

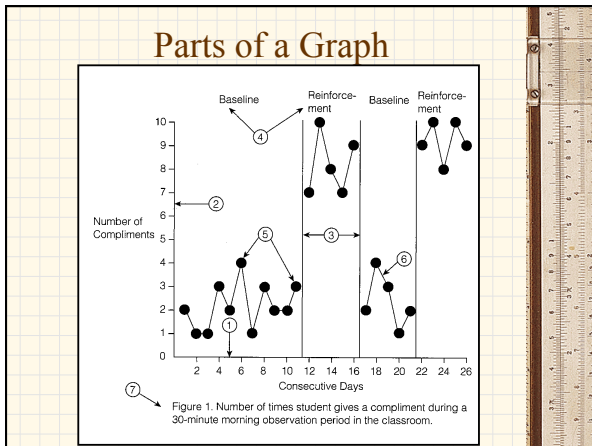


# Visual Analysis

Class 7  
SPCD 619

# “Follow your data”



- Four Questions to ask as you are analyzing the graphed data:  
(pp. 55-62, O' Neill, McDonnell, Billingsley, & Jenson, 2011)
1. Can you understand the basic variables involved in the study from examining the visual display of data?
  2. Does the study design allow for assessment of experimental control?
  3. Do the data presented provide a convincing demonstration of control by the IV with regard to changes in level, trend, variability, immediacy of effect, etc?
  4. If there is a demonstrated functional relationship between the IV and DV, does it represent a socially valid impact on the target behaviors of concern (i.e., clinical significance)?

## Visual Analysis

- Most frequently used analysis strategy with SCD

- Level
  - Trend
  - Variability
- +
- Overlap
  - Immediacy of effect
  - Consistency across similar phases

Within Phase

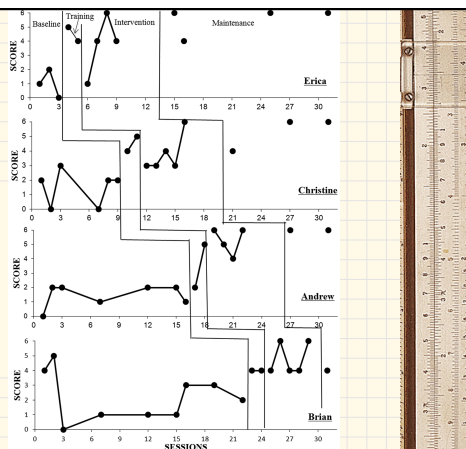
Between Phases

Other: Vertical analysis: intercept gap

(from Dr. Tom Kratochwill, 2011)

Kim & Lina-Thompson, 2013

How do we apply these components of visual analysis to interpret the data?



**Basic effect** – a predicted change in the DV when the IV is actively manipulated

– Assess the basic effect by simultaneous assessment of

- Level
- Trend
- Variability
- Immediacy of effect
- Overlap across adjacent phases
- Consistency of data patterns in similar phases (Parsonson & Baer, 1978; Kratochwill & Levin, 1992)

The core discriminations for visual analysis (once the design is selected as meeting standards) (Dr. Tom Kratochwill, 2011)

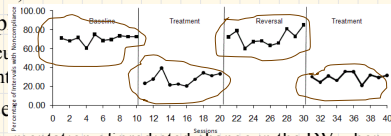
- Is the baseline adequate?
- Are there sufficient data within a phase to document a pattern?
- Is there a basic effect between two phases?
  - For each pair of phases?
- Is there a functional relationship documented by the full data set within a study?

**Evidence Standards: Strong**  
(from Dr. Tom Kratochwill, 2011)

- Baseline
  - Documentation of a research question/problem
  - Documentation of a predictable pattern ( $\geq 5$  data points)
- Each phase
  - Documentation of a predictable pattern ( $\geq 5$  data points)
- Basic effect\*
  - Documentation of predicted change in the DV when IV is manipulated
- Experimental control
  - 3 demonstrations of basic effect at different points in time – no demonstrations of IV failure

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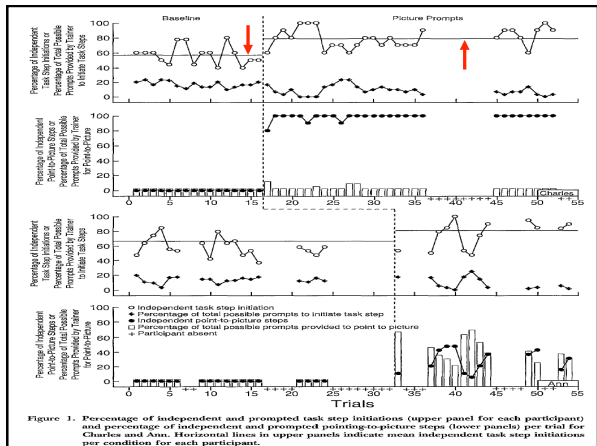
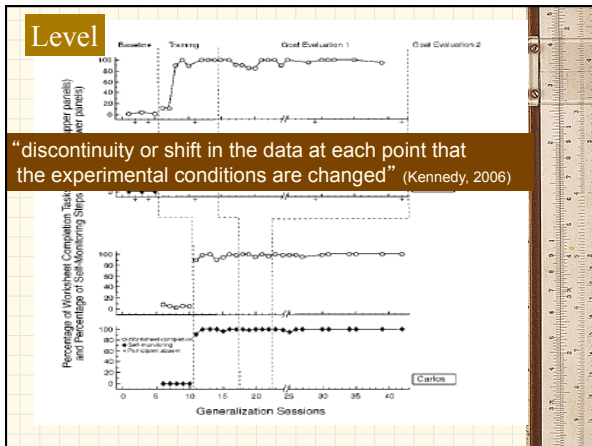
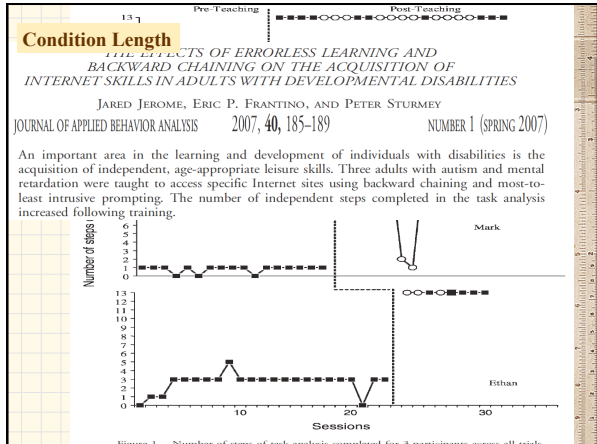
**Evidence Standards: Moderate**  
(from Dr. Tom Kratochwill, 2011)

- All of the STRONG criteria w/these exceptions
  - Only 3-4 data points per phase
  - 3 demonstrations of effect but w/additional demonstrations of failure-demonstrate-effect
  - Non-concurrent multiple baseline

## Evidence Standards: No Evidence

(from Dr. Tom Kratochwill, 2011)

- No support for an effect
  - Evidence does not meet MODERATE level

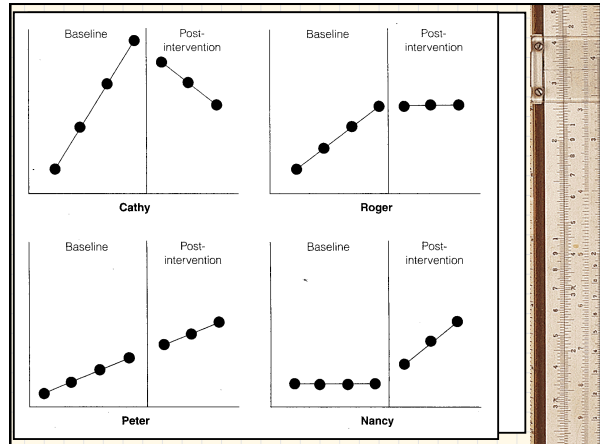
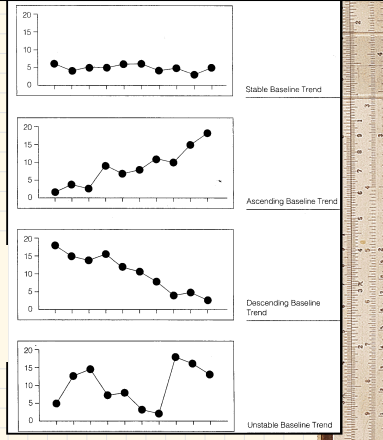


Trend: "best fit straight line that can be placed over the data within a phase."  
 (i.e., Are the data going up or down and to what extent?)

Assessed in terms of:

- Slope/angle

- Magnitude



### Quantitative Means of Estimating Slope

- Split-Middle Technique
- Least-Squares Regression

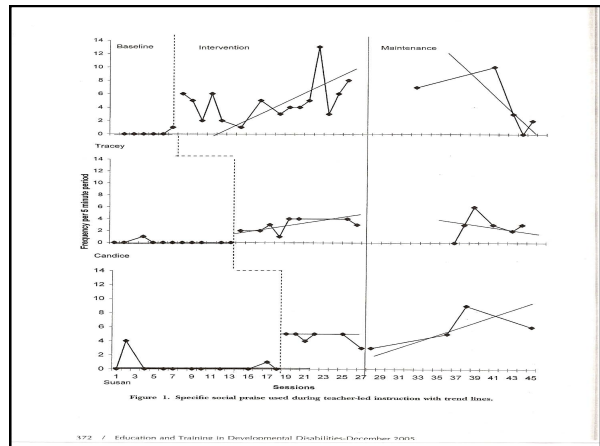
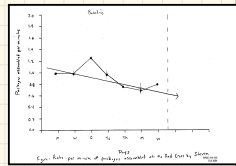
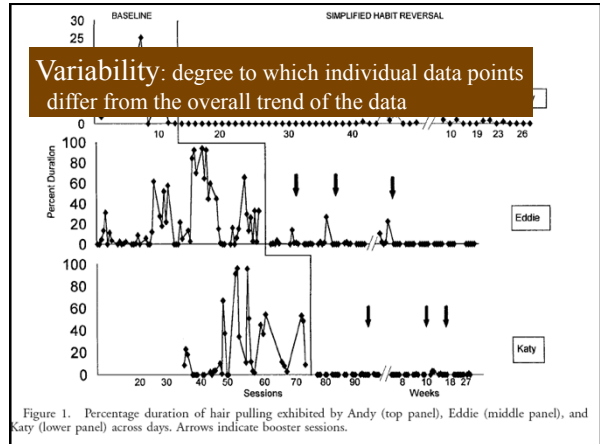
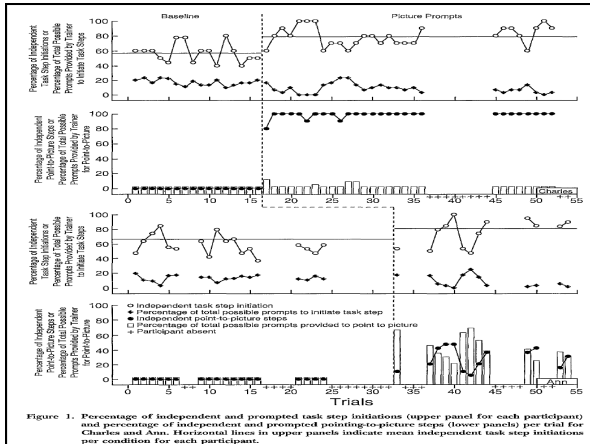


Figure 1. Specific social probe used during teacher-led instruction with trend lines.

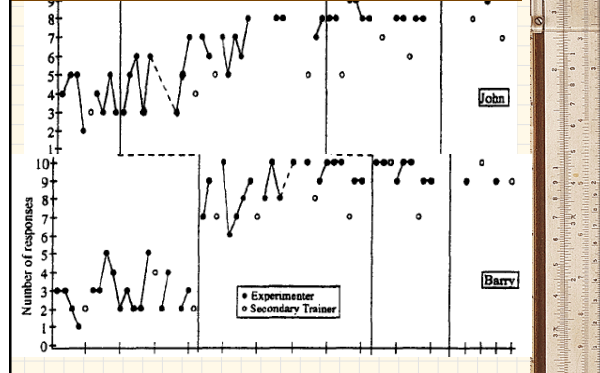
172 / Education and Training in Developmental Disabilities, December 2005

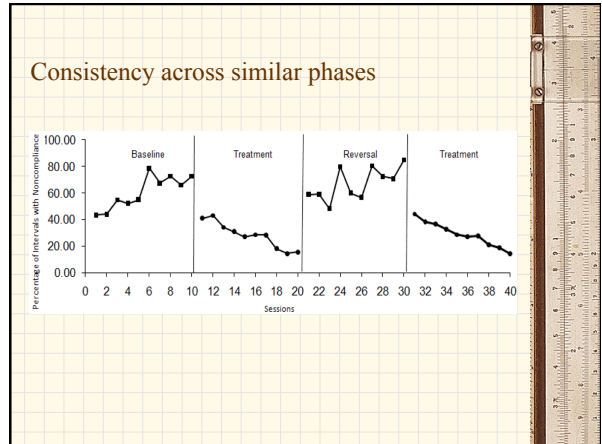
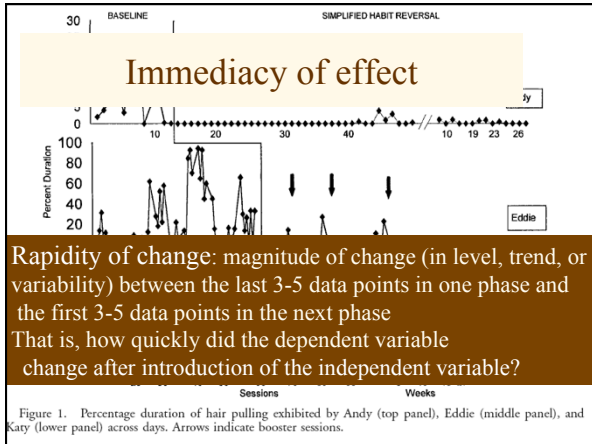
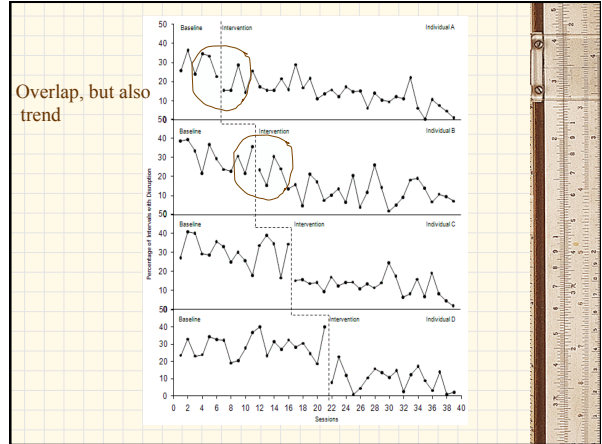
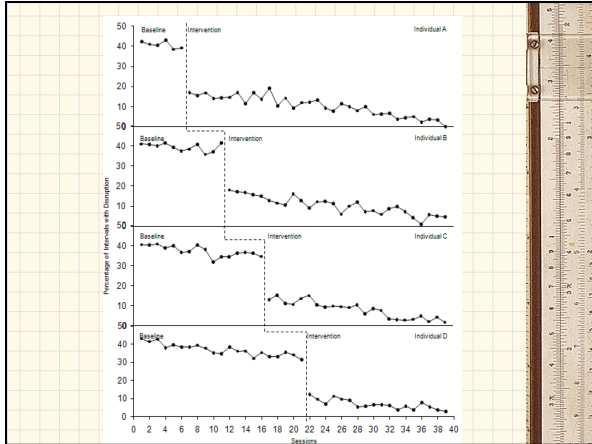


## Rule of thumb

- The more variable the data, the more data are needed to demonstrate a consistent pattern
  - Wait for consistent pattern before moving to next phase
- Can only compare data in adjacent phases

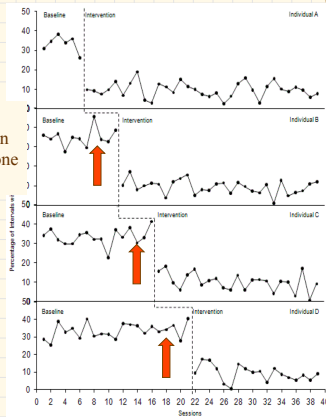
## Overlap: degree to which data in adjacent phases are the same





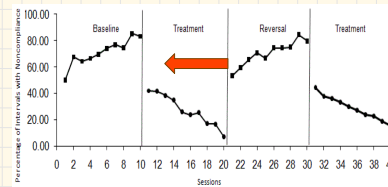
### Multiple Baseline

Also consider stability in non-intervened series when effect is demonstrated in one Series



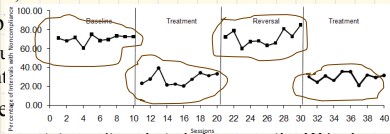
### Intercept gap to assess a basic effect (Dr. Richard Parker)

Magnitude of the intercept gap between the best-fit straight lines associated with two phases at each point of intervention



### Evidence Standards: **Strong** (from Dr. Tom Kratochwill, 2011)

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### Coming up for Week 8



- Finish up visual analysis
- Withdrawal & Reversal Design
  - Be sure to have done the readings, including the example studies