Comparative Designs: Part 2

Week 11

Adapted Alternating Treatments Design (AATD)

- This design can be used to compare the effects of two or more interventions on two separate behaviors
- Can be used with behaviors that are NOT reversible so can use with functional, developmental, or academic behaviors.
- Most often used to examine the efficiency of two or more instructional interventions
  - most often the measure used to measure efficiency is how quickly participants acquire a skill.
- The design can also be used to conduct component or parametric analysis of an intervention.

Requirements for AATD

- This design differs from the ATD in that you apply one or more interventions to *separate* DVs (i.e., behavior sets or chains), rather than to the same DV. Recommended to use **three** behavior sets.
- Target behaviors must be
  - Nonreversible, not in the participants' behavioral repertoire, independent but functionally equivalent, and of equal difficulty.
- Use 3 behavior sets for two intervention strategies (1 per intervention and one for control)
- Use 4 or more participants

Conditions

- Initial Probe – assess all behavior sets for a minimum of 3 observations
- Comparison Phase – Implement interventions to the two behavior sets (3rd set is a control) behavior sets until a predetermined criterion is reached
- Final probe – assess all behavior sets (including the control set)

Enhancing Spelling Performance in Students with Learning Disabilities

Keith A. Nies · Phillip J. Belfiore

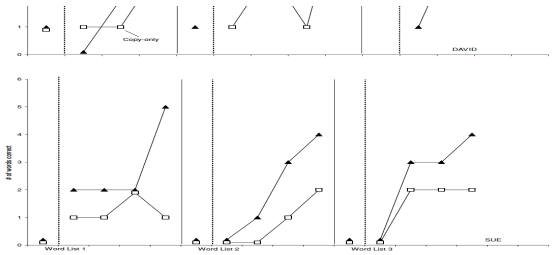


Fig. 1 Number of words spelled correctly using Cover-Copy-Compare and Copy-Only

Minimizing Threats to Internal Validity

- Minimize history and maturation threats by assessing control behavior set during initial and final probe; can also collect intermitment probe data on control set during comparison condition
- Minimize instrumentation threats by collecting frequency IOA and procedural fidelity data
- Minimize multitreatment interference by increasing times between sessions in the comparison condition, assessing the control behavior set.
- Separation of treatment isn't an issue b/c you are using separate target behavior sets
- Must have behavior sets of equal difficulty.

Implementing an AATD (McDonnell et al., 2011, p. 160)

- 1. Operationally define the DVs and measures, focusing on efficiency and effectiveness of the intervention.
- Ensure that the target behaviors are equally difficult and functionally independent of each other.
- Operationally define the Ivs and ensure that they are procedurally equivalent.
- Counterbalance the introduction of the IVs across participants
- Initiate baseline and collect data until baseline is stable
- Initiate the comparison phase, implementing the intervention schedule until each participant meets the predetermined performance with one or more of the Ivs.

Parallel Treatments Design: Comparative

- Useful in comparing effectiveness and efficiency of instruction on acquisition of skills
- Typically used with a minimum of 2 – 4 participants
- Combines elements of multiprobe/multiple baseline designs and ATD
  - Rapidly applies interventions repeatedly across sessions (allowing comparison of interventions in terms of efficiency)
  - Uses a time-lag design to apply interventions to multiple sets of behaviors (provides evidence of a functional relation)

Parallel Treatments Design

- Simultaneously introduce two instructional procedures to six or more independent but comparable behavioral sets (behaviors) of equal difficulty.
  - Probe 1
  - Interventions 1 & 2 applied to Targets 1 & 2, respectively; criterion met
  - Probe 2
  - Interventions 1 & 2 applied to Targets 3 & 4, respectively; criterion met
  - Probe 3
  - Interventions 1 & 2 applied to Targets 5 & 6, respectively; criterion met

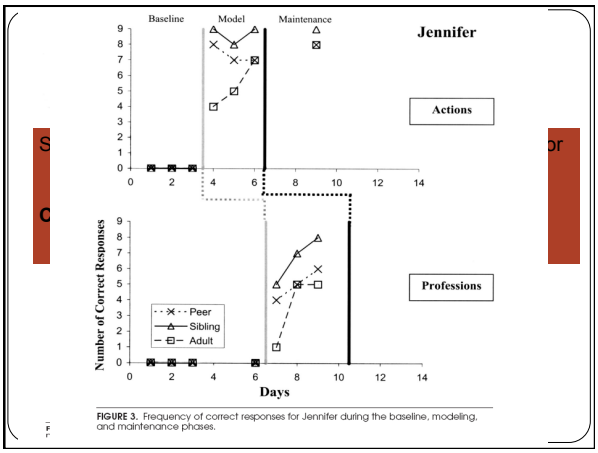


FIGURE 3. Frequency of correct responses for Jennifer during the baseline, modeling, and maintenance phases.

Parallel Treatments Design & Minimizing Threats to Internal Validity

- Use of probes decreases problems with excessive testing/ extended practice of incorrect responses; also helps to monitor history and maturation threats.
- Collect frequent IOA and procedural fidelity data to monitor instrumentation threats
- Multitreatment interference can be minimized by increasing length of time between sessions and monitoring untaught target behavior sets
- Minimizes threats due to separation of treatments b/c use IVs on different behavior sets

Summary of Parallel Treatments Design

Appropriate to Use When

- Want to study the effectiveness/efficiency of two interventions on nonreversible target behaviors
- Can identify six equally difficult behavior sets

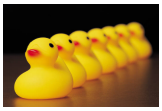
Not Appropriate to Use When

- Target behaviors are reversible, or
- When you can't identify enough equally difficult behavior sets
- Don't have the time/ resources it takes to utilize this design

Research Proposals Reminder

- Use the format outlined in the handout
  - Include ALL of the information specified in the handout
  - Use the Gast chapter to build your understanding of what is incorporated into a research proposal (at least for a quantitative methodology study)
- Model the "style" found in professional journals: single-case design studies
  - Begin with a strong introduction that demonstrates why the proposed study is important and how it will add to the literature

Coming up . . .



- **Week 12**
  - Discuss variations of multiple baseline and combination designs; Edie will lead the discussion of the study using a changing criterion design
  - Take-Home Quiz 2 is due
- **Week 13**
  - Discuss use of statistics for data analysis of single case research data; meta analysis and single case studies