

# Chapter Eight

## Primary Data Collection: Observation



### LEARNING OBJECTIVES

1. Develop a basic understanding of observation research.
2. Learn the approaches to observation research.
3. Understand the types of machine observation.
4. Appreciate how online tracking is changing and its growing use in social media.
5. Learn how virtual shopping environments are created and used in marketing research.

# Observation in Marketing Research



- Observation
  - The systematic process of recording actual behavioral patterns of people, objects, and events as they happen.
  - *The systematic process of recording patterns of occurrences or behaviors without normally communicating with the people involved.*

# The Nature of Observation Research

## Natural vs. Contrived:

- Is the setting made up by the researcher or are you observing a naturally occurring event?



## Open vs. Disguised:

- Does the subject know the purpose of the research?

## Human vs. Machine:

- Can a machine better capture data – or not?

## Structured vs. Unstructured:

- Is the researcher taking detailed notes or is the researcher making more general observations?

## Direct vs. Indirect –

- *Example “Garbologist”*: Going through one’s garbage – or “stuff” to analyze consumption patterns.

# Natural Setting

---

Subjects are observed in the environment where the behavior normally takes place.

- Shopping in a store
- Using or consuming a product at home

# Contrived Setting

---

Subjects are observed in an environment that has been specially designed for recording their behavior.

- “fake” store
- Computer simulation

# THE RESEARCH SETTING: NATURAL AND CONTRIVED SETTINGS

- Natural setting – A location or site where a behavior of interest normally occurs
  - Researcher does not have to arrange or manipulate the setting
  - Making observations can be difficult
- Contrived setting, or structured setting – A location or site arranged to mimic the natural setting within which a behavior of interest normally occurs



# **STRUCTURE**

The degree of standardization used with the data collection instrument.

# Structured Observation

Method of observation in which the phenomena to be observed (typically behaviors) can be defined precisely along with the categories used to record the phenomena.

Record #: 83

male       female

First soup can picked up for examination:

- Campbell's
- Progresso
- Lipton
- Knorr
- other: \_\_\_\_\_

Total # cans picked up for examination, any brand: 3

Brand selected:

(leave blank if none selected)

- Campbell's
- Progresso
- Lipton
- Knorr
- other: \_\_\_\_\_

Time (in front of soup shelves):

12 seconds

# Unstructured Observation

Method of observation in which the researcher has a great deal of flexibility in terms of what to note and record.

Purchaser first paused in front of the Campbell's brand. He glanced at the price on the shelf, picked up a can of Campbell's, glanced at its picture and list of ingredients, and set it back down. He then checked the label and price for Progresso. He set that back down and after a slight pause, picked up a different flavor can of Campbell's than he originally looked at, placed it in his cart, and moved down the aisle.

# Disguised vs. Undisguised Observation

---

With **disguised observation**, subjects are not aware that they are being observed.



With **undisguised observation**, subjects are aware that they are being observed.

# Why Use Observation Research?

- Observation is often the best method for generating valid data about individuals' behavior.
  - Parents were asked whether the color of a new toy would matter. All said No.
  - After the study , as a reward for participation, researchers offered the parents a toy to take home.
  - Clamored for purple and blue toys.

# Primary Advantage of Observational Research

- In the telephone survey, 96 percent of people said they always washed their hands after using a public bathroom.
- Chicago and San Francisco 89%
- Atlanta, and New York 85%
- 98 percent of women washed
- 20 percent of people using the restrooms at Pennsylvania Station and Grand Central Terminal in New York did not wash their hands

# Advantages of Observation Research

- You see what people actually do - *rather than what they say they do*
- Firsthand information is less prone to biases
- The observational data can be executed quickly and relatively accurately
- Electronic collection such as scanners is more efficient than manual counts
- Clients can also observe their customers along with the researcher



# Disadvantages of Observation Research

- Only physical or behavior can be measured
- Can't measure attitudes, beliefs, intentions, or feelings
- Not always a good representation of the general population
- Interpretation is somewhat subjective depending on observation type
- Data analysis is generally more qualitative than quantitative
- It can be expensive and time consuming if subjects not readily available
- Data can be time sensitive making predictive analysis tricky

# Ethnographic Observation Research

**The study of human behavior in its natural context, involving observation of behavior and physical setting.**

## Advantages:

- It is reality-based; it can show exactly how consumers live with a product, not just what they say about it or how they remember using it.
- It can reveal unexpressed needs and wants; it can discover unexploited consumer benefits.
- It can reveal product problems.
- It can show how, when, where, and why people shop for brands.
- It can show who in the family actually uses a product.
- It can take advantage of consumers' experience with the category and their hands-on creativity.
- It can test new products in a real context.
- It can reveal advertising execution ideas that derive directly from consumer experience.
- It can form a better relationship with your consumers based on an intimate knowledge of their lifestyles.



# Example One: Parking Interviews

Ellen Isaacs, with a team from the Palo Alto Research Center,

- Objective: how people searched for parking, and whether the signage was clear, especially when driving by during rush-hour.
- Focus on
  - challenges people encountered,
  - the way parking restrictions were defined,
  - what worked and didn't work with the existing infrastructure,
  - what could be improved to make parking better.
- The findings were used to inform the design of new parking systems.
- Her ted talk link:
- <https://www.youtube.com/watch?v=nV0jY5VgymI>

# Machine Observation

*Observations made by machines rather than people.*

## Techniques Include:

- Neuromarketing:
  - Electroencephalograph
  - Galvanic Skin Responses
  - Eye Tracking
  - Facial Action Coding Services (FACS)
- Television Audience Measurement
- Instore Tracking
- TiVo Targeting, Cablevision Targeting
- Symphony IRI Consumer Network



# Eye Tracking



# Eye Tracking

Media: Diapers-01.jpg  
Time: 00:00:00.000 - 00:00:06.033  
Participant filter: All



Exclusively gentle for the most sensitive skin.

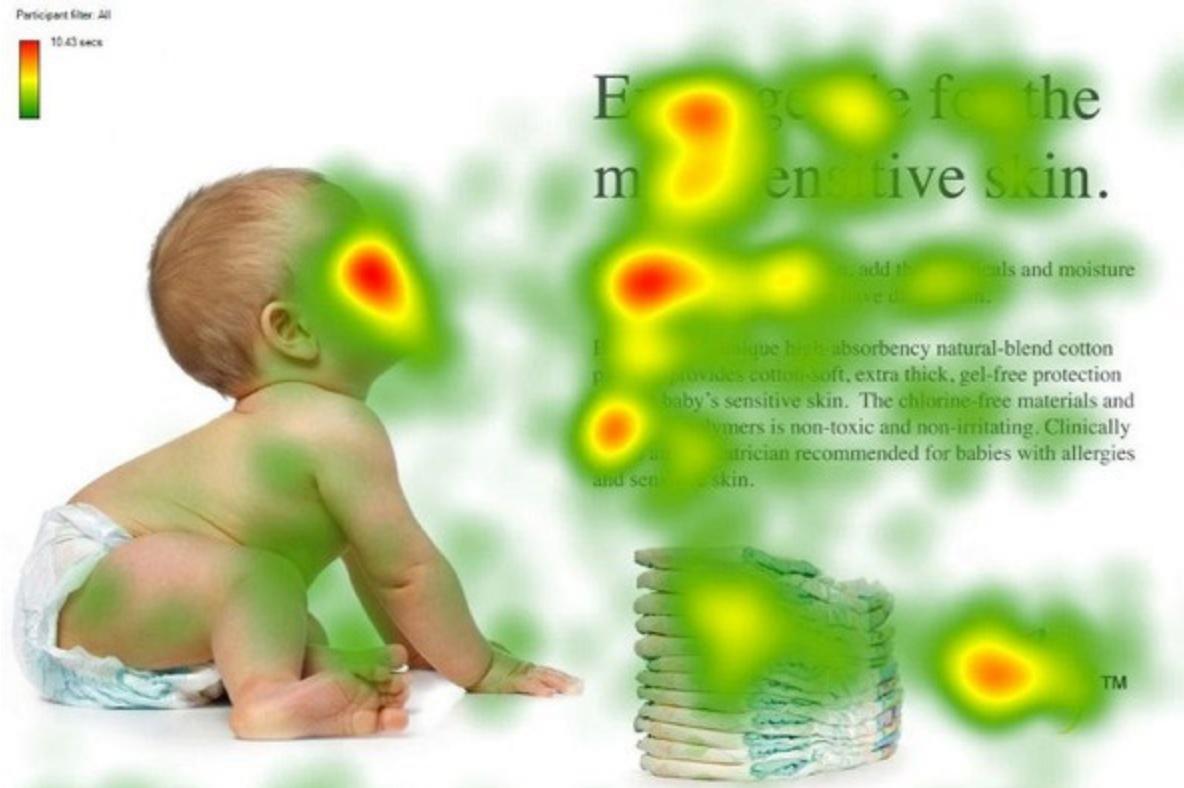
Since babies have sensitive skin, add the chemicals and moisture to your diaper and you have diaper rash.

Baby Wipes' unique high-absorbency natural-blend cotton fibers provides cotton-soft, extra thick, gel-free protection for your baby's sensitive skin. The chlorine-free materials and absorbent polymers is non-toxic and non-irritating. Clinically tested and pediatrician recommended for babies with allergies and sensitive skin.



If you are not satisfied with the baby leakage protection, you will get your money back. Read more about our leakfree guarantee at [www.baby.com](http://www.baby.com)

# Eye Tracking



If you are not satisfied with the baby leakage protection, you will get your money back. Read more about our leakfree guarantee at [www.baby.com](http://www.baby.com)

# Can You Spot a Fake?



## Which One Is Fake?

- Is it even clear if consumers like what you're selling? Some might tell you they like your product even if they don't. Who's really interested and who's just being polite?
- A true smile will involve the eyes as well as the mouth. Also, a true smile will curve the lips while a fake smile won't. In a fake smile, the corners of the mouth will move outward, not upward.

# Virtual Shopping

## Advantages:

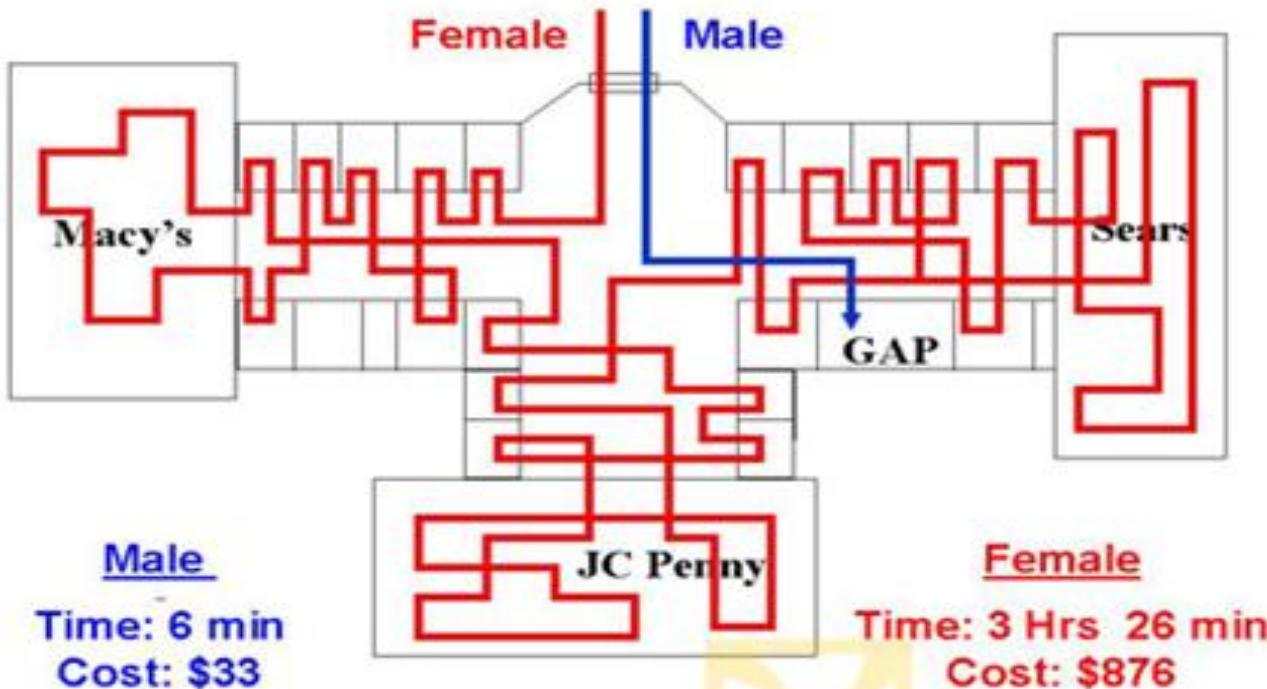
1. Duplicates the distracting clutter of an actual market
2. Can set up and alter the tests quickly
3. Production costs are low after set up
4. Very flexible

Read in the text how Kimberly-Clark uses virtual shopping.

<https://www.youtube.com/watch?v=UNMHH0kIpPE>

# Man and Woman Shopping Behavior

## Mission: Go to Gap, Buy a Pair of Pants



# Chapter Nine

## Primary Data Collection: Experimentation and Test Markets



### LEARNING OBJECTIVES

1. Understand the nature of experiments.
2. Gain insight into requirements for proving causation.
3. Learn about the experimental setting.
4. Examine experimental validity.
5. Compare types of experimental designs.
6. Understand extraneous variables
7. Analyze experimental design, treatment, and effects.
8. Examine the limitations of experimental research.
9. Evaluate selected experimental designs.
10. Gain insight into test marketing.

# Three Types of Primary Data Research

**Exploratory Research**

*(explore)*

**Descriptive Research**

*(describe)*

**Causal Research**

*(establish cause and effect)*

# Types of Exploratory Research

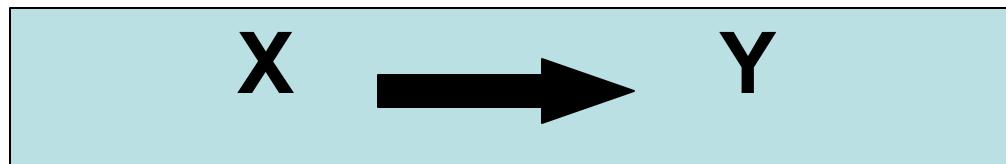
- Literature Search
- Depth Interviews
- Focus Groups
- Case Analyses
- Projective Methods
- Experience survey

# Descriptive Research

- Has six specifications:
  - Who
  - What
  - When
  - Where
  - Why
  - How
- Surveys and Observations

# Causal Research

The purpose of causal research is to test cause and effect relationships:



**condition X causes event Y**

# Causal Research

- Evidence of Causality
  - Time Order
    - Evidence that shows X occurs before Y
  - Consistent variation
    - Evidence of the extent to which X and Y occur together or vary together in the way predicted by the hypothesis
  - Elimination of Other Explanations
    - Evidence that allows the elimination of factors other than X as the cause of Y

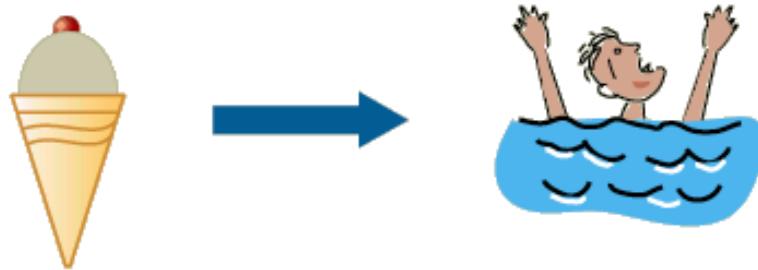
# Evidence of Causality

- Because we can never know for certain that we have eliminated all other possible causes of an effect, we can never state with certainty that  $X$  caused  $Y$ .

## The Spurious Effect of Ice Cream

---

**Proposed Causal Inference**



**Spurious Association**



# Spurious Relationship

- Shoe size and reading performance for elementary school children.
- Number of police officers and number of crimes.
- Number of doctors in region and number of people dying from disease.
- Tea drinking and lung cancer

# Causal Research

- Causation is often tested through experimentation
- Experimentation includes independent (condition X) and dependent (event Y) variables
- The basic point of an experiment is to change the levels of one or more X variables and examine the resulting impact on Y variables
- At the same time, it is very important to control (i.e., hold constant) other variables that might impact Y variables

# What is an Experiment?

## An Experiment:

- A research approach in which one variable is manipulated and the effect on another variable is observed.

## Key Variables:

- **Independent:** variables one controls directly such as price, packaging, distribution, product features, etc.
- **Dependent:** variables one does not directly control such as sales or customer satisfaction - (*might control them by manipulating the independent variable*)
- **Treatment:** the independent variable manipulated during an experiment to measure its effect on the dependent variable
- **Extraneous:** factors one does not control but has to live with, such as the weather

# Experimental Setting

Laboratory:

Experiments conducted in a controlled setting.

Field:

Tests conducted in an actual environment, such as a marketplace.

# Lab Experiment

## Example 1

Purpose: test the web design attractiveness.

Step: present 2 different websites.

Measure the sessions of the respondents.



## Example 2

Purpose: predict the movie box office revenue

Step: show movie trailers to respondents and ask them to provide response toward a purchase intention question.

# Examples of True Experimental Designs

## EXHIBIT 9.1

### Examples of True Experimental Designs

**Situation:** California Tan wants to measure the sales effect of a point-of-purchase display. The firm is considering two true experimental designs.

#### After-Only with Control Group Design

Basic design:

Experimental Group:  $(R) \times O_1$

Control Group:  $(R) \quad O_2$

Sample: Random sample of stores that sell their products.

Stores are randomly assigned to test and control groups.

Groups can be considered equivalent.

Treatment ( $X$ ): Placing the point-of-purchase display in stores in the experimental group for 1 month.

Measurements ( $O_1, O_2$ ): Actual sales of company's brand during the period that the point-of-purchase displays are in test stores.

Comments:

Because of random assignment of stores to groups, the test group and control group can be considered equivalent.

Measure of the treatment effect of  $X$  is  $O_1 - O_2$ . If  $O_1 = 125,000$  units and  $O_2 = 113,000$  units, then treatment effect = 12,000 units.



# Experimental Validity

## Internal Validity:

The extent to which competing explanations for the experimental results observed can be ruled-out.

## External Validity:

The extent to which causal relationships measured in an experiment can be generalized to outside persons, settings, and times.

# Internal Validity vs. External Validity

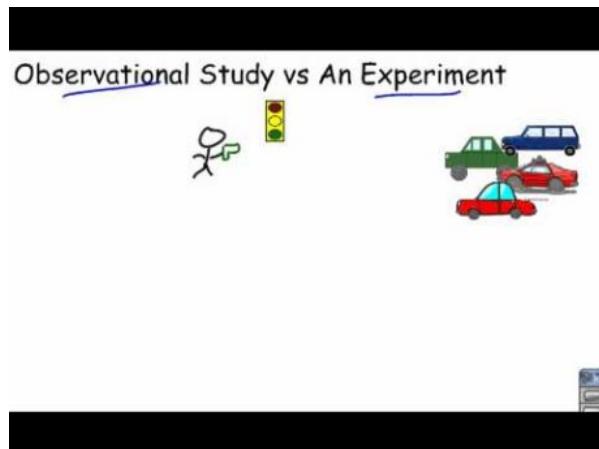
**Internal Validity** The degree to which an outcome can be attributed to an experimental variable and not to other factors. *Lab experiments tend to have higher levels of internal validity.*

**External Validity** The degree to which the results of an experiment can be generalized, or extended, to other situations. *Field experiments tend to have higher levels of external validity.*

# YouTube Video

## Observational Study vs Experiment

- <https://www.youtube.com/watch?v=NG4lFmSO7VQ>



# Experimental Notation

## “X” = Independent Variable:

Indicates the exposure of an individual or a group to an experimental treatment. This variable is something the researcher can change and manipulate (such as prices and new packages). It is hoped that the change in the independent variable will cause a change in the dependent variable.

## “O” = Dependent Variable:

Indicates a variable the researcher cannot change directly. It is hoped that changing the independent variable will cause changes in the dependent variable (sales of the product). Thus the dependent variable is “*dependent*” on what the researcher does with the independent variable.

# True Experimental Design

- Test whether imposing mandatory attendance policy would increase students' test grade
- O-Grade (dependent variable)
- X-imposing mandatory attendance after exam 1
- Control group: no mandatory attendance
- Experiment group: mandatory attendance

# Experimental Design Examples

Given:

O = The Measurement of the Dependent Variable

X = The Manipulation/Change of Independent Variable

E = Experimental Effect - Change in Dependent Variable due to Change in the Independent Variable

**Before and After With  
Control Group**

$O_1 X O_2$   
 $O_3 \quad O_4$

True experimental design that involves random assignment of subjects or test units to experimental and control groups and pre- and post -measurements of both groups.

**Before and After With  
Control Group**

**O<sub>1</sub>X O<sub>2</sub>  
O<sub>3</sub> O<sub>4</sub>**

True experimental design that involves random assignment of subjects or test units to experimental and control groups and pre- and post -measurements of both groups.

- Experimental group
  - O<sub>1</sub>=119, O<sub>2</sub>=127 (exam 1 and exam 2 grade)
- Control group
  - O<sub>3</sub>=120, O<sub>4</sub>=125 (exam 1 and exam 2 grade)

$$\text{Effect} = (O_2 - O_1) - (O_4 - O_3) = 8 - 5 = 3.$$

The O<sub>4</sub>-O<sub>3</sub> control the effect of extraneous variables.

# Extraneous variables

## **Maturation:**

Changes in subjects occurring during the experiment that are not related to the experiment but which might affect subjects' response to the treatment factor.

- E.g., Maturation- students get smarter from exam1 to exam 2 (they know how to study for the course).

**Before and After With Control Group**

$O_1 \times O_2$   
 $O_3 \quad O_4$

True experimental design that involves random assignment of subjects or test units to experimental and control groups and pre- and post -measurements of both groups.

**History:** Intervention, between the beginning and end of an experiment, of outside variables that might change the dependent variable.

- E.g., professor might provide sample questions, which increases grade.

**Mortality:** Loss of test units or subjects during the course of an experiment which might result in a non-representativeness.

- E.g., Some students might drop from one group.

**Note:** The two threats are not controlled by the true experiment (lab experiment can control the history threat but it is hard for field experiment).

# Experimental Design Examples

Given:

O<sub>1</sub> = Grade of experimental group  
X = Attendance policy  
O<sub>2</sub> = Grade of control group

## After Only With Control Group

Subjects in the experiment are randomly assigned to experiment and control groups respectively. No pre measurements of the dependent variable are taken.

*Experimental Group*

X O<sub>1</sub>

*Control Group*

O<sub>2</sub>

### **After Only With Control Group**

Subjects in the experiment are randomly assigned to experiment and control groups respectively. No pre measurements of the dependent variable are taken.

<i>Experimental Group</i>	X	O <sub>1</sub>
<i>Control Group</i>		O <sub>2</sub>

- Experimental group: O<sub>1</sub>=127 (exam 2 score)
- Control group: O<sub>2</sub>=125 (exam 2 score)

$$\text{Effect} = O_1 - O_2 = 127 - 125 = 2$$

**Assumption:**

Randomization

Test Mortality same to each group (e.g., either no dropout or drop due to Covid).

# Selected Experimental Designs

## Pre-Experimental Design:

- *Designs that offer little or no control over extraneous factors.*

## Two Key Design Types:

1. One-Shot Case Study
2. One-Group Pretest-Posttest

# Experimental Design Examples

Given:

O = The Measurement of the Dependent Variable

X = The Manipulation/Change of Independent Variable

E = Experimental Effect - Change in Dependent Variable due to Change in the Independent Variable

Example: X-mandatory attendance policy, O- exam score

## One Shot Case Study

**X O<sub>1</sub>**

Change the independent variable, then measure the change in the dependent variable to see if there was in fact a change in the dependent variable that the researcher might conclude resulted from the change in the independent variable.

# Experimental Design Examples

Example: change x, measure the change in the O.

Problem: no pretest, no control group.

## One Shot Case Study

**X O<sub>1</sub>**

Change the independent variable, then measure the change in the dependent variable to see if there was in fact a change in the dependent variable that the researcher might conclude resulted from the change in the independent variable.

# Experimental Design Examples

Given:

O = The Measurement of the Dependent Variable

X = The Manipulation/Change of Independent Variable

E = Experimental Effect - Change in Dependent Variable due to Change in the Independent Variable

**One-Group Pretest-Posttest**

$O_1 X O_2$

Same as “**One-Shot**” except measure the dependent variable before the change in the independent variables. The researcher is establishing a benchmark from which to gauge the change.

# Experimental Design Examples

## Problems

History threat: Observed change might be caused by other events outside the experiments.

Maturation threat: Respondents have grown older, smarter, more experienced.

### One-Group Pretest-Posttest

$O_1 \times O_2$

Same as “**One-Shot**” except measure the dependent variable before the change in the independent variables. The researcher is establishing a benchmark from which to gauge the change.

# True Experimental Design

Research using an experimental group and a control group to which test units are randomly assigned.

Two Key Design Types:

1. Before and After With Control Group
2. After Only With Control Group

# Experimental Design Examples

Given:

O = The Measurement of the Dependent Variable

X = The Manipulation/Change of Independent Variable

E = Experimental Effect - Change in Dependent Variable due to Change in the Independent Variable

**Before and After With  
Control Group**

$O_1 X O_2$   
 $O_3 \quad O_4$

True experimental design that involves random assignment of subjects or test units to experimental and control groups and pre- and post -measurements of both groups.

# Experimental Design Examples

Given:

O = The Measurement of the Dependent Variable

X = The Manipulation/Change of Independent Variable

E = Experimental Effect - Change in Dependent Variable due to Change in the Independent Variable

## After Only With Control Group

Subjects in the experiment are randomly assigned to experiment and control groups respectively. No pre measurements of the dependent variable are taken.

*Experimental Group*

**X O<sub>1</sub>**

*Control Group*

**O<sub>2</sub>**

# Examples of True Experimental Designs

## EXHIBIT 9.1

### Examples of True Experimental Designs

**Situation:** California Tan wants to measure the sales effect of a point-of-purchase display. The firm is considering two true experimental designs.

#### After-Only with Control Group Design

Basic design:

Experimental Group:  $(R) \times O_1$

Control Group:  $(R) \quad O_2$

Sample: Random sample of stores that sell their products.

Stores are randomly assigned to test and control groups.

Groups can be considered equivalent.

Treatment ( $X$ ): Placing the point-of-purchase display in stores in the experimental group for 1 month.

Measurements ( $O_1, O_2$ ): Actual sales of company's brand during the period that the point-of-purchase displays are in test stores.

Comments:

Because of random assignment of stores to groups, the test group and control group can be considered equivalent.

Measure of the treatment effect of  $X$  is  $O_1 - O_2$ . If  $O_1 = 125,000$  units and  $O_2 = 113,000$  units, then treatment effect = 12,000 units.



# Examples of True Experimental Designs

## Before and After with Control Group Design

Basic design:

Experimental Group:	(R)	$O_1$	X	$O_2$
Control Group:	(R)	$O_3$		$O_4$

Sample: Same as after-only design.

Treatment (X): Same as after-only design.

Measurements ( $O_1$  to  $O_4$ ):

$O_1$  and  $O_2$  are pre- and postmeasurements for the experimental group;

$O_3$  and  $O_4$  are the same for the control group.

Results:

$$O_1 = 113,000 \text{ units}$$

$$O_2 = 125,000 \text{ units}$$

$$O_3 = 111,000 \text{ units}$$

$$O_4 = 118,000 \text{ units}$$

Comments:

Random assignment to groups means that the groups can be considered equivalent.

Because groups are equivalent, it is reasonable to assume that they will be equally affected by the same extraneous factors.

The difference between pre- and postmeasurements for the control group ( $O_4 - O_3$ ) provides a good estimate of the effects of all extraneous factors on both groups. Based on these results,  $O_4 - O_3 = 7,000$  units. The estimated treatment effect is  $(O_2 - O_1) - (O_4 - O_3) = (125,000 - 113,000) - (118,000 - 111,000) = 5,000$  units.

# **MARKET TESTING**

A controlled experiment done in a limited but carefully selected sector of the marketplace.

# Test Markets

Real world testing of a new product or some element of the marketing mix using an experimental or quasi experimental design.

## Types of Test Markets

- Traditional or standard test markets
- Scanner or electronic test markets
- Controlled test markets
- Simulated test markets



# Types of Test Markets

**Standard Test Market** A test market in which the company sells the product through its normal distribution channels.

- McDonald's perform test marketing in their own stores.
- McLobster
- On the menu with a big “NEW”

# Types of Test Markets

**Controlled Test Market** An entire test program conducted by an outside service in a market in which it can guarantee distribution.

- Outside research service company: ACNielsen, IRI
  - Pay distributors to provide the required amount of shelf space for test products.
  - Monitor sales of the product.
  - get their products into test markets more quickly.
  - Often supply more realistic levels of distribution.
  - Provide better monitoring of product movement.

**Simulated Test Market** A study in which consumer ratings are obtained along with likely or actual purchase data often obtained in a simulated store environment; the data are fed into computer models to produce sales and market share predictions.



For Instance, customers have given a set amount of money and specific ads are shown to all the selected customers and asked them to purchase from given options.

# Video for test marketing

- Adventures in test marketing
  - <https://www.youtube.com/watch?v=7wx5B2p8qyg>



# Chapter Ten

## The Concept of Measurement



### LEARNING OBJECTIVES

1. Analyze the concept of measurement.
2. Define what is a concept.
3. Learn the nature of a construct.
4. Write a concept constitutively.
5. Define a concept operationally.
6. Create a measurement scale.
7. Evaluate the reliability and validity of a measurement.

# Measurement Process

## Measurement:

The process of assigning numbers or labels to persons, objects, or events in accordance with specific rules for representing quantities or qualities or attributes.

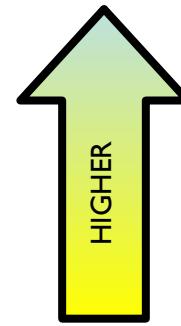
**Rule:** The guide, method, or command that tells a researcher what to do.

## Constructs:

*Specific types of concepts that exist at higher levels of abstraction.*

# Scales of Measurement

Ratio  
Interval  
Ordinal  
Nominal



Higher levels of measurement have all the properties  
of lower levels of measurement

# Nominal Data

*Scales that partition data into mutually exclusive and collectively exhaustive categories.*

## Classification Type Data:

- Yes or no questions
- Nouns in general
- Gender
- Race / Ethnicity
- Occupation
- Text open-ended questions

## Analysis Approach:

- Cross tabulations / Percentages
- Sums and frequency counts
- *One can't tell the relative value of responses*

# Ordinal Data

*Scales that maintain the labeling characteristics of nominal scales and have the ability to order data.*

## **Ranking Type Data:**

- Best liked, worst liked
- Win, place, or show
- First, second, third
- Small, medium, and large
- Comparisons rankings -  
*“rank these movies from best to worst”*

## **Analysis Approach:**

- Cross tabulations, sums and frequency counts
- Percentages, mode, mean for some types
- *One can tell the relative order of responses  
but not the distance between responses*

# Interval Data

*Scales that have the characteristics of ordinal scales, plus equal intervals between points.*

## **Comparison Type Data:**

- One a “1 to 10” scale
- Age, income, etc. as ranges

## **Analysis Approach:**

- Standard deviation, variance, kurtosis
- Descriptive statistics - mean, median, mode
- Sums and ranged frequency counts
- Correlation
- *Can tell the relative value of responses and can tell the distance between responses*

# Ratio Data

*Scales that have the characteristics of interval, plus a meaningful zero point.*

## Flat Numeric Type Data:

- Age = 50 (*not an age range*)
- Income = \$25,000 (*not an income range*)
- Number of children: \_\_\_\_\_

## Analysis Approach:

- Standard deviation, variance, kurtosis
- Descriptive statistics - mean, median, mode
- Sums and ranged frequency counts
- Pearson correlation, regression
- Can tell the relative value of responses and can tell the distance between responses and how they relate to zero

# Application Scenario

- Sherry Shire is a resident of Danfield, a community with a population of approximately 9,000 residents.
- She is thinking of pursuing her dream of opening her own espresso bar.
  - Four purveyors of espresso drinks in Danfield.
- Purpose:
  - identify the relative size of each Espresso vendor based on consumer purchase frequency.

# Differences in Information Conveyed by Numbers

- 1A. For each coffee shop listed below, please indicate whether you have purchased an espresso drink there in the last week.

Central Perc

(1) Yes      (2) No

Village Market

(1) Yes      (2) No

Starbucks

(1) Yes      (2) No

Gino's Cappuccinos

(1) Yes      (2) No

- 
- 1B. Please rank the following coffee shops according to how frequently you have purchased an espresso drink there in the last week, where 1 = most frequently, and 4 = least frequently.

\_\_\_\_\_ Central Perc

**1** \_\_\_\_\_ Village Market

**4** \_\_\_\_\_ Starbucks

**2** \_\_\_\_\_ Gino's Cappuccinos

**3**

# Differences in Information Conveyed by Numbers: Nominal

- 1A. For each coffee shop listed below, please indicate whether you have purchased an espresso drink there in the last week.

Central Perc	(1) Yes	(2) No
Village Market	(1) Yes	(2) No
Starbucks	(1) Yes	(2) No
Gino's Cappuccinos	(1) Yes	(2) No

---

**Meaning of numbers:** Identification, or membership in a category

**Appropriate Analyses:** Percentage (frequency) for each category

Mode (most frequent category)

# Differences in Information Conveyed by Numbers: Ordinal

- 1B. Please rank the following coffee shops according to how frequently you have purchased an espresso drink there in the last week, where 1 = most frequently, and 4 = least frequently.

Central Perc  
**1**  Village Market  
**4**  Starbucks  
**2**  Gino's Cappuccinos  
**3**

---

**Meaning of numbers:** Relative order on a characteristic

**Appropriate Analyses:** Percentage for each rank level

Median rank

# Differences in Information Conveyed by Numbers

- 1B. Please rank the following coffee shops according to how frequently you have purchased an espresso drink there in the last week, where 1 = most frequently, and 4 = least frequently.

Central Perc  
**1**  Village Market  
**4**  Starbucks  
**2**  Gino's Cappuccinos  
**3**

---

- 1C. Please use the scale provided to indicate how frequently you have purchased an espresso drink in the last week at each of the following coffee shops.

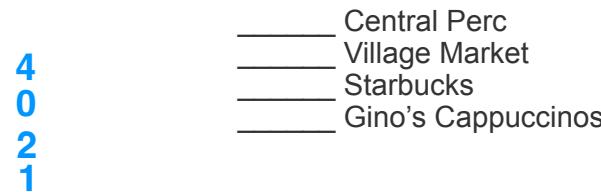
Very Infrequently    0    1    2    3    4    Very Frequently

**4**  Central Perc  
**0**  Village Market  
**2**  Starbucks  
**1**  Gino's Cappuccinos

# Differences in Information Conveyed by Numbers: Interval

1C. Please use the scale provided to indicate how frequently you have purchased an espresso drink in the last week at each of the following coffee shops.

Very Infrequently    0    1    2    3    4    Very Frequently



Central Perc  
twice as frequent  
as Starbucks?

Gino's Cappuccinos  
half as frequent  
as Starbucks?

1<sup>st</sup> difference ( $4 - 2$ )  
twice as large as  
2<sup>nd</sup> difference ( $2 - 1$ )

**Meaning of numbers:**

Legitimately allow relative comparison of  
differences (intervals sizes) on scale

**Appropriate Analyses:**

Mean ratings  
Percentage (frequency count) per  
scale point

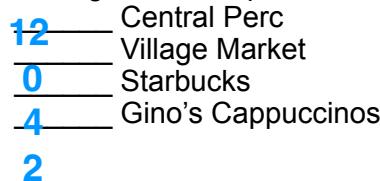
# Differences in Information Conveyed by Numbers

1C. Please use the scale provided to indicate how frequently you have purchased an espresso drink in the last week at each of the following coffee shops.

Very Infrequently    0    1    2    3    4    Very Frequently



1D. In the last week, how many espresso drinks have you purchased at each of the following coffee shops?



# Differences in Information Conveyed by Numbers: Ratio

- 1D. In the last week, how many espresso drinks have you purchased at each of the following coffee shops?

12	Central Perc
_____	Village Market
0	Starbucks
4	Gino's Cappuccinos
2	

Central Perc three times as frequent as Starbucks?

Gino's Cappuccinos half as frequent as Starbucks?

Yes!  
Why?

**Meaning of numbers:**

There is a natural, or absolute, zero which permits comparison of absolute magnitudes of numbers

**Appropriate Analyses:**

Mean values

# Difference Between Interval and Ratio Scales

## Interval Scale

- Zero is just another scale position
- Zero = the scale point between -1 and +1

What is your attitude toward credit cards?



## Ratio Scale

- Zero has an absolute meaning
- Zero = Absence of the property being measured

What is your credit card balance?  
\$ \_\_\_\_\_

# Difference Between Interval and Ratio Scales

- Interval scale: where the difference between two values is meaningful.
  - E.g., The difference between a temperature of 100 degrees and 90 degrees is the same difference as between 90 degrees and 80 degrees.

# Difference Between Interval and Ratio Scales

- Rank the restaurant on a 1-8 favorability scale.
  - Customer 1: 8
  - Customer 2: 4
- Can we say that customer 2's attitude to the restaurant is twice as favorable as that of customer 1?
- Answer : No!
- What we can say is the difference in altitude between a 8 and 4 is the same as the difference between 7 and 3.

# **Reliability and Validity**

## **Reliability:**

Degree to which measures are free from random error and, therefore, provide consistent data. The extent to which the survey responses are internally consistent.

## **Validity:**

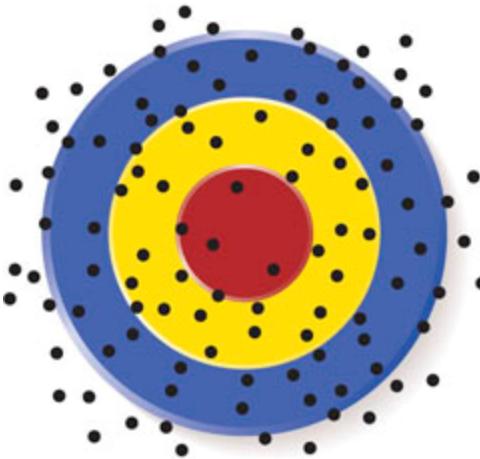
Degree to which what the researcher was trying to measure was actually measured.

# Reliability and Validity

- Validity
  - The degree to which a measure measures what it is supposed to measure
  - As systematic and/or random error increases, validity of a measure decreases
- Reliability
  - The degree to which a measure is consistent across time, evaluators, and the items forming the scale.
  - Systematic error is less troublesome than random error.
- Reliability is a necessary, but not sufficient , for establishing the validity.

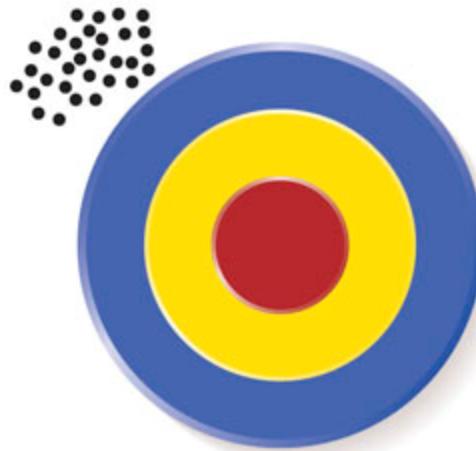
# Reliability and Validity

Situation 1



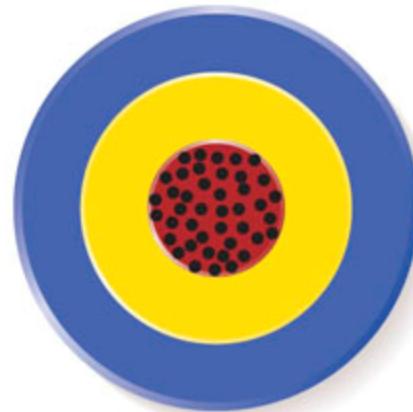
Neither Reliable  
nor Valid

Situation 2



Highly Reliable  
but Not Valid

Situation 3



Highly Reliable  
and Valid

# Testing Reliability

## Test and Retest:

The ability of the same instrument to produce consistent results when used a second time under conditions as similar as possible to the original conditions.

## Stability:

Lack of change in results from test to test.

## Equivalent Form:

Ability of two very similar forms of an instrument to produce closely correlated results.

# Testing Reliability

## Internal Consistency:

The ability of an instrument to produce similar results when used on different samples during the same time period to measure a phenomenon.

## Split Half Technique:

A method of assessing the reliability of a scale by dividing the total set of measurement items in half and correlating the results.

# Testing Reliability

## ► Test-retest reliability

is obtained by repeating the measurement with the same instrument, approximating the original conditions as closely as possible.

A students measure the length of the object, the result of four measurements were 5.5cm, 5.51cm, 5.53cm, 5.55cm, then the length of the object is?

### Difficulty

- 1. *Difficult to locate and gain the cooperation of respondents for a second testing.*
- 2. *The first measurement may alter a person's response on the second measurement.*
- 3. *Environmental or personal factors may change.*



# Testing Reliability

## ► Equivalent Form Reliability

The difficulties encountered with the test–retest approach can be avoided by creating equivalent forms of a measurement instrument.  
uses one set of questions divided into two **equivalent** sets

E.g., 100 questions that measure a construct.

Randomly split the questions into two sets of 50 (set A and set B)

Step 1: Give test A to a group of 50 students on a Monday.

Step 2: Give test B to the same group of students that Friday.

Step 3: Correlate the scores from test A and test B.



# Testing Reliability

## ► Internal Consistency Reliability

Internal consistency reliability assesses the ability to produce similar results when different samples are used to measure a phenomenon during the same time period.

E.g., same exam is used for different classes.

- Split-half technique: Method of assessing the reliability of a scale by dividing the total set of measurement items in half and correlating the results



# Testing Validity

## Face:

The degree to which a measurement seems to measure what it is supposed to measure.

e.g., what is your age/income/education level?

## Content:

The representativeness, or sampling adequacy, of the content of the measurement instrument.



# Content Validity

- A scale's content logically appears to reflect what was intended to be measured.
- E.g., test a person's general spelling ability in English.
  - Includes all the words in the English (ideal).
  - Actually come up with a set of items that adequately represents the full range of words.
- E.g., measure a sales representative's job satisfaction.
  - Duties, fellow workers, top management, sales supervisors, customers, pay and promotion opportunities.

# Testing Validity

## Criterion Related:

The degree to which a measurement instrument can predict a variable that is designated a criterion.



## Construct:

The degree to which a measure represents and logically connects, via the underlying theory, the observed phenomenon to the construct.

# Testing Validity

## Criterion-Related Validity

### Predictive:

The degree to which a future level of a criterion can be forecast by a current measurement scale.

- Purchase intent-purchase behavior
- High school GPA-College GPA

### Concurrent:

The degree to which another variable, measured at the same point in time as the variable of interest, can be predicted by the measurement instrument.

- New depression tests-established test
- Nursing students practical test-paper test

# Testing Validity

## Construct Validity

### Convergent:

The degree of correlation among different measures that purport to measure the same construct.

### Discriminate:

The measure of the lack of association among constructs that are supposed to be different.

# Construct Validity

## Convergent Validity and Discriminant Validity

- E.g., job satisfaction
  - Highly positively correlate with other related measure of job satisfaction. (convergent validity)
  - Uncorrelated with role conflict, or organizational commitment (discriminant validity).

# Chapter Eleven

## Using Measurement Scales to Build Marketing Effectiveness



### LEARNING OBJECTIVES

1. Explain the linkage among attitudes, behavior, and marketing effectiveness.
2. Understand the concept of scaling.
3. Compare the various types of attitude scales.
4. Examine some basic considerations in selecting a type of scale.
5. Realize the importance of attitude measurement scales in management decision making.

# **Attitude Measurement Scales**

- Graphic rating scales
- Itemized rating scales
- Rank-order scales
- Paired comparisons
- Constant sum scales
- Semantic differential scales
- Stapel scales
- Likert scales
- Purchase-intent scales
- Scale conversions
- Net promoter score (NPS)

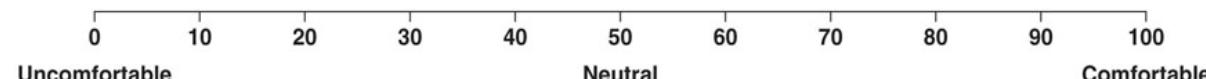
# Graphic Rating Scales

Measurement scales that include a graphic continuum, anchored by two extremes.

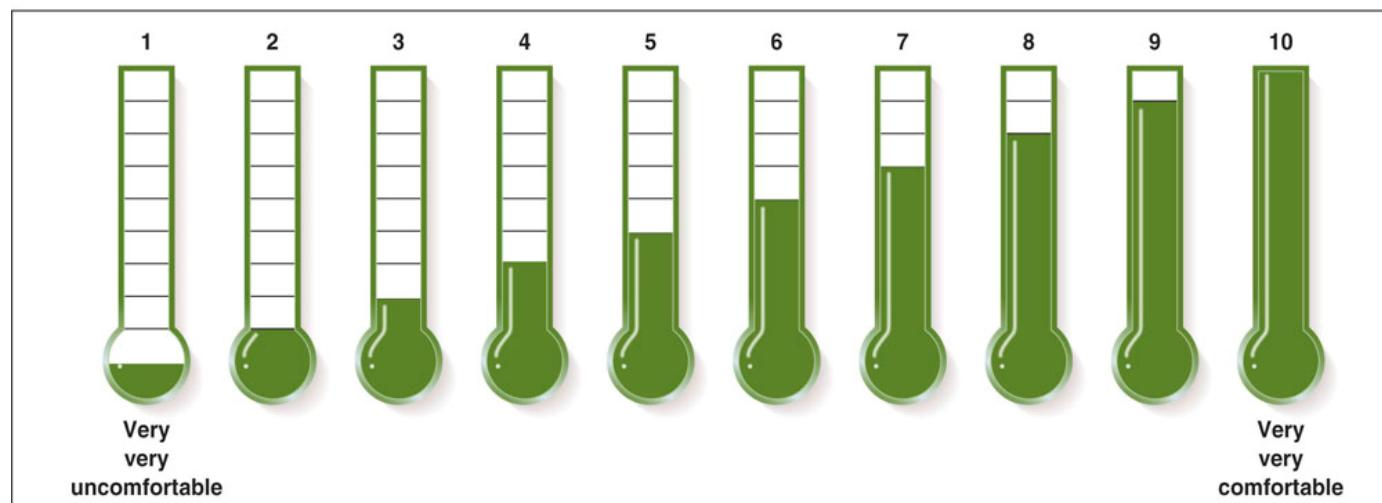
Scale A



Scale B

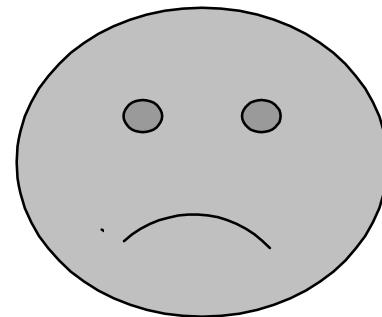
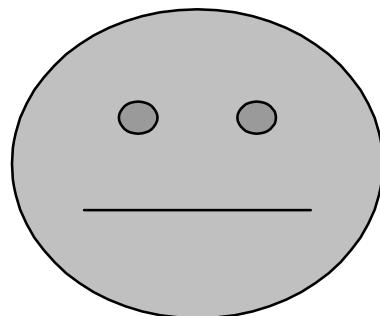
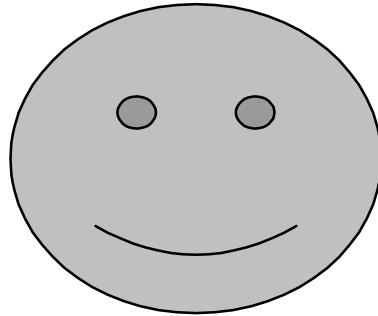


Scale C



# Graphic Rating Scales

These scales are often used when interviewing children.



How do you feel when coming to marketing research class?

# Itemized Rating Scales

The respondent selects an answer from a limited number of ordered categories.

<i>Odd Scale</i>	<b>Important</b>	1	2	3	4	5	<b>Not Important</b>
------------------	------------------	---	---	---	---	---	----------------------

<i>Even Scale</i>	<b>Important</b>	1	2	3	4	5	6	<b>Not Important</b>
-------------------	------------------	---	---	---	---	---	---	----------------------

# Rank Order Scale

## Eye Shadow Scales

Please rank the following eye shadows, with 1 being the brand that best meets the characteristic being evaluated and 6 the worst brand on the characteristic being evaluated. The six brands are listed on card C. (HAND RESPONDENT CARD C.) Let's begin with the idea of having high-quality compacts or containers. Which brand would rank as having the highest quality compacts or containers? Which is second? (RECORD BELOW.)

	<b>Q.48. Having High-Quality Container</b>	<b>Q.49. Having High-Quality Applicator</b>	<b>Q.50. Having High-Quality Eye Shadow</b>
Avon	_____	_____	_____
Cover Girl	_____	_____	_____
Estee Lauder	_____	_____	_____
L'Oreal	_____	_____	_____
Natural Wonder	_____	_____	_____
Revlon	_____	_____	_____

**Card C**

Avon	Cover Girl	Estee Lauder
L'Oreal	Natural Wonder	Revlon

# Paired Comparison:

Respondent is presented with two objects and asked to select one according to some criteria.

For each pair of drinks listed, place a check beside the one you would prefer if you had to choose between the two.

(Compare: Coke, Diet Coke, Pepsi, Diet Pepsi)

- Coke vs. Diet Coke
- Coke vs. Pepsi
- Coke vs. Diet Pepsi
- Diet Coke vs. Pepsi
- Diet Coke vs. Diet Pepsi
- Pepsi vs. Diet Pepsi

Pay attention:  $N*(N-1)/2$

# Paired Comparison

---

Here are some characteristics used to describe sun care products in general. Please tell me which characteristic in each pair is more important to you when selecting a sun care product.

- a. Tans evenly
  - a. Prevents burning
  - a. Good value for the money
  - a. Not greasy
  - a. Tans without burning
  - a. Protects against burning and tanning
  - a. Goes on evenly
  - a. Prevents burning
  - b. Tans without burning
  - b. Protects against burning and tanning
  - b. Goes on evenly
  - b. Does not stain clothing
  - b. Prevents burning
  - b. Good value for the money
  - b. Tans evenly
  - b. Not greasy
-

# Constant Sum Scale

Below are seven characteristics of women's tennis sportswear. Please allocate 100 points among the characteristics such that the allocation represents the importance of each characteristic to you. The more points that you assign to a characteristic, the more important it is. If the characteristic is totally unimportant, you should not allocate any points to it. When you've finished, please double-check to make sure that your total adds to 100.

Characteristics of Tennis Sportswear	Number of Points
Is comfortable to wear	_____
Is durable	_____
Is made by well-known brand or sports manufacturers	_____
Is made in the United States	_____
Has up-to-date styling	_____
Gives freedom of movement	_____
Is a good value for the money	_____
	100 points

## PEER EVALUATION FORM

### GROUP PROJECT 1 Marketing Research

Name:

Course Number:

Section Number:

Instructions: List the names of the members of your group (including yourself). Divide 100 points among the group members based on each group member's contribution to the completion of the group project. For example, if there are 5 people in your group (including yourself) and you believe that everyone contributed equally you would assign 20 points to each.

#### **Group Members**

---

#### **Point Distribution**

\_\_\_\_\_ points

---

\_\_\_\_\_ points

---

\_\_\_\_\_ points

---

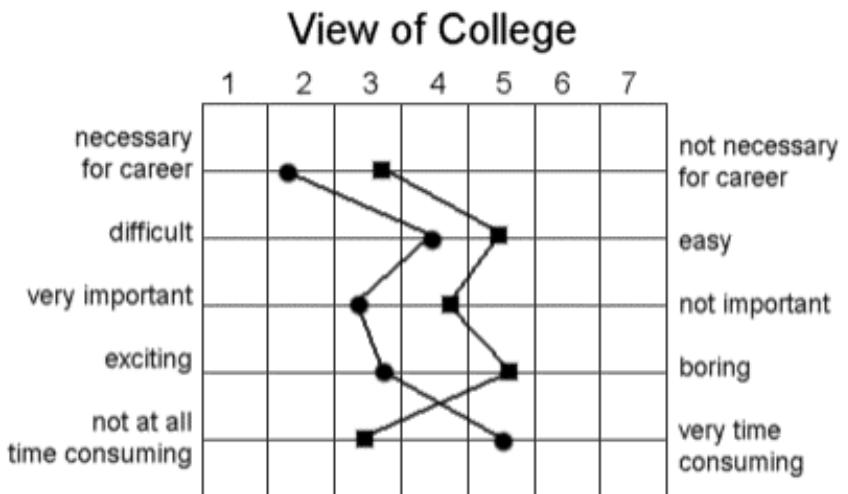
\_\_\_\_\_ points

**100 points (total)**

Comments: \_\_\_\_\_

# Semantic Differential Scale:

The Semantic differential is seven point rating scale with endpoint associated with bipolar labels that have semantic meaning



Semantic profiles for students with (●) and without (■) prior work experince.

# Staple Scale

---

+5	+5
+4	+4
+3	+3
+2	+2
+1	+1
Cheap Prices	Easy to Navigate
-1	-1
-2	-2
-3	-3
-4	-4
-5	-5

Select a “plus” number for words you think describe the Web site accurately. The more accurately you think the word describes the Web site, the larger the “plus” number you should choose. Select a “minus” number for words you think do not describe the Web site accurately. The less accurately you think the word describes the Web site, the larger the “minus” number you should choose. Therefore, you can select any number from +5 for words you think are very accurate all the way to -5 for words you think are very inaccurate.

---

## Staple Scale:

It is a unipolar rating scale with 10 categories numbered from -5 to +5, without a neutral point (zero). Ratings may range from +3 to -3, or +5 to -5, very accurate to very inaccurate.

When thinking about Samsung mobiles, do you believe that the word “innovative” aptly describes or poorly describes the company? On the scale of +5 to -5 how will you rank Samsung mobiles according to the word “innovative”?

- (+5) Describes very well
- (+4)
- (+3)
- (+2)
- (+1)
- Innovative
- (-1)
- (-2)
- (-3)
- (-4)
- (-5) Poorly Describes

# Likert Scale

How did you feel about the registration process when you became a new user?

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
The registration was simple.	<input type="radio"/>				
The registration questions were "nonthreatening."	<input type="radio"/>				
Registration here will protect my privacy.	<input type="radio"/>				
The registration did not take a long time to complete.	<input type="radio"/>				
The registration informed me about the site.	<input type="radio"/>				

- - - - -

# Itemized Rating Scale

- Likert Scale
- Semantic Differential Scale
- Staple Scale

## Itemized Rating Scale

	<b>Basic Characteristics</b>	<b>Examples</b>	<b>Advantages</b>	<b>Disadvantages</b>
Likert Scale	A five-point scale about degree of agreement	Attitude	Easy to construct and understand	Time-consuming
Semantic Differential Scale	A seven-point scale with bipolar labels	Brand, product, image	Versatile	Controversy as to whether the data is interval
Staple Scale	Unipolar ten-point scale, -5 to +5, without a neutral point (zero)	Attitude, firm images	Easy to construct and understand	Confusing and difficult to apply over phone

## Purchase- Intent Scales:

- Scales used to measure a respondent's intention to buy or not buy a product.

Which of the following statements best describes the likelihood of you purchasing Nike athletic shoes within the next 6 months?

- I definitely will buy it
- I probably will buy it
- I am uncertain whether I will buy it
- I probably will not buy it
- I definitely will not buy it

# Chapter Twelve

## Questionnaire Design



### LEARNING OBJECTIVES

1. Understand the role of the questionnaire in the data-collection process.
2. Become familiar with the criteria for a good questionnaire.
3. Learn the process for questionnaire design.
4. Understand how software, the Internet, and mobile devices are influencing questionnaire design.
5. Understand the impact of the questionnaire on data-collection costs.

# Determine Wording of Each Question

What wording issues need to be addressed?

A day trip is defined here as leaving town for any recreational purpose and returning home the same day. In a typical month, how many day trips do you take? \_\_\_\_\_

typical month?

**ISSUE: Avoid generalizations and ambiguous terms**

Example:

A day trip is defined here as leaving town for any recreational purpose and returning home the same day. **How many day trips did you take last month?**

\_\_\_\_\_

# Determine Wording of Each Question

- Avoid Double-Barreled Questions
  - Carefully use *and* and *or*

Think back to the last meal you purchased at a fast-food restaurant. How satisfied were you with the price and the quality of service that you received?

Very Dissatisfied

Dissatisfied

Somewhat Dissatisfied

Somewhat Satisfied

Satisfied

Very Satisfied

# Determine Wording of Each Question

What wording issue needs to be addressed?

How would you rate Motel 6 in terms of overall quality and affordability?

Low 1 2 3 4 5 High

and

**ISSUE: Break double-barreled questions into separate questions (Watch out for **and** and **or**...).**

How would you rate Motel 6 in terms of overall quality?

Low 1 2 3 4 5 High

How would you rate Motel 6 in terms of overall affordability?

Low 1 2 3 4 5 High

# Determine Wording of Each Question

What wording issue needs to be addressed?

Using the scale provided, how would you rate the overall quality of the food served to you this evening?

**ISSUE:** **Avoid ambiguous response alternatives**

- Extremely High
- Very High
- Moderately High
- Average
- Moderately Low
- Very Low
- Extremely Low

Example:

Using the scale provided, how would you rate the overall quality of the food served to you this evening?

Extremely Low 1 2 3 4 5 6 7 8 9 10 Extremely High

# Determine Wording of Each Question

- Avoid Leading Questions
  - Example

Do you feel that limiting taxes by law is an effective way to stop the government from picking your pocket every payday?

Yes       No       Undecided

# Determine Wording of Each Question

- Avoid Unstated Alternatives
  - An alternative answer that is not expressed in a question's options
  - Thorough exploratory research and questionnaire pretesting are key

Would you like to have a job, if this were possible?

Yes       No

81% said they would like to have a job

19% said they would not like to have a job

Would you prefer to have a job, or do you prefer to be a stay-at-home mom?

32% said they would prefer to have a job

68% said they prefer to be a stay-at-home mom.

# Determine Wording of Each Question

- Avoid Assumed Consequences
  - When a question is not framed to clearly state the consequences and this generates different responses from individuals who assume different consequences.
  - Questions should be framed to clearly state the consequences when possible.
  - Example

Would you like to double the number of job offers you receive as a senior?

Yes

No

Would you like to double the number of job offers you receive as a senior if that means devoting an additional 10 hours per week to studying so as to raise your grade point average?

Yes

No

# Determine Wording of Each Question

- Are you in favor of TAMUC providing every student with a personal computer?

# Determine Wording of Each Question

- Are you in favor of TAMUC providing every student with a personal computer?
- ...even though it will mean a substantial increase in tuition?

# Examples

- “Have you recently tried and enjoyed the new Burger King Big King sandwich?” Double questions and is leading (biased).
- “Many people have recently watched the movie, Titanic. Have you seen it?” Leading to bias
- “How satisfied were you with the all new and improved Clean-O laundry detergent?” Introduced bias.
- “How many days do you sleep until 8:00 a.m.?” Vague.

# Examples

- *How do you like the flavor of this high-quality Maxwell House coffee?* bias - leading question
- *What do you think of the taste and texture of this Sara Lee coffee cake?* Double-Barreled questions
- *We are conducting a study for Bulova watches. What do you think of the quality of Bulova watches?* Client introduced - bias