

روش پژوهش کمی Quantitative Research Methods

रा अस्तर का स्वर्ध

دکتر مهدی محمدی

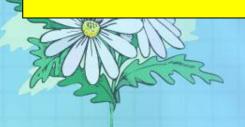
دانشیار دانشگاه شیراز

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فلسفه تحقيقات كمي

- 1- ماهيت واقعيت
- **7-فاصله محقق با نمونه تحقيق**
 - ۳- ارزش شناسی
 - 4- روش شناسی
 - ۵- قالب نگارش تحقیق

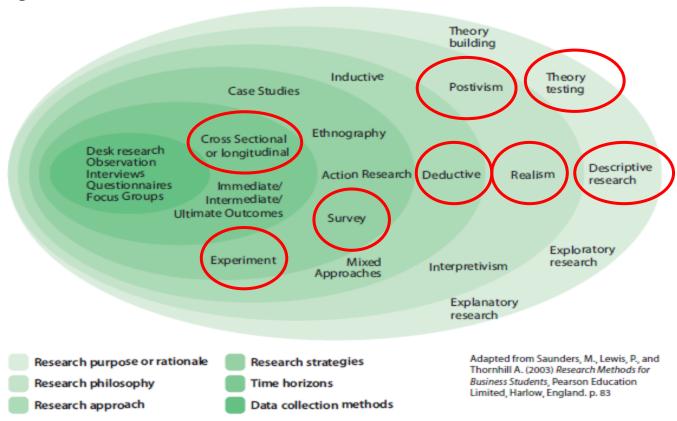


Appendix D

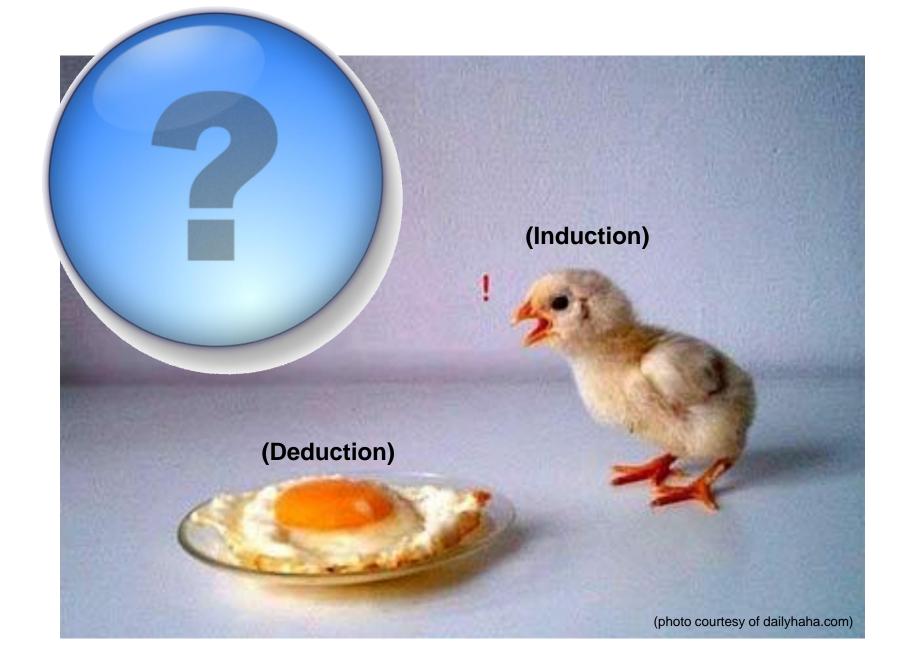
A framework for thinking about research

When first thinking about research, there is a tendency to believe it is about how to administer a questionnaire or how to run a focus group. However, these activities or 'data collection methods' belong in the centre of the 'research onion' (see Figure 5). The methods chosen result from consideration of the the purpose of the research, the research philosophy under which you are working, the type of approach you wish to use, the strategies that best fit that approach and the timeframe for the research. To get the whole picture you need to peel away the layers of the onion to expose the elements that make up research.

Figure 5 - The research onion







Three overall approaches to research:

- Quantitative research
 - Qualitative research
 - Combined research

Quantitative research is a type of research in which the researcher studies a problem that calls for:

- an explanation about variables
- decides what to study
- asks specific, narrow questions
- collects quantifiable data from participants
- analyzes these numbers using statistics and graphs
- conducts the inquiry in an unbiased, objective manner.

- Factors
- Questionnaire Survey
- Statistically Significant
 - Associations

- Experiment
- Correlation
 - Survey

Words that indicate numeric data, such as:

- Variables
- Measures
- Survey instruments

- words that indicate mathematical analysis, such as:
 - Statistics
 - Differences
 - Comparisons
 - Associations

1. Identifying a Research Problem · Specifying a problem · Justifying its importance 8. Disseminating and 2. Reviewing the Literature · Arguing for the need to **Evaluating the Research** study it for audiences · Selecting sources about · Sharing the research with the problem audiences · Summarizing the sources · Having the study's process · Critically evaluating the assessed by audiences sources 7. Drawing Conclusions 3. Specifying a Purpose · Relating the study results Stating the study's intent to the literature and focus · Identifying limitations of · Narrowing the purpose to research questions or the study · Suggesting implications for hypotheses practice and future research, 4. Choosing a Research 6. Analyzing Data and Reporting Results Design · Breaking down the data Selecting an overall · Making sense of the data approach for the study 5. Selecting Participants · Representing the data · Planning the study's and Collecting Data methods Selecting sites and individuals to study · Obtaining permissions Gathering information

FIGURE 1.4 The Steps of the Process of Research

Planning your research: Key questions

- What do you want to know?
- How do you find out what you want to know?
- Where can you get the information?
- · Who do you need to ask?
- When does your research need to be done?
- Why? (Getting the answer)



Define the Problem

TABLE 4.1

Problem Recognition

Sources of Problems

Gap between what is supposed to happen and what did happen (Failure to meet objectives)

Gap between what did happen and what could happen (Should we and how do we take advantage of opportunities?)

- و روش های غیرفعال:
- · کنترل و ارزیابی توسط سرپرستان
 - بازرسی
 - واقعه بحراني
 - بروز شکایت و انتقاد



- روش های فعال
- ساده کردن کارها
 - کنترل آماری
- مقایسه آمار ادواری
- مقایسه با سایر سازمانها
 - مقایسه با شاخص ها



• نیازسنجی

- مصاحبه افراد کلیدی
 - مصاحبه گروهی
 - مصاحبه جمعی
 - مشاهده مستقیم



- استفاده از تجارب
- استنتاج از نظریه ها و فرضیه ها
- استفاده از متون درسی و مجلات تخصصی

· دولت ها ، دانشگاه ها و موسسات پژوهشی خصوصی

- مرور متون و اطلاعات علمي
- شرکت دردوره های آموزشی و همایش های علمی
 - مطالعه مورد یا موارد
 - پایش یا کنترل گلوگاه (نقاط کلیدی)
 - كنترل مالي
 - بررسی فرآیند زمان انتظار

مقدمه / زمینه پژوهش

- Establish the general territory (real world or research).
- Describe the broad foundations of your study—provide sufficient background for readers.
- Indicate the general scope of your project.
- Provide an overview of the sections that will appear in your proposal (optional).
- Engage the readers.



بيان مساله



- Answer the question: "What is the gap that needs to be filled?" and/or "What is the problem that needs to be solved?"
- State the problem clearly early in a paragraph.
- Limit the variables you address in stating your problem or question.
- Consider framing the problem as a question.

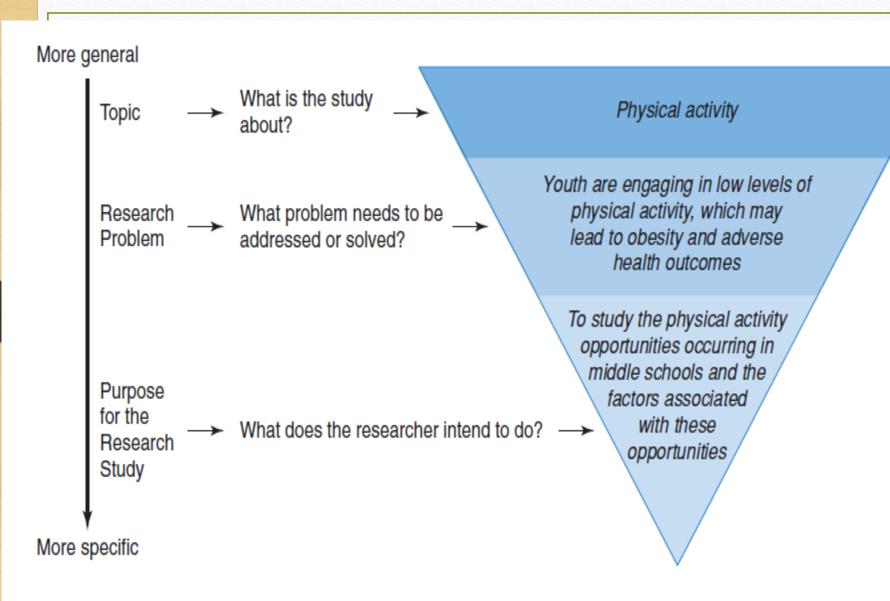


FIGURE 3.1 Distinguishing Among a Study's Topic, Research Problem, and Purpose

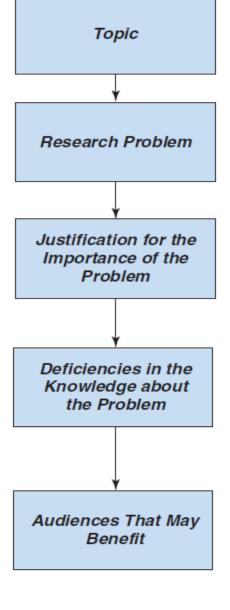
FIGURE 3.2 Flow of Ideas in a "Statement of the Problem" Passage

Ideas in a Generic Statement of the Problem

Subject area of the study

Ideas in the Statement of the Problem in a Qualitative Study about Parents Raising Children with Disabilities (Lassetter et al., 2007)

Children with Disabilities



Flow of Ideas

 An issue, concern, or controversy related to the topic that needs a solution

Supporting evidence about the

literature and/or professional

problem's importance from the

Something that is not known

about the problem

and personal experience

 Researchers, practitioners, policy makers, and other individuals who could use the missing knowledge if it became known stress can affect the well being of the whole family

Literature documents the sources of stress for parents raising a child with a

disability and the effects

 Little research has explored parents' experiences raising

a child with a disability using

qualitative methods, and the

meanings of the experiences

of stress on families

disability can be stressful for parents and parent

Raising a child with a

By better understanding parent experiences, those working with parents of children with disabilities could better develop effective interventions and support systems

اهميت مساله

- Answer the question: "What is the gap that needs to be filled?" and/or "What is the problem that needs to be solved?"
- After reading the Significance of the Study, the reader will know why you are doing this study and be convinced of its importance.
- State the practical and/or theoretical importance of the problem and/or objectives of your study.
- You respond to this as if somebody said about your study,
- "So, what?":
- What would happen if this study were not done?
- If →Then
- How will population be affected? (usefulness or benefits)
- How will society be affected? (usefulness or benefits)
- Who will be affected? (inside and outside)
- What will need to be done after your study?
- How will this make a contribution? (methodological, substantive, and/or theoretical)
- How does this affect Leadership?

Relationship Of Review Of Literature To Theory, Research, Education And Practice



WHAT IS THE LITERATURE?

"The literature" means the works you consulted in order to understand and investigate your research problem. In other words, the literature review is a *critical look* at the existing research that is significant to the work that you are carrying out.

How useful are the following sources (Literature search)?

- Journals
- Books
- Conference
- Report
- Newspapers
- Thesis
- Internet
- CD-ROM
- Magazines

To help you come up with an overall organizational framework for your review, consider the six typical ways of organizing the sources into a review:

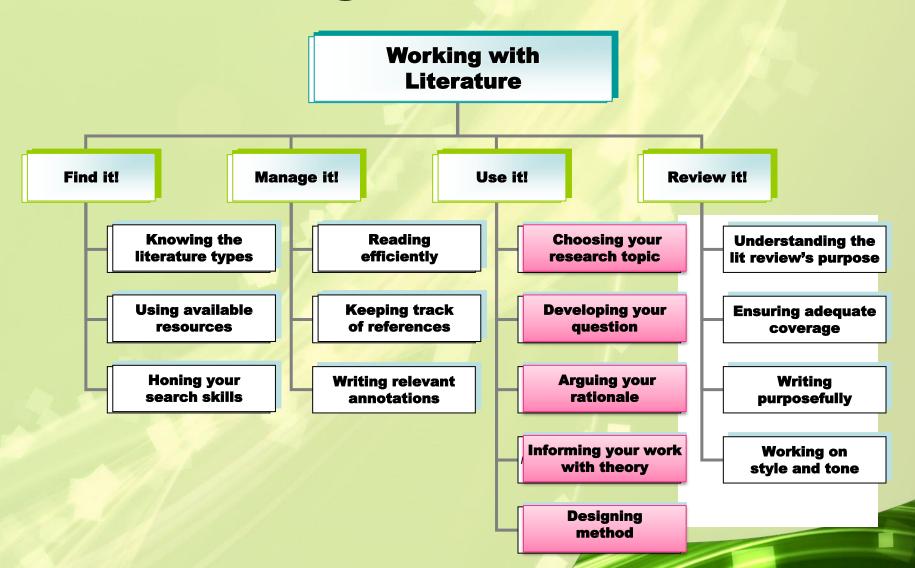
- **Chronological**
- **By publication**
- ₩ By trend
- **Thematic**
- **Methodological**
- **Questions for Further Research**

WHY WRITE A REVIEW OF THE LITERATURE?

Here are some of the questions your literature review should answer:

- 1. What do we already know in the immediate area concerned?
- 2. What are the characteristics of the key concepts or the main factors or variables?
- 3. What are the relationships between these key concepts, factors or variables?
- 4. What are the existing theories?
- 5. Where are the inconsistencies or other shortcomings in our knowledge and understanding?
- 6. What views need to be (further) tested?
- 7. What evidence is lacking, inconclusive, contradictory or too limited?
- 8. Why study (further) the research problem?
- 9. What contribution can the present study be expected to make?
- 10. What research designs or methods seem unsatisfactory?

Working with Literature



منابع اطلاعاتي براي بررسي پيشينه تحقيق

مطالعات، نوشتههای اولیه یک نظریه پرداز، محقق یا شاهد زنده در یک واقعیه است. (یادداشتها - گزارشات - دستنویسهای مستقیم)...

منابع دوم

(هم نهاده) یعنی ادبیات نظری و تجربی قبلی است. کتابها، مقالههای منتشر شده و

The state of the s

Choosing a topic

- Choose a topic that interests you
- Choose a topic that is researchable
- Choose a topic this is of a manageable size
- Choose a topic that relates to your course of study
- You are already very knowledgeable about. You will be the EXPERT!
- Contributes toward your career goals.
- Find the field you wish to plough.
- Like a 1000 piece jig saw puzzle
 - Every piece must fit together



عنوان

-Quantitative studies tend to narrow the topic initially

اجزاء عنوان

- The formal statement of a quantitative research topic...
 - -identifies the variables of interest.
 - —describes the specific relationship between the variables.
 - -identifies the nature of the participants.

What Is Level of Measurement?

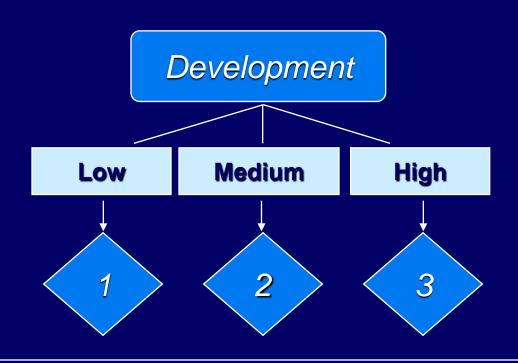
The relationship of the values that are assigned to the attributes for a variable

Variable

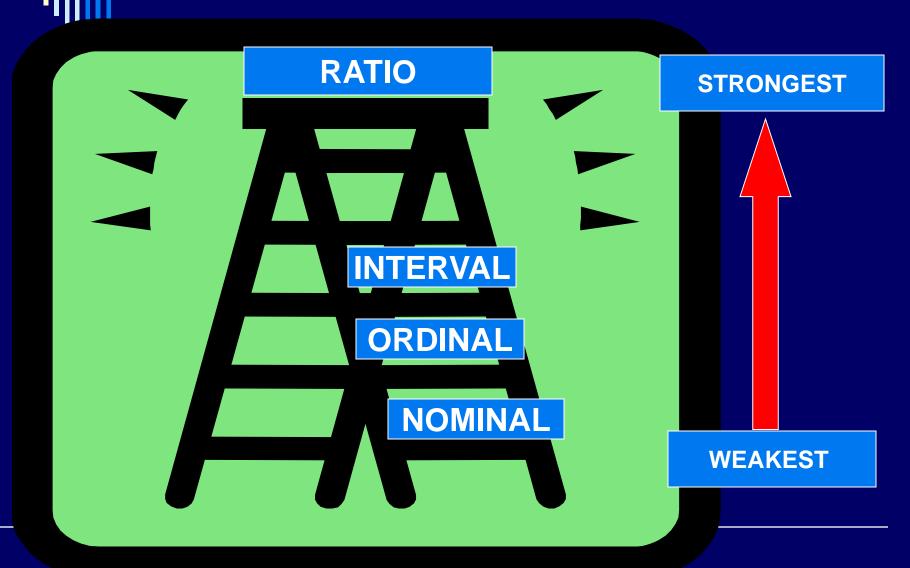
Attributes

Values

Relationship







What is a research Method?

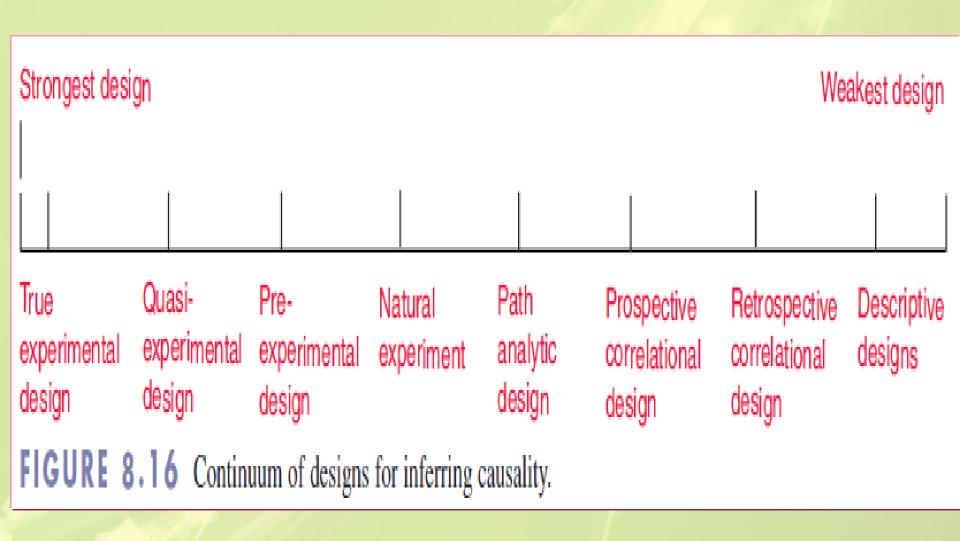
❖ A researcher's overall plan for obtaining answers to the research questions or for testing the research hypotheses is referred to as the research design.

Aspects of research methods

- Intervention
- Comparison
- **Controls of extraneous variables**
- Timing of data collection
- Research sites and settings
- Communication with the study participants

CLASSIFICATION OF RESEARCH DESIGN (POLIT & HUNGLER, 1999) **Qualitative Design Quantitative Design** Phenomenological Ethnographic study Grounded Theory NON-EXPERIMENTAL Experimental DESCRIPTIVE True Experimental Quasi experimental pre- experimental SURVEY 1. One- shot case study 2. CORRELATIONAL 1. Non equivalent 1. Pre test & post Test 2. One-group pre test-**EX-POST FACTO STUDIES** control group design control design. post test design COMPARATIVE 2. Post test- only control 2. Time-series design group design **EVALUATIVE**

METHODOLOGICAL



Three identifying properties

Randomization

Control

Manipulation

Experimental Design #1 Pretest-Posttest Control Group Design

Diagram

$$O \longrightarrow X_1 \longrightarrow C$$

$$o \longrightarrow x \longrightarrow o$$

Experimental Design #2 Posttest-Only Control Group Design

Diagram

 $X_1 \longrightarrow 0$

 $\mathbf{X} \longrightarrow 0$

Experimental Design #3 Solomon Four Group Design

Diagram

$$\begin{array}{cccc} X_1 & \longrightarrow & 0 \\ X & \longrightarrow & 0 \\ \longrightarrow & X_1 & \longrightarrow & 0 \end{array}$$

Experimental Design #4 Counterbalanced Design

Diagram

Experimental Design #5 Factorial Design

Diagram

Independent Variable #1 **Teaching Method**

Independent Variable #2

Aptitude

Lecture Only	Reading/Lecture/Small Groups
Randomly assigned 3 rd graders scoring above 85 on an aptitude test.	Randomly assigned 3 rd graders scoring about 85 on an aptitude test.
Randomly assigned 3 rd graders scoring below 60 on an aptitude test.	Randomly assigned 3 rd graders scoring below 60 on an aptitude test.

Solomon four-group design

	Data Collection		
Group	Before	After	
Experimental—with pretest	х	х	
Experimental—without pretest		х	
Control—with pretest	х	x	
Control—without pretest		х	

FIGURE 8.1 Solomon four-group experimental design.

انواع مطالعات نیمه تجربی Quasi-Experimental

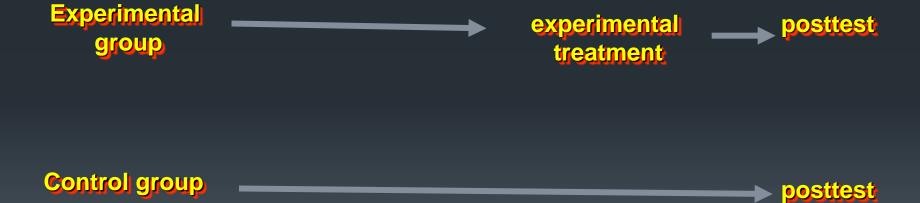
Type of Quasi-experimental Design

- A. Nonequivalent control group design
- B. After-only nonequivalent control group design
- c. One group (pretest-posttest) design
- D. Time series design

A. Nonequivalent control group design طرح گروہ کنترل نامعادل



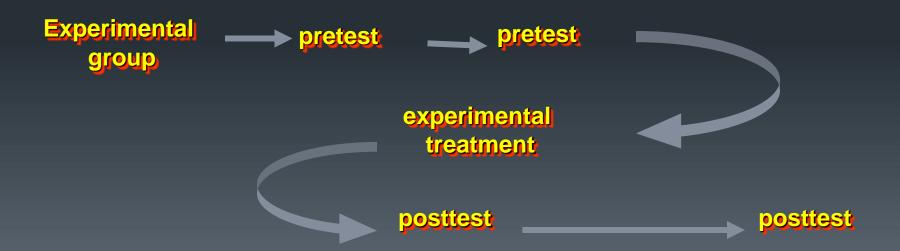
B. After-only nonequivalent control group design



C. One group (pretest-posttest) design

Experimental pretest experimental posttest treatment

D. Time series design



Non-Experimental Research Design

Non-Experimental Descriptive Comparative Correlational Causal Comparative

Descriptive Research

What is the Descriptive Research?

This type of research involves either identifying the characteristics of an observed phenomenon or exploring possible correlations among two or more. It primarily concerned with finding out "what is", solving the problems through the interoperation of the data that has been gathered, (answering the questions who, what, where, when and how...)

Descriptive" what is the current situation?"

- Numerical data gathered through tests, surveys, observations, interviews
- variables are not manipulated but are measured as they occur
- Subgroups may be compared on some measure
- Two or more variables of a group may be correlated
- Doesn't attempt to identify cause of differences or relationships, just if they exist

اهداف پژوهش

- Precise
- Detailed
- Clear
- Operational

فرمت هدف نویسی در طرح های کمی

►The purpose of this	(experiment? Survey?) study
is (was? will be?) to test the tl	heory of that
(compares? relates?) the	(independent variable)
to (dependent variable	e), controlling for
(control variables) for	(participants) at
(the research site).	
►The independent variable(s)	will be defined as
(provide a definition).	
►The dependent variable(s) _	will be defined as
(provide a definition),	and the control and
intervening variable(s),	_, (identify the control and
intervening variables) will be	defined as
(provide a general definition).	55

ردهبندي سئوالات تحقيق

- 1. سوالهای توصیفی: در این گونه سوالها معمولاً از کلمات چه میباشد؟ چیست؟و چگونه است؟ استفاده میشود.
- **7. سوالهای رابطهای: در این گونه سوالها چگونگی** رابطه دو یا چند متغیر مورد نظر قرار میگیرد. آیا رابطه معناداری بین متغیر x و متغیر y وجود دارد؟
- **7. سوالهای تفاوتی: این سوالها با تفاوت سطوح** متغیرها سرو کار دارد. آیا تفاوت معناداری بین متغیر x و متغیر y وجود دارد؟

Types of applied research questions – with examples

Type of research question	Example
Descriptive	How common is drug use amongst university students?
Normative	How serious is drug abuse amongst university students
Correlation	What is the relationship between gender, academic performance and drug use amongst university students?
Impact	Has the drug awareness campaign had any impact on the level of university student drug use?

فرضيات پژوهش

A good quantitative hypothesis...

- is based on sound reasoning.
- provides a reasonable explanation for the predicted outcome.
- clearly and concisely states the expected relationships between variables.
- is testable.

فرضيات پژوهش

- Types of quantitative hypotheses
 - Research hypotheses state the expected relationship between two variables
 - Non-directional
 - Directional
 - Null

انواع تعريف عملياتي

تعریف عملیاتی اندازه پذیر:

عملیاتی که باید انجام پذیرد تا اندازه گیری یک مفهوم یا سازه میسر شود.

تعریف عملیاتی آزمایشی:

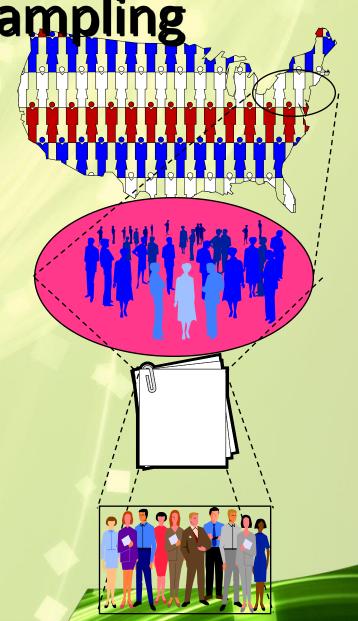
ایجاد شرایط آزمایشی لازم برای بروز پدیـده مورد مطالعه Groups in Sampling

The Target Population

The Study Population

The Sampling Frame

Who is in your study?



جامعه آماری باید:

مانع باشد

جامع باشد

زمانی که نه از واریانس جامعه و نه از احتمال موفقیت یا عدم موفقیت متغیر اطلاع دارید و نمی توان از فرمولهای آماری برای برای براورد حجم نمونه استفاده کرد از جدول مورگان استفاده می کنیم. این جدول حداکثر تعداد نمونه را می دهد.

S	N	S	N	S	N	S	N	S	N
338	2800	260	800	162	280	80	100	10	10
341	3000	265	850	165	290	86	110	14	15
346	3500	269	900	169	300	92	120	19	20
351	4000	274	950	175	320	97	130	24	25
351	4500	278	1000	181	340	103	140	28	30
357	5000	285	1100	186	360	108	150	32	35
361	6000	291	1200	181	380	113	160	36	40
364	7000	297	1300	196	400	118	180	40	45
367	8000	302	1400	201	420	123	190	44	50
368	9000	306	1500	205	440	127	200	48	55
373	10000	310	1600	210	460	132	210	52	60
375	15000	313	1700	214	480	136	220	56	65
377	20000	317	1800	217	500	140	230	59	70
379	30000	320	1900	225	550	144	240	63	75
380	40000	322	2000	234	600	148	250	66	80
381	50000	327	2200	242	650	152	260	70	85
382	75000	331	2400	248	700	155	270	73	90
384	100000	335	2600	256	750	159	270	76	95

محاسبه حجم نمونه آماری از رابطه کوکران

$$n = \frac{\frac{z^2 \times p \times q}{d^2}}{1 + \frac{1}{N} \left(\frac{z^2 \times p \times q}{d^2} - 1\right)}$$

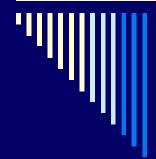
$$n = \frac{(1.96)^2 \times \frac{(0.5 \times 0.5)}{(0.05)^2}}{1 + \frac{1}{2713} (1.96)^2 \times \frac{(0.5)(0.5)}{(0.05)^2} - 1)} = 337$$

در این فرمول داریم: حجم جامعه آماری ۲۷۱۳ =N

p: احتمال نسبت برخورداری از صفت مورد نظر p=0/4 p: احتمال نسبت عدم برخورداری از صفت مورد نظر q=0/4 p:

d= ٠/٠٥ يا خطاي مطلوب d-٠/٠ انحراف يا خطاي مطلوب

z= ۱/۹۶ درجه یا ضریب اطمینان ۹۵ درصد ت



Units of Analysis

- Individuals
- People
- Places
- □ Groups
- Institutions
- Nations
- Programs

نمونه آماری (نمونهگیری)

به منظور جمع آوری اطلاعات دربارهٔ افراد جامعه میتوان یکی از روشهای زیر را به کار گرفت.

→ الف: گردآوری داده ها از طریق شمارش

لـــ ب: گردآوری داده ها از طریق نمونه گیری

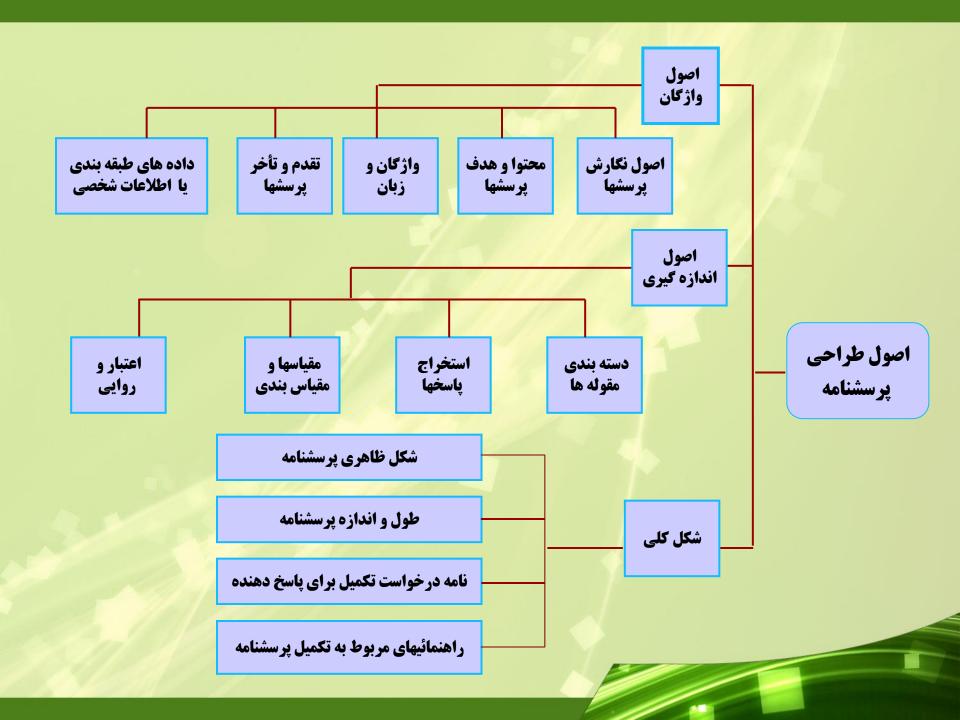
ابزار جمع آوری اطلاعات در پژوهش

- 💠 پرسشنامه / مقیاس / سیاهه
 - الله مصاحبه 💠
 - مشاهده
 - 💠 آزمون
 - ابزار آزمایشگاهی

پرسشنامه

تعریف: پرسشنامه مجموعهای از سوالهاست کسه پاسخ دهنده با ملاحظه آنها پاسخ لازم را ارائسه میکند.

اصول کلی تنظیم پرسشنامه: دارای اهداف و سوالهای تحقیق, جذاب بودن برای پاسخگو, کوتاه و حاوی کلیه اطلاعات مورد نیاز تحقیق



انواع مصاحبه

سـازمان يافته

نيمه سازمان يافته

سازمان نايافته

تعریف مشاهده

یکی از ابزار جمع آوری دادهها مشاهده است. مشاهده عبارتست است از شناسایی، نامگذاری، مقایسه، توصیف و ثبت انچه روی میدهد.

روش مشاهده، ابزار اساسی برای جمع آوری اطلاعات درباره رفتار غیر کلامی است. مشاهده معمولابه جمع آوری اطلاعات از طریق ملاحظه صحیح و یادداشت برداری ازپدیده ها، آنطور که در طبیعت و روابط علت و معلولی یا روابط متقابل.

برای یک مشاهده خوب محقق باید به سه پرسش زیر پاسخ دهد:

چه چیزی را مشاهده کند؟

چه زمانی و کجا مشاهده کند؟

چگونه مشاهده کند؟

انـواع مشـاهده

- ۱)مشاهده کنترل شده:
- ۱-۱)تجربه آزمایشگاهی کنترل شده
 - ۱-۲) بررسی میدانی کنترل شده
 - ۲)مشاهده کنترل نشده
 - ۲-۱)بررسی میدانی کنترل نشده
- ۲-۲)تجربه آزمایشگاهی کنترل نشده

مزایا و محدودیتهای مشاهده

1)مزایا:

مشاهده رفتار غیر کلامی محیط طبیعی مشاهده وقایع در بلند مدت

۲) محدودیتهای مشاهده

- فقدان كنترل عوامل خارجي
- مشکل کمی کردن مشاهدات
 - کوچکی اندازه نمونه
- مشکل یادداشت برداری و کسب موافقت برای مشاهده تعمیم نتایج

روایی و اعتبار (پایایی) پرسشنامه

روايي

یعنی سوالات آنچه را که موضوع بررسی ماست بپرسند و جز آن چیسزی را مسورد پرسسش قسرار ندهند.

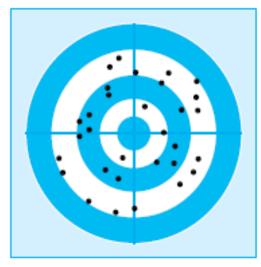
سئوالات باید اعتبار داشته باشند به گونه ای که اگر در فواصل زمانی مختلف از افراد مورد نظر پرسش شوند حاصل آن واحد باشد و یسک گونسه از آنهسا استنباط شود و طبیعی است به شرطی ایسن هسدف قابل وصول است که سیالات استاندارد باشد.

پایایی

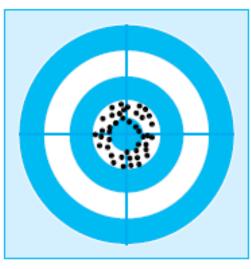
Figure 5.2



Reliable but not valid



Valid but not reliable



Valid and reliable

TABLE 4.7. Types of Validity				
Type of validity	Description			
Face validity	A judgment call made by regular people that, at face value, the measure is tapping what we think it is			
Content validity	A judgment call made by experts that the measure is tapping what we think it is			
Construct validity	The measure is tapping into the concept and related concepts, as we propose, which requires us to create highly specific operational definitions			
Statistical validity	The statistical analysis chosen is appropriate and the conclusions drawn are consistent with the statistical analysis and the rules of statistical law			
Ecological validity	The findings are generalizable to a real-world setting			
Internal validity	Precautions have been taken to safeguard against the possibility that an extraneous variable influenced the results			
External validity	The findings have only been generalized to populations supported by the tests			



TABLE 4.8. Types of Reliability			
Type of reliability	Description		
Interitem reliability	Consistency of results across multiple questions or indicators intended to measure a single variable		
Test-retest reliability	Consistency of results testing the measure with the same subjects twice		
Interrater reliability	Consistency of results using two or more researchers/observers		

	Type of	- 0 0 0
Statistical test	measure	Overview
t-Test	Comparison	Used to compare the results of two groups (statistical significance of differences in groups' means) (Babbie, 2013)
Analysis of variance (ANOVA)	Comparison	Used to compare the results of more than two groups (statistical significance of differences in groups' means) (Babbie, 2013)
Analysis of covariance (ANCOVA)	Comparison	Used to compare the results of more than two groups, controlling for covariates (Creswell, 2014)
Chi-square (X²)	Association	A test of significance based on the null hypothesis (Babbie, 2013), used to test the association between two categorical variables (Creswell, 2014)
Cramer's V	Association	Used to test the strength of the relationship between two variables. Results in a score between 0 and 1 (0 indicates no relationship whatsoever and 1 indicates a perfect relationship) (Adler & Clark, 2011)
Pearson product-moment correlation	Correlation	Used to determine the strength and direction of a relationship between two variables (Adler & Clark, 2011)
Multiple r regression	Correlation	Used to relate three or more continuous variables

