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SPHSC 569
Single Subject Design

Basic Elements and
Research Questions

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Basic Elements
(Hayes, Kazdin, McReynolds & Kearns)

- Repeated measures – continuous assessment
- Baseline-baseline level of performance – description, prediction
- Stability/trends-Variability
- Replication
- Attitude of investigative play
- Creative use of designs

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Repeated Measures

- Continuous assessment of behaviors of interest
 - Continuous – during all phases
 - Multiple measures
- Procedures and measures same over time

(We'll talk about how many and how often)

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Baseline of Performance

- Baseline – A phase
- How many data points?
- Types of baselines
 - Controlled and uncontrolled
- Function of baseline
 - Descriptive
 - Predictive

(handout)

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Stability/Trends– Variability

- Stability – trend – increase, decrease, or flat/plateau
- Variability – no trend

Goals:

- Change direction of trend
- Make trend more powerful
- Establish a trend

Variability – what to do:

1. Wait
2. Look for factors contributing to variability (client factors, temporal)
3. Start Tx – establish a trend

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Replication

- How many?
 - Original + 1, 2 (more the better)
 - Up to you --- factors to consider
 - How difficult was it to change the behavior
 - Novelty of finding
 - Past literature
 - How robust the functional relation
 - How unusual the subjects/population
 - How unusual the treatment
 - Number of explanations for finding

Etc.

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Replication

- Types
 - Direct
 - Either within or between subjects
 - Systematic
 - Intraexperimental systematic replication
 - Variation in experimental preparation or procedures – slight variation within same experiment
 - Interexperimental systematic replication
 - New experiment to expand or clarify findings

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Replication

- Replication possibilities
 - Find no effect
 - Find opposite effect
 - Find partial or mixed effect
- What to do
 - Check procedural details – any omitted or inaccurately administered
 - Consider the “discovery” and explanation

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Attitude of Investigative Play

- Original manipulation
 - If it works, why?
 - If it doesn't work, why?
- Replication
 - If it works, why?
 - If it doesn't work, why?

Remember -- well designed study, the data don't lie!

Have fun!

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Creative Use of Designs

- Elements:
 - No treatment
 - Treatment
 - All types of variations in independent variables
 - Time
- Our approach – discuss designs, but also about how to put different elements together
 - Within series
 - Between series
 - Combined series

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Research Questions
(Sidman, 1960)

- Theory vs. clinically generated
 - Do you have a hypothesis or mere curiosity?
- Try out a new method or technique
 - Independent or dependent variables
- Establish the existence of a behavioral phenomenon
- Explore conditions under which a phenomenon occurs

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Characteristics of Good Research
(Hulley & Cummings)

FINER

- Feasible
 - Sample size
 - Technical expertise
 - Cost
 - Scope
- Interesting
- Novel
- Ethical
- Relevant (consider measures)

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Types/Areas of Research Questions

- Kennedy
 - Demonstration
 - Comparison
 - Parametric
 - Component
- Kendall & Ford-Norton; Olswang
 - Effectiveness/Efficacy
 - Effects
 - Efficiency

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Types/Areas of Research Questions

Kazdin (1980)

- Treatment package
- Dismantling
- Constructing
- Parametric
- Comparative
- Client & Therapist Variation
- Internal Structure or Process

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Kazdin – Research Questions

- Treatment package
 - Determining changes that occur with entire package
- Dismantling
 - Taking out components of treatment package to see what is critical
- Constructive
 - Adding components to see what is important
 - Establishes validity of treatment package

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Kazdin – Research Questions

- Parametric
 - Varying aspects of treatment to maximize change
 - Yeaton and Seachrest
 - Strength and Integrity
- Comparative
 - How does one treatment compare to another

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Kazdin – Research Questions

- Client and Therapist Variation
 - Attributes of client and/or therapist serve as variables worth investigating
- Internal Structure or Process
 - Rosen and Proctor
 - Product:
 - Ultimate change – long term
 - Process
 - Instrumental change – short term
 - Intermediate change – short term

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Possible Research Questions
(No shortage of possibilities)

- Effectiveness
 - Is treatment changing behavior?
 - Did clinically significant change occur?
 - What occurs when manipulation introduced?
 - What is the longevity of the change? Durability?
 - Did the session provide enough practice to see change?

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Possible Research Questions

- Effects
 - How does subject change in relationship to intervention? (multiple measures)
 - What is the degree of change? Rate of change?
 - What behaviors change as the result of treatment
 - How widespread is the behavior change with particular treatment? (issues of generalization ---stimulus and response generalization)
 - What are the subject characteristics as related to different types of behavior change?
 - Does change in the impairment bring about change in activity participation?

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Possible Research Questions

- Efficiency
 - Is one treatment more effective, efficient than another?
 - Are all components necessary? Are particular components more important than others ?
 - Does altering amount of exposure to treatment differentially change behavior?
 - Does altering the magnitude of exposure to treatment differentially change behavior?
 - Does altering the density of exposure to treatment differentially change behavior?
 - What amount of change in behavior X sufficient enough to bring about ultimate change in behavior X? (instrumental)

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Final Thought

- Is your research advancing clinical practice or theory? Consider:
 - Does treatment package X increase requests for information in children with ASD?
 - What components of treatment package X increase requests for information children with ASD?
 - What contextual variables influence/increase requests for information in children with ASD?
 - What characteristics of children with ASD result in reduced requesting information?

Final Final Thought

- As you write the questions you will need to operationally define the terms.
 - Correspond to your independent and dependent variables
- Should have a hint in the review of the literature and fully defined in the methods
