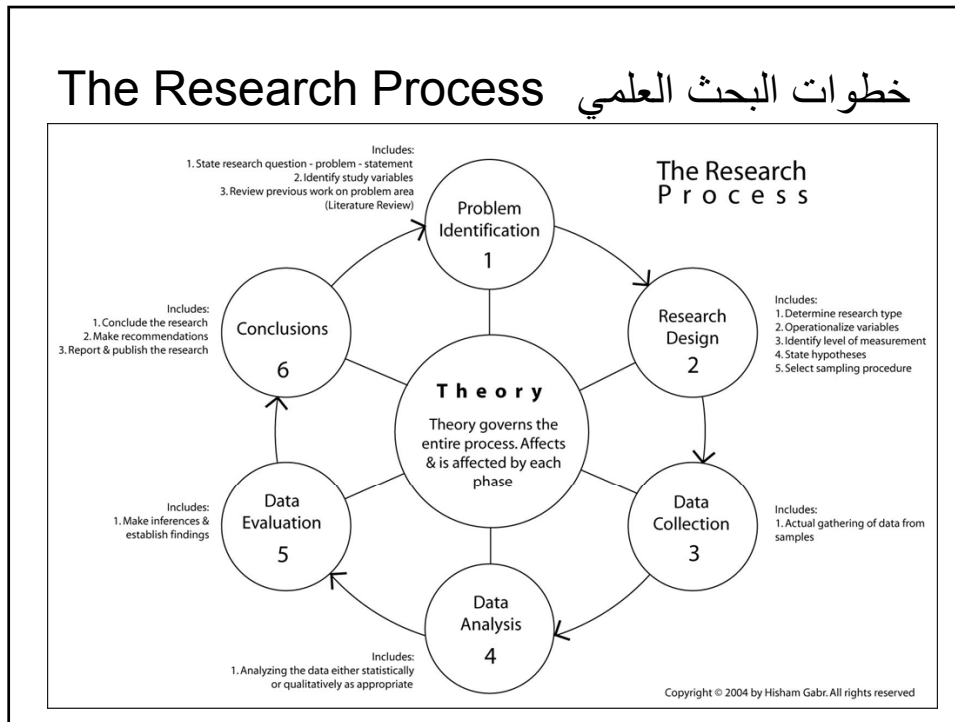


## The Research Hypothesis, Variables, and Sampling

- **Research Variables & Constructs**  
Definitions, measurements & types
- **Research Hypotheses**  
Types of relationships



## Research Variables

المتغير

A variable is "a name for something that is thought to influence a particular state of being in something else .... a special kind of concept that contains within it a notion of degree or differentiation" (Hoover, 1980, pp.22).

Examples of variables are heat, pressure, temperature, age, etc.

## Research Constructs

المفاهيم النظرية

A construct is "a hypothetical attribute or mechanism that helps explain & predict behavior in a theory" (Gravetter & Forzano, 2003, pp.85).

Examples of constructs are motivation, self-esteem, etc.

## Variables

## Constructs

Well defined

Less well defined

Easily observable

Difficult to observe

Easily measured

Difficult to measure

Tangible, concrete attributes

Intangible, abstract attributes

Directly observed & measured

Not directly observable

Height, weight

Motivation, self-esteem

## Types of Variables

انواع المتغيرات

### 1. Independent variable (ID.V.)

المتغير المستقل

is the variable that influences another variable  
(the dependent variable).

### 2. Dependent variable (D.V.)

المتغير التابع

is the one influenced by another variable (the  
independent variable).

## Types of Variables

انواع المتغيرات

An independent variable in one study  
can become the dependent variable in  
another study

## Operationalizing variables

تعريف المتغيرات

An operational definition is a procedure for measuring & defining a construct. An operational definition specifies a measurement procedure (or set of operations) for measuring an external, observable behavior & uses the resulting measurement as a definition & a measurement of the hypothetical construct

## Measuring Constructs

Indirect method of measuring the construct: observe & measure the external factors & the behaviors that are associated theoretically with the construct, instead of directly observing & measuring the construct itself

External

stimulus → construct → behavior  
factors

Rewards, → motivation → performance  
reinforcements

Stimulus → intelligence → Response to  
factors questions (IQ test)

## Operationalizing variables

تعريف المتغيرات

Variables need to be clearly defined and in a way that permits some kind of measurement. The operational definition of a variable must retain the meaning of the original variable and allow possible measurement using the available resources. Any variable can be operationalized in different ways depending upon the hypotheses and focus of the study.

## Measuring variables

قياس المتغيرات

Variables vary, but they may vary in different ways. Some vary in terms of differences of degree such as temperature or height, others vary in terms of differences in rank or order, others vary in terms of differences in variety such as nationality or religion, others vary in simply whether they exist or not. These different ways of variation represent what is known as "levels of measurements" for variables.

Levels of Measurements		مستويات القياس
Level of M.	Allowable variable property	Examples
1. Nominal	classification	ethnicity, race, religion, gender, marital status, occupation, group affiliation
2. Ordinal	classification & order	social class, socioeconomic standing, formal education
3. Interval	classification & order & setting standard units of distance (zero is arbitrary)	Biblical time, temperature
4. Ratio	classification & order & setting standard units of distance & locate absolute (true) zero	income, age, weight, distance

## Research Hypotheses

"A hypothesis proposes a relationship between two or more variables" (Hoover, 1980, pp.31).

الفرضية تقترح علاقة بين متغيرين أو أكثر

A hypothesis includes the variables of the study and the expected type of relationship that exists between them.

الفرضية تتضمن متغيرات ت الدراسة و شكل أو نوع العلاقة المتوقعة بينهم

## Research Hypotheses

To correctly establish hypotheses for your study, you need to clearly define measurable variables (operationalization of variables), and precisely establish a measurable relationship between the variables.

لابد من تعريف المتغيرات بشكل محدد يقبل القياس

### Types of relationships that exist between variables in a hypothesis

أنواع العلاقات بين المتغيرات في الفرضية

Relationship	Meaning
1. Null	No relationship is presumed to exist
2. Inferential / correlative	A relationship is presumed, but it is a relationship that deals with degrees of influence of one variable on another
3. Direct / Inverse	A specific correlative relationship is presumed in which one variable has a predictable association with another--either one variable increases as the other increases (direct) or one increases while the other decreases (inverse)
4. Causal	Changes in one variable are presumed to result from variations in another



**Understanding the Museum Image Formation Process**

Sergio Moreno Gil  
Universidad de Las Palmas de Gran Canaria, Spain  
J. R. Brent Ritchie  
University of Calgary, Alberta, Canada

Journal of Travel Research  
Volume 47 Number 4  
May 2009 480-493  
© 2009 SAGE Publications

*Hypothesis 1a:* A museum's cognitive image, as perceived by **residents**, influences a museum's affective image.

*Hypothesis 1b:* A museum's cognitive image, as perceived by **tourists**, influences a museum's affective image.

*Hypothesis 2a:* A museum's cognitive image, as perceived by **residents**, influences the museum's overall image.

*Hypothesis 2b:* A museum's cognitive image, as perceived by **tourists**, influences the museum's overall image.

*Hypothesis 3a:* A museum's affective image, as perceived by **residents**, influences the museum's overall image.

*Hypothesis 3b:* A museum's affective image, as perceived by **tourists**, influences the museum's overall image.

**The Impact of Customer-to-Customer Interaction on Cruise Experience and Vacation Satisfaction**

Jue Huang<sup>1</sup> and Cathy H. C. Hsu<sup>2</sup>

Journal of Travel Research  
49(1) 79-92  
© 2010 SAGE Publications

*Hypothesis 1:* Quantity of C2C interaction has a positive direct effect on customers' cruise experience.

*Hypothesis 2:* Quality of C2C interaction has a positive direct effect on customers' cruise experience.

*Hypothesis 3:* Cruise experience has a positive direct effect on vacation satisfaction.

*Hypothesis 4:* Quantity of C2C interaction has a positive indirect effect on vacation satisfaction, mediated by cruise experience.

*Hypothesis 5:* Quality of C2C interaction has a positive indirect effect on vacation satisfaction, mediated by cruise experience.

Causal relationship

العلاقة السببية

Cause and Effect

السبب و التأثير

ID.V. and D.V.

Correlation relationship

العلاقة  
الارتباطية

Variable A and Variable B

ID.V. and D.V.

### Examples of research ideas in the field of architecture

One might be interested in finding out what causes some people and not others to like a certain building.

مهتم بمعرفة أسباب إعجاب البعض بمبني معين بينما يكرهه البعض الآخر

One might be interested in finding out what causes people to like a certain building more than another one of the same building type.

مهتم بمعرفة أسباب إعجاب البعض بمبني معين و ليس مبني آخر من نفس النوعية

One might want to know the consequences of using a new glass specification on the heat gain of a certain building.

مهتم تعرف تبعيات إستخدام زجاج جديد بخصائص جديدة علي درجة الحرارة لمبني ما

### Examples of research ideas in the field of architecture

One might like to predict the behavior of a designed building towards weather conditions

مهتم أن تعرف سلوك مبني معين تجاه الظروف المناخية

One might want to understand why a group of people have abandoned a certain neighborhood.

مهتم أن تفهم لماذا هاجرت مجموعة من الناس لمجاورة سكنية معينة

### Examples of research ideas in the field of architecture

One might want to explain why a certain structural element in a building has unexpectedly and suddenly collapsed.

مهتم أن تفسر لماذا إنهار فجأة عنصر إنشائي بمبني ما

One might want to understand why certain houses were designed in a certain way a hundred years ago.

مهتم أن تفهم لماذا صممت مجموعة من المساكن بطريقة معينة منذ مئات السنين

### Examples of research ideas in the field of architecture

One might be interested in investigating the change in architectural style of buildings in a particular city over a certain period of time.

مهتم أن تدرس التغير في الطراز المعماري لمدينة معينة عبر الزمن

One might be interested in knowing why tourists prefer to go to a certain destination more than to a neighboring and similar one.

مهتم أن تعرف لماذا يختار السياح الذهاب لمنطقة أو مدينة معينة بدلا من منطقة أخرى

### Examples of research ideas in the field of architecture

One might be interested in understanding the reasons why a certain urban street in the old city has been designed the way it is.

مهتم أن تفهم أسباب تغيير طابع و تصميم شارع في المدينة القديمة

One might be interested in discovering new ways to provide sustainable homes for the future.

مهتم أن تستكشف طرق جديدة لتصميم منازل مستدامة في المستقبل

One might like to explore the behavior of a new synthetic material when used in building walls.

مهتم أن تستكشف سلوك مادة مصنعة جديدة عند استخدامها في الحوائط

etc.