One Independent Variable with Repeated Measures Designs

Variations—

Sometimes called “single subject” or “small n designs”

How do you know if an Independent variable is affecting of changing dependent variable while only using a small number of subjects?

ABA Designs

Multiple Baseline Designs

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ABA Designs:

A = Baseline Condition

B = Intervention

A = Back to baseline

Question: Does cocaine increase an animal's activity level?

What's the IV? What's the DV?

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Operational definition of "activity level"—sensors on cage floor that measure motion

So, just administer the drug and watch how active they are? (as compared to what?)

Need a baseline!

1. Observe the rat's activity level (DV) for a baseline period (Baseline = A)
2. Administer the drug (IV) and observe activity level (Intervention = B)

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Problem: Potential confounding variables

1. History (external changes in environment)
2. Maturation (internal changes in the rat)
3. Testing Effects

So we add a period in which we revert to baseline conditions (remove the IV) and measure the DV

What should we expect to happen?

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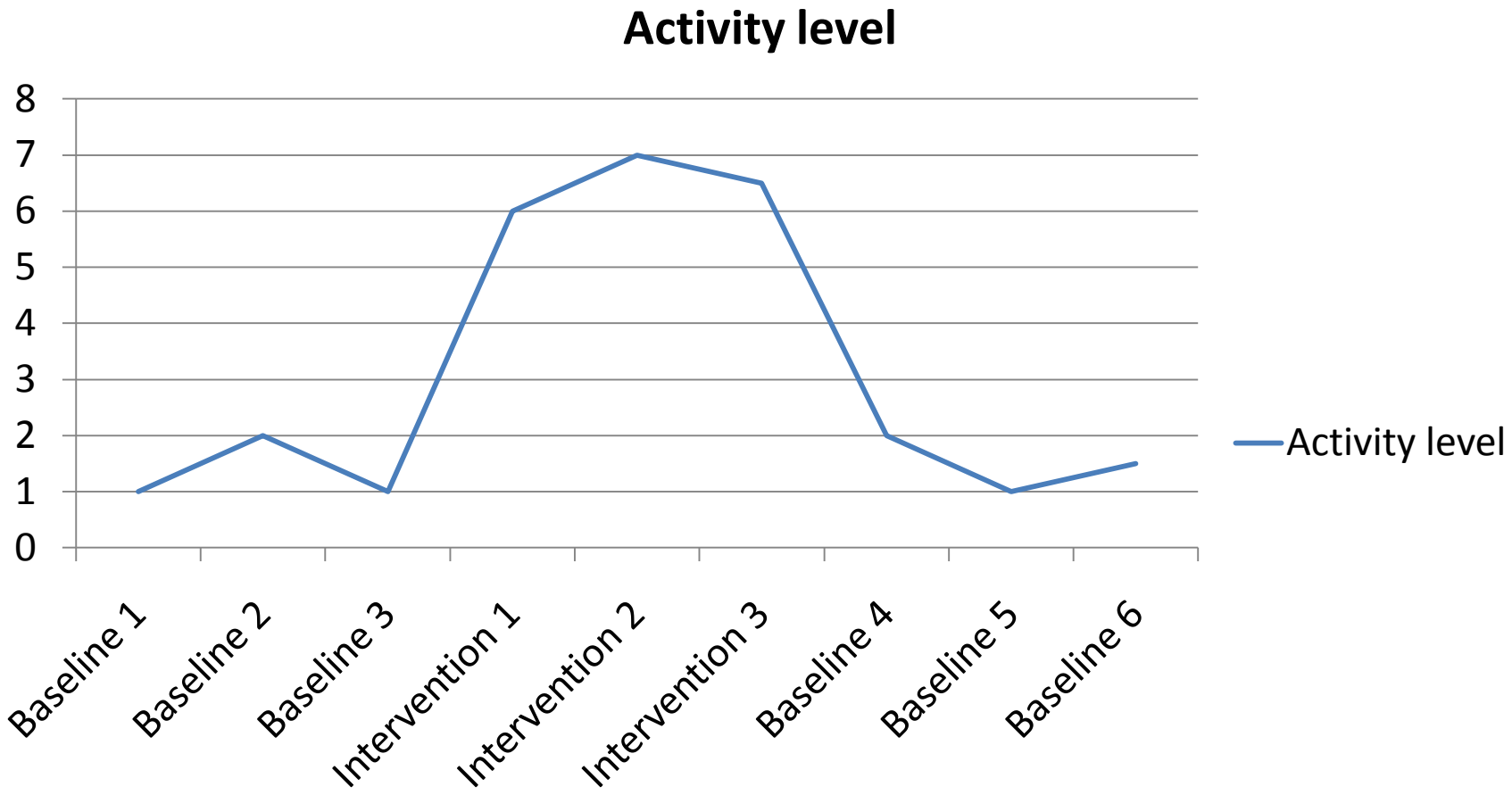

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Other examples:

1. Depression and Medication

    Depression is episodic and naturally increases and decreases from time to time.

    How do we know if a particular medication relieves depression?

ABA and if it's effective, reinstate medication

2. Behavioral Intervention

    How do we know if an intervention to change a problem behavior is effective?

Potential problem, however:

    What if we do not want to revert to baseline?

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How about a

Multiple baseline design?

TWO or more dependent measures

DV1 and DV2

A = Baseline

B = Intervention affecting DV1(only)

C = Intervention affecting DV2 (only)

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Example Behavioral Intervention—

"The Man Who Would Not Brush His Teeth"

Background: VA Program to help/encourage/support long term inpatients to go to group homes in the community

-Very demoralizing to spend your life in Hospital

-Very expensive esp when not necessary

-Challenge: Most had developed inappropriate behaviors over the years – e.g. did not make bed, dress in regular clothes, shower and so on

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The case: Man who had been in Hospital for 34 years (really!)

Group homes would not take him because he had extremely poor hygiene.

Goals: Many, but one was to get dressed in morning and another was to brush his teeth each night (Dependent Variables)

Intervention: Points given for doing (Points could be used in the PX)

Question: Was this an effective intervention?

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Baseline: Measure both DV's daily for three weeks

Intervention 1: Points for Dressing in Morning but not for Brushing Teeth—continue to measure both DV's for three weeks

Intervention 2: Add Points for Brushing Teeth each night—continue to measure both variables for three weeks

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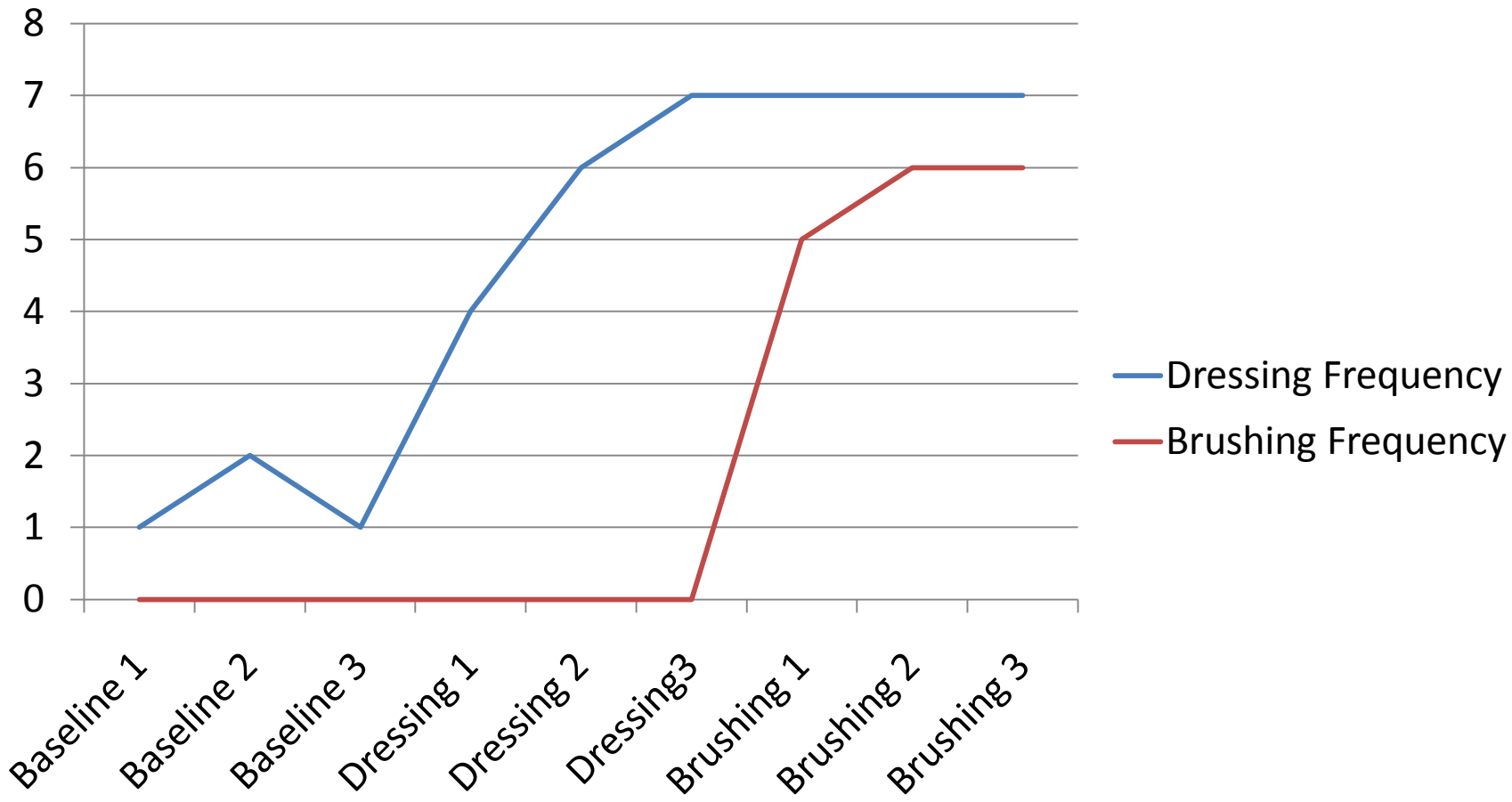

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End of story: Man did go to group home out in country and once he started living there he loved it. No longer needed point program. He knew he had to maintain behavior to maintain residence.

Question: Did “points” (IV) cause the changes in the two DV’s?

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Limitations:

1. Data not always this definitive: statistical analysis is a problem
2. May repeat this procedure with a few participants/clients/subjects but what about generalizability?

Nevertheless, it does appear that points (the IV) did increase Tooth Brushing (Case Closed)