Data collection and Nonsampling Error in Marketing Research

- The nonsampling error; which is defined as all errors in a survey except those attributable to the sample plan and sample size.
- **Nonsampling error includes:**

1-All types of nonresponse error

2-Data gathering errors

3-Data handling errors

4-Data analysis errors

5-Interpretation errors

- **Data collection:** is the phase of the marketing research process during which respondents provide their answers or information to inquiries posed to them by the researcher.

Possible Errors in Field Data Collection

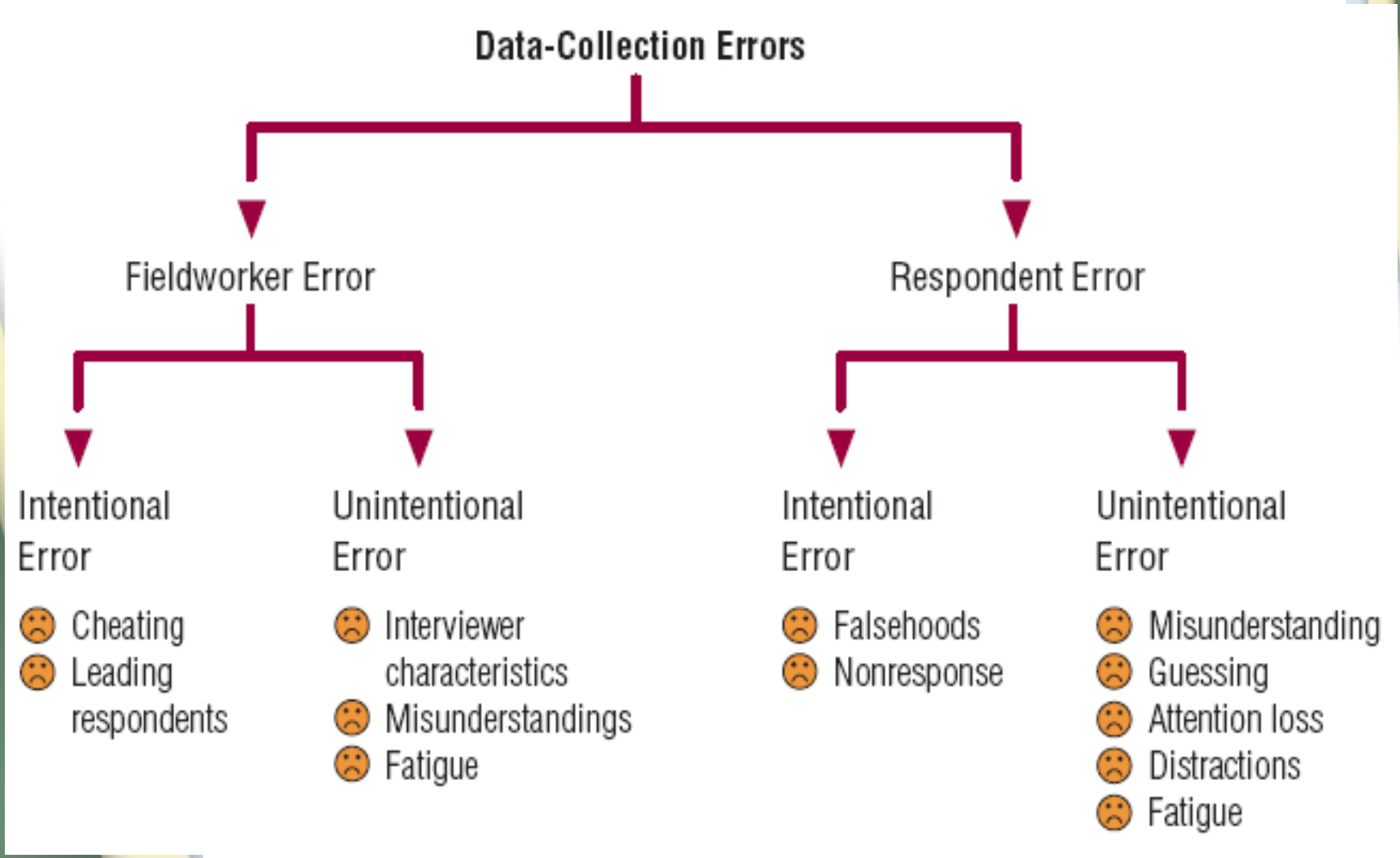
- **We have two types and further specify error:**

1-Fieldworker error: errors committed by the persons who administer the questionnaires

2-Respondent error: errors committed on the part of the respondent

- Errors may be either intentional or unintentional.

Data Collection Errors can occur with



First: Fieldworker Errors

1- Intentional fieldworker error: errors committed when a data collection person willfully violates the data collection requirements set forth by the researcher.

- **We describe two types from Fieldworker Errors:**

a)**Interviewer cheating** occurs when the interviewer intentionally misrepresents respondents.

-Interviewer cheating is a concern, especially when compensation is based on a per-completion basis.

-for example:

What type of cheater are you?

statement	I have done this	I have not done this
Copied another students home work or assignments	Yes	No
Allowed someone else to copy homework/ assignments	Yes	No

b)**Leading respondents** occurs when the interviewer influences respondent's answers through wording, voice inflection, or body language.

-for example:

'I thought you would say "Yes" as over 90% of my respondent have agreed on this issue'

2-Unintentional fieldworker error: errors committed when an interviewer believes he or she is performing correctly.

- **There are three general sources:**

a) **Interviewer personal characteristics** occurs because of the interviewer's personal characteristics

such as accent, sex, and

demeanor.

- Interview error can occur without the interviewers being aware of them.

b)**Interviewer misunderstanding** occurs when the interviewer believes he or she knows how to administer a survey but instead does it incorrectly.

-Unintentional interviewer errors include misunderstanding and fatigue.

-There is considerable education gab between marketing researchers who design questionnaires and interviewers who administer them.

c)**Fatigue-related mistakes** occur when interviewer becomes tired.

For example we should make the interview in the earlier of the day before they become tired.

Second: Respondent Errors

- **Respondent error** are error committed on part of the respondent.
- **It may be either**

1- Intentional respondent error: errors committed when there are respondents that willfully misrepresent themselves in surveys.

- **There are at least two major types of it**

a)Falsehoods occur when respondents fail to tell the truth in surveys.

-They may feel embarrassed, they might want to protect their privacy, or they may even suspect the interviewer who has a hidden agenda.

-**For example** The income level of the respondent is a sensitive topic for many people woman age.

b)**Nonresponse** occurs when the prospective respondent fails to take part in a survey or to answer specific questions on the survey.

-Some observers believe that survey research is facing tough times a head, because of a growing distaste for survey participation, increasingly busy schedules, and a desire for privacy.

2- Unintentional respondent error: errors committed when a respondent gives a response that is not valid but that he or she believes is the truth.

- **There are five types of it:**

a) **Respondent misunderstanding** occurs when a respondent gives an answer without comprehending the question and/or the accompanying instructions.

- Sometimes a respondent will answer without understanding the question.

For example A respondent may think in terms of net income for past year rather than income before taxes as desired by reasearcher.

b) **Guessing** occurs when a respondent gives an answer when he or she is uncertain of its accuracy.

c) **Attention loss** occurs when a respondent's interest in the survey wanes

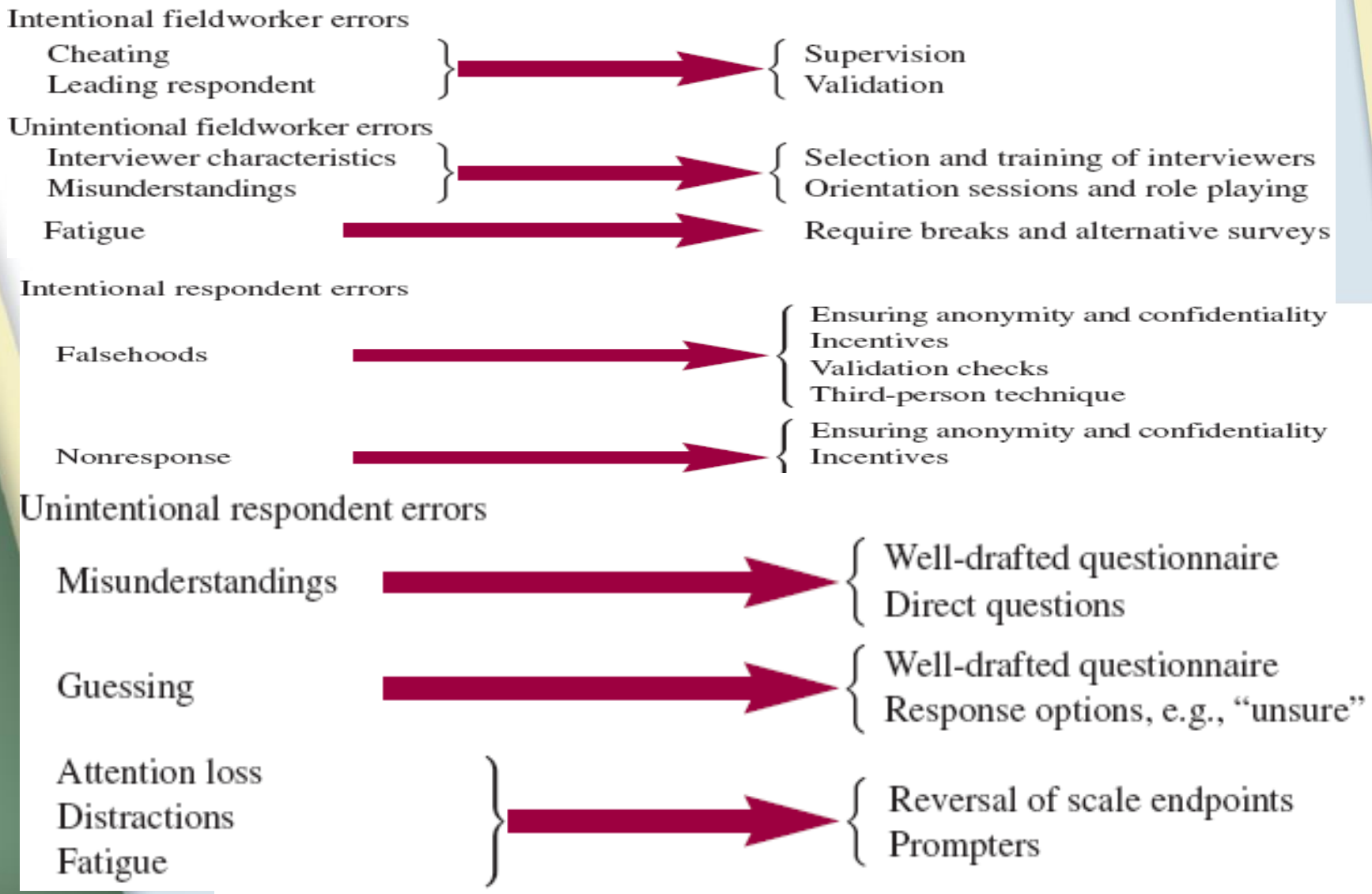
d) **Distractions** (such as interruptions) may occur while questionnaire administration takes place

e) **Fatigue** occurs when a respondent becomes tired of participating in a survey

- **To help you learn and remember these various types of data-collection error, see if you can correctly identify the type for each of the following data-collection situations** ("X" in the cell that corresponds to the type of error that pertains to the situation) in the next slide

Situation	Interviewer	Error	Interviewee	Error
	Intentional	Unintentional	Intentional	Unintentional
A respondent say “no opinion “to every question asked				
When a mail-intercept interviewer is suffering from a bad cold,few people want to take the survey				
Because a telephone respondent has an incoming call, he asks his wife to take the phone and answer the rest of the interviewers question				
A respondent grumbles about doing the survey, so an interviewer decides to skip asking the demographic questions				
A respondent who lost her job last year gives her last years income level rather than the much lower one she will earn for this year				

How to Control Data Collection Errors:(Field data-collection quality control



- **1- Control of intention fieldworker error;**

-We have two strategies to guard against cases in which the interviewer might intentionally commit an error.

a) **Supervision** used administrators to oversee the work of field data-collection workers.

Such as many companies now inform respondents that all or part of the call may be monitored and or recorded.

b)**Validation** verifies that the interviewer did the work.

2- Control of unintentional Fieldworker:

-The supervisor is instrumental in minimizing unintentional interviewer error.

-we describe three mechanisms commonly used by professional field data-collection companies in this regard:

a)**Selection and training** interviewer personal characteristics that cause unintentional error are best taken care of by careful selection of interviewers.

-Following it with train them well so as to avoid any biases resulting from manner, appearance , and so forth.

b) **Orientation sessions** are meeting in which the supervisor introduces the survey and questionnaire administration requirements to the fieldworkers.

c) **Role-playing sessions** Which are dry runs or dress rehearsals of the questionnaire with the supervisor or some other interviewer playing the respondents role.

-Unintentional fieldworker error can be reduced with supervised orientation sessions and role playing.

3- Control of intentional respondent error;

-To control intentional respondent error, it is important to minimize respondent falsehoods and nonresponse tendencies.

-Tactics useful in minimizing intentional respondent error include:

a)**Anonymity** is assuring the respondent that his or her name will not be associates with the answers.

b)**Confidentiality** is assuring the respondent that his or her answer will remain private.

C)**Incentives** which are cash payments, gifts or something of value promised to respondents in return of their participation.

d) **Validation checks** in which information provided by a respondent is confirmed during the interview.

e) Researcher can use a questionnaire design feature to reduce intentional respondent error.

- Sometimes the opportunity arises , where **a third-person technique** can be used in a question, that is instead of directly quizzing the respondent, the question can be couched in term of third person who is similar to the respondent.

4- Control of unintentional respondent error:

It takes various forms including:

a) well- drafted **Questionnaire instruction and examples** are commonly used as a way of avoiding respondent confusion.

b) A tactic we described when we discussed the semantic differential is **Reversals of scale endpoint,** in which instead of putting all of the negative adjectives on one side and all the positive ones on the other side, a researcher will switch the positions of a few items.

c) long questionnaires use **"prompters"** are used to keep respondents on task and alert.

- **5- Final comment on the control of data collection errors with traditional surveys**

Technology is dramatically changing data collection and helping in the control of its error.

Nonresponse Error

- **Nonresponse**: failure on the part of a prospective respondent to take part in a survey or to answer specific questions on the survey.
- **There are three types of it**

  1-Refusals to participate in survey occurs when a potential declines to take part in the survey.

  2-Break-offs during the interview occurs when a respondent reaches a certain point and then decides not to answer any more question for the survey.

3-Refusals to answer certain questions (item omissions) is the phrase sometimes used to identify the percentage of the sample that did not answer a particular question.

- Completed interview must be defined

Measuring Nonresponse Error in survey

- Response rate enumerates the percentage of the total sample with which the interviews were completed.
- **CASRO response rate formula:**

CASRO Response Rate Formula (simple form)

$$\text{Response rate} = \frac{\text{number of completed interviews}}{\text{number of eligible units in sample}}$$

- **Eligible respondents** are determined by screening or qualifying question.

For example if we were working with a kitchen wares department, we would determine respondents eligibility for the survey by asking them the screening question ”Do you shop at ACME department store regularly?” If the answer is “yes” then we would ask, ‘Have you shopped in the kitchen wares department at any time during the last 3 month? If the answers “yes” then they are eligible to take a part in the survey.

- CASRO response rate formula:

CASRO Response Rate Fomula (Expanded Form)

$$\text{Response rate} = \frac{\text{completions}}{\text{completions} + \left(\frac{\text{completions}}{\text{completions} + \text{ineligible}}\right) \times (\text{refusals} + \text{not reached})}$$

We have a sample of 1000 shoppers and the results of the survey are
completions =400
Ineligible=300(those who refuse the survey and those who cannot be reached ,they are included in the formal for response rate)
Refusals=100
Not reached=200

Here are the calculations:

Calculation of CASRO Response Rate (Expanded Form)

$$\text{Response rate} = \frac{400}{400 + \left(\frac{400}{400 + 300}\right)(100 + 200)}$$

$$= \frac{400}{400 + (0.57)(300)}$$

$$= 70.0\%$$

Reducing Nonresponse Error

- **Mail surveys:**
  - Advance notification
  - Monetary incentives
  - Follow-up mailings
- **Telephone surveys:**
  - Callback attempts
- **Adjusting result to reduce the effects of Nonresponse Error:**

-If we do not find significant to nonresponse, there is no reason to make adjustment.

- **But if some exists, we have two methods of compensating for its presence:**

1- Weighted averages involve applying weight that are believed to accurately reflect the proportions that subgroups represent in the population to the subgroup means to compute an overall score that adjusts for the nonresponse differences in the subgroups.

2-Oversampling involves drawing a sample that is larger than group to be analyzed.

-please note that we are referring to an instance in which the final sample will be a good deal larger than the target sample size, and not a case of drawing a large number of potential respondent in order to achieve the target sample size.

Preliminary Questionnaire Screening

- Completed questionnaires should be screened for error.
- What to look for in questionnaire inspection

-we have 5 type of response problems found during questionnaire:

1- Incomplete questionnaire are those in which the later questions or page of a questionnaire are left blank.

2- Nonresponses to specific questions (item omissions) when a respondent does not answer a particular question, it is referred to as an "item omission".

3-Yea- or nay-saying patterns are vseen as persistent tendencies on the parts of some respondents to agree or disagree, respectively, with most of the questions asked.

4-Middle-of-the-road patterns is seen as a preponderance of "no opinion" responses.

5- Unreliable responses are found when conducting questionnaire screening, and an inconsistent or unreliable respondent may need to be eliminated from the sample.

- **Screening completed questionnaires include** incomplete questionnaires, nonresponses to specific a questions, yea or nay saying patterns, middle-of-road patterns, and unreliable responses.

Minimizing Nonsampling Error

1-Cannot eliminate and cannot measure (except for non-response error)

2-Implement CONTROLS to minimize error:

- Close supervision of data collectors
- Training
- Care in constructing questionnaire and instructions…pretest!
- Provide incentives to respondents
- VALIDATION…industry standard is 10%