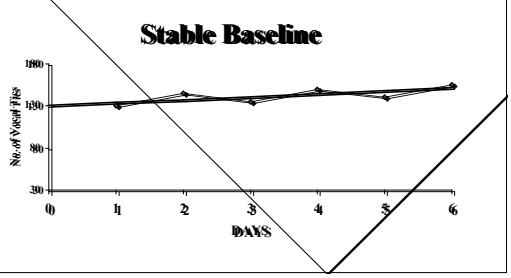
Methods for Handling Instability

- Analyze sources of variability
- Wait for a more stable pattern to emerge
- Examine the temporal unit of analysis
- Proceed despite the variability

Baseline Trends

- Stable

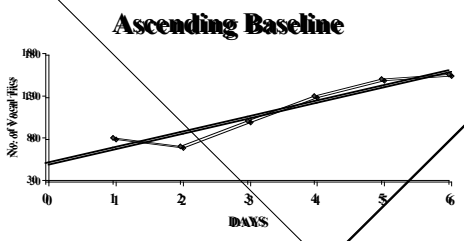
Examples of Baselines



Baseline Trends

- Stable
- Ascending

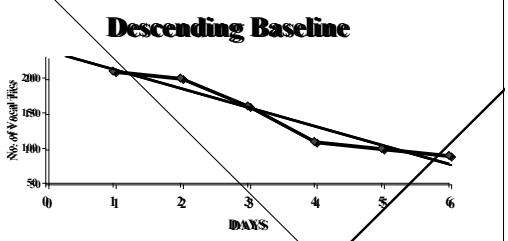
Examples of Baselines



Baseline Trends

- Stable
- Ascending
- Descending

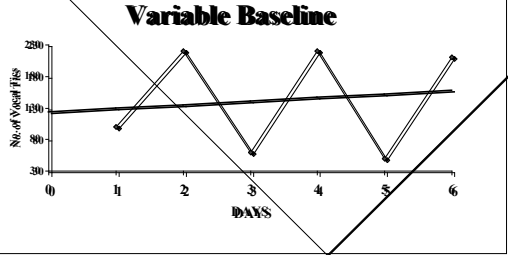
Examples of Baselines



Baseline Trends

- Stable
- Descending (worsening)
- Ascending (improving)
- Unstable

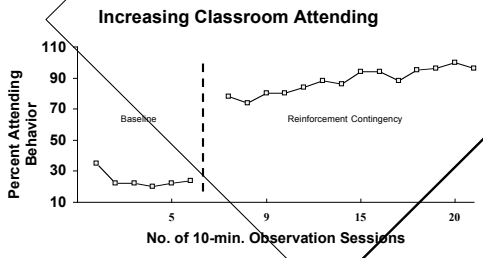
Examples of Baselines



Classes of Time Series Designs

- Controlled case study
  - Data are collected on *one or more* individuals during a baseline (pretreatment) phase AND during a treatment/intervention phase.
  - Does not control for many threats to validity

Example of the Controlled Case Study Design



Walker, H.M., & Buckley, N.K. The use of positive reinforcement in conditioning attending behavior. Journal of Applied Behavior Analysis, 1968, 1, 245-250

Factors Important in the Evaluation of Case Studies

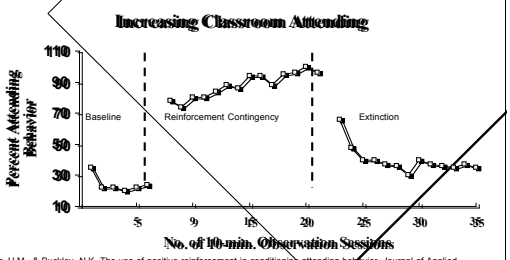
- Type of data
- Assessment occasions
- Past and future projections
- Type of effect
- Number and heterogeneity of subjects
- Treatment integrity

Major Classes of Time Series Designs

Withdrawal (Reversal) designs

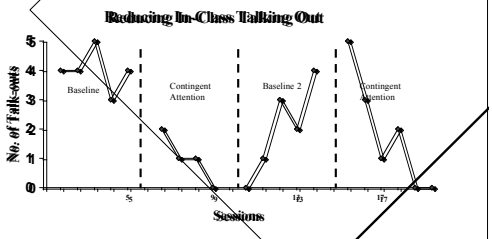
- A/B/A
- A/B/A/B
- A/B/B+C/B/B+C

Example of the A-B-A Withdrawal Design



Walker, H.M., & Buckley, N.K. The use of positive reinforcement in conditioning attending behavior. Journal of Applied Behavior Analysis, 1968, 1, 245-250

Example of the A-B-A-B Withdrawal Design



Hall, R.V., et al The teacher as observer and experimenter in the modification of disputing and talking-out behaviors. Journal of Applied Behavior Analysis, 1971, 4, 141-149.

Features of Withdrawal Designs

- Primary strategy involves the systematic introduction and withdrawal of treatment
- Experimental control (internal validity) is demonstrated by showing that the target behavior changes as a function of the change in condition (phase change)
- Particularly well-suited for treatments involving environmental change strategies

Features of Withdrawal Designs

- Not well-suited for treatments that exert an *enduring* effect
- Ethical and practical limitations associated with the withdrawal of treatment

Variants of Withdrawal Designs

- Interactive (Component Analysis)
  - B/B+C/B/B+C
  - C/C+B/C/C+B
  - B+C/C/B+C/C
- Comparing two or more treatments
  - A/B/A/C/A
  - A/C/A/B/A

Classes of Time Series Designs

- Multiple baseline designs
  - Across subjects
  - Across behaviors
  - Across settings

Features of the Multiple Baseline Design

- Similar in structure to the controlled case study
- Involves the *sequential* introduction of treatment (phase change) across either multiple subjects, multiple target behaviors (symptoms), or multiple settings

Features of the Multiple Baseline Design

- Demonstrates experimental control (internal validity) by showing that the change in the target for each series occurs when the phase change is applied
- The more replications, the stronger the demonstration of internal validity

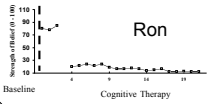
Features of the Alternating Treatment Design

- Involves the rapid and random alternation of two or more conditions (series)
- The alternation is usually achieved by random assignment
- Usually the different treatment conditions are administered for one session or for one segment of a session

Features of the Multiple Baseline Design

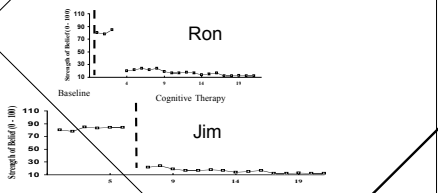
- Requires that each series be independent of the other
- Not appropriate in cases in which one would expect generalization to occur

Example of a Multiple Baseline Design Across Subjects



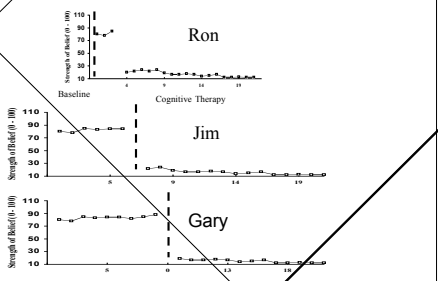
Hypothetical Data Depicting the effects of a cognitive therapy intervention applied sequentially across three delusional patients

Example of a Multiple Baseline Design Across Subjects



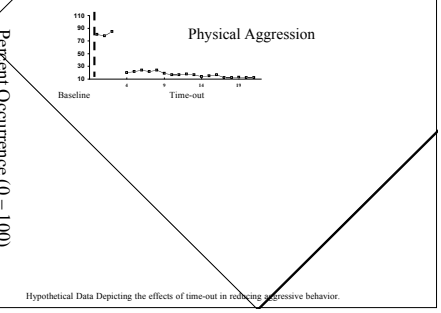
Hypothetical Data Depicting the effects of a cognitive therapy intervention applied sequentially across three delusional patients

Example of a Multiple Baseline Design Across Subjects



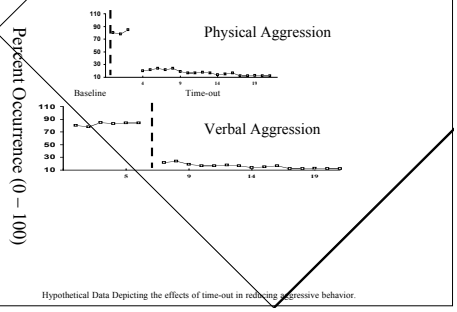
Hypothetical Data Depicting the effects of a cognitive therapy intervention applied sequentially across three delusional patients

Example of a Multiple Baseline Design Across Behaviors



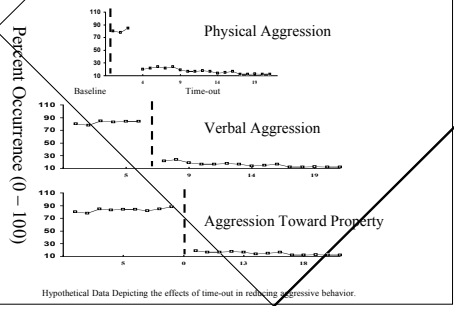
Hypothetical Data Depicting the effects of time-out in reducing aggressive behavior.

Example of a Multiple Baseline Design Across Behaviors



Hypothetical Data Depicting the effects of time-out in reducing aggressive behavior.

Example of a Multiple Baseline Design Across Behaviors



Hypothetical Data Depicting the effects of time-out in reducing aggressive behavior.

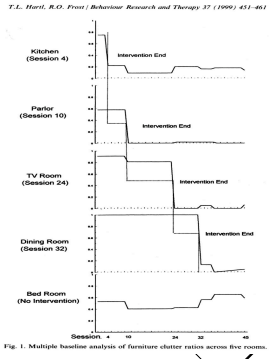


Fig. 1. Multiple baseline analysis of furniture clutter ratios across five rooms.

Advantages of the Multiple Baseline Design

- Can be applied to a wide range of clinical situations
- Does not require withdrawal of treatment
- Does not require that treatment effects show reversibility
- Appropriate for the evaluation of treatments that produce *enduring* effects on the individual

Major Classes of Time Series Designs

- Alternating treatment design

Features of the Alternating Treatment Design

- One of the series can be a baseline
- Experimental control is demonstrated by showing a divergence between the series
- Not indicated when rapid alternation of treatments is likely to produce significant treatment interference effects

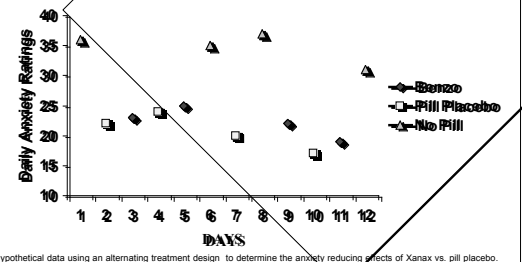
Advantages of the Alternating Treatment Design

- Allows two or more active treatments to be compared
- Does not require withdrawal of treatment
- Comparisons can be made over a much shorter period
- Do not need a formal baseline to make valid inferences
- Can be useful for targets that are changing naturally

Clinical Applications (Idiographic Assessment)

- Benzodiazepine withdrawal

Example of Alternating Treatment Design

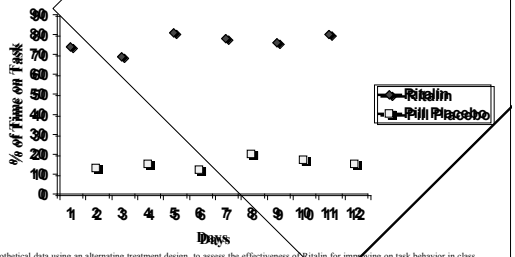


Hypothetical data using an alternating treatment design to determine the anxiety reducing effects of Xanax vs. pill placebo.

Clinical Applications (Idiographic Assessment)

- Evaluation of stimulant medication in ADHD

Example of Alternating Treatment Design

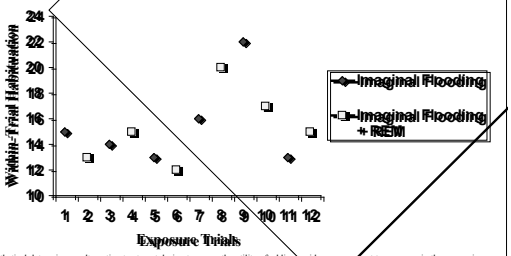


Hypothetical data using an alternating treatment design to assess the effectiveness of Ritalin for improving on task behavior in class.

Clinical Applications (Idiographic Assessment)

- Evaluating efficacy of a specific psychosocial treatment parameter

Example of Alternating Treatment Design



Hypothetical data using an alternating treatment design to assess the utility of adding rapid eye movement to exposure in the processing of traumatic memories.