Dispositional Variables

When properties of the subjects are treated like an independent variable

I. Logic of Dispositional Research
II. Examples of Dispositional Research
III. Problems with Dispositional Research
IV. Possible Solutions to the selection problem
V. Developmental Research

I. Logic of Experiments
A. Major components of Between Subjects Designs:
1. Hold all factors other than the I.V. constant
2. Random selection of subjects to conditions

However, what if we want to study a variable that we cannot really manipulate?
I. Logic of Experiments

B. Dispositional Variables: differences between populations or sub-populations that become the topic of investigation in and of themselves.

II. Some Examples:

I.Q. levels
clinical population differences
social class or economic differences
racial differences
sex
sexual preference
age

Handedness Example

Porac & Coren’s (1981)

Percentage of Population who are right-handed

Age (years)
Conclusion (Coren & Halpern, 1991)

left-handedness may be a marker for abnormalities that may affect longevity:
- birth stress related
- developmental delays
- immune system deficiencies
- intra-uterine hormone
Suppose that some pathology causes 10% of each group to change lateralization.

**Right sideness**
- 81%
- 1.2% pathology

**Left sideness**
- 9%
- 9%
- 50% pathology

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**Alternative Explanations:**

1. Gender - the majority of left-handers are male, and males die younger than females.
2. People are encouraged to change handedness (especially in writing). In one recent study 9% of people over 80 ate with their left hand.
Fitness Example

Deaths per 10,000 people/year

Cardio-vascular Deaths

Males

Females

Fitness level

Males

Females

Deaths per 10,000 people/year

Cancer Deaths

Males

Females

Fitness level

Males

Females

III. Problems with Dispositional Research

A. Selection Problem:
Basic assumption of between subjects design is called into question. We can no longer assign subjects to conditions randomly, so how can we insure that the different groups are the same?
B. Nature of the comparison:
What are you trying to conclude?

Example: male versus female

IV. Possible Solutions

A. Between subjects matching:
Try to equate the groups on other important variables.

- May not be possible.
- You may not know what the important variables are.

B. Use a within-subjects design.
Try to test the person under more than one value.
Example: Pre- versus post menopause
alcoholic versus per-alcoholic
follow subjects as they age
V. Developmental Psychology

A. Nature of developmental change
- not just age, but a group of variables correlated with age.
1) biological change:
   muscle coordination
   hormonal changes (puberty, pregnancy, menopause)
   changes in brain structure

A. Nature of developmental change
2. Learning
   instrumental and classical conditioning
   new behaviors acquired
   language learning

A. Nature of developmental change
3. Experience:
   Normative Age graded experiences
   Examples:
   age 6 go to school
   age 16 allowed to drive
   age 21 allowed to drink
A. Nature of developmental change

In developmental research, we are interested in the development or changes in structures and behaviors of individuals as a result of these factors.

B. Two major methods

Cross sectional designs
Longitudinal designs

1. Cross sectional designs

A) Definition: different groups of individuals are selected at the same point in time to represent different developmental levels.

Example: DeLoache (1987) compared 21/2 and 3 year olds in a model task. Toy hidden in model, child then asked to find the toy in the real room.
1. Cross sectional designs (cont)

B. Advantages of Cross-sectional research
1) Can obtain a wealth of developmental information in a short period of time.
2) Only need to test each individual once, so there are no effects of repeated testing.

1. Cross sectional designs (cont)

C. Disadvantages
1) Problem of equating the groups on important variables
2) Separation of developmental processes from cultural or historical differences
“cohort effects” generation of people raised in the same “world” or “climate” share experiences.

Examples:
- WWII cohort
- Vietnam
- “Computer Age”

Example of a cohort problem

**Mental test score**

Jones & Kaplan (1945)

Perecent of US population completing High School
2. Longitudinal Designs

A. Follow the same group of individuals over an extended period of times and measure changes in performance.

Example: Eisdorfer & Wilkie (1973) Gave a full scale WAIS four times to individuals over a 10 year period.
2. Longitudinal Designs

B. Advantages of Longitudinal Designs
1. Holds important subject variables constant
2. May detect effects not visible in cross-sectional designs

C. Disadvantages of Longitudinal Designs

1. Attrition: (Duke study)

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2. Effects of Repeated Testing
3. Cohort Effect threatens generalizability
4. Practical issues
   - inflexible
   - slow to provide answers
   - publish or perish?
3. Cross-Sequential Designs

A. Definition: combines elements of longitudinal and cross sectional designs. Several different developmental groups are followed over a period of time.

Example: Schaie & Strother (1968)
Mental tests given to groups ranging in age from 20 to 60, and each group followed for 7 years.

Schaie & Strother (1968)

Example 2
Dennis (1966) (see also Cole, 1979)
Followed publication records of in a number of fields over the course of their lives. Included artists and scientist that lived to 79 or older.
Social Science group (history, philosophy)
Science (Biology, Chemistry, mathematics)
Artists (drama, liberal writing, poetry)
**Percentage of Work Produced during Decade**

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