

Objectives

- How do we **describe** the natural world?
- Crafting your research question
- We will review **Descriptive/Qualitative** designs
- Discuss core elements of an **Experimental/Quantitative** research design

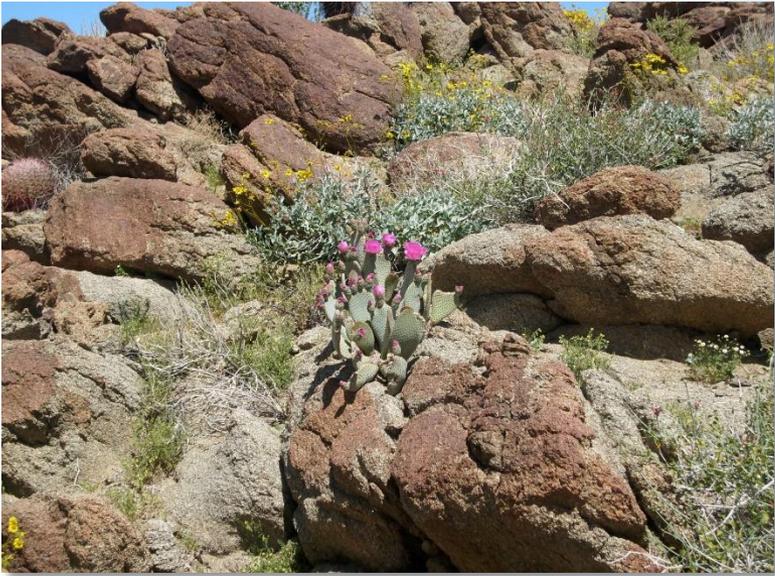
What Does Research Methods Allow us to Do?

Describe the world

Made predictions (hypotheses)

How do we describe the natural world?

Vivaldi's Four Seasons describes the emotional experience of the changing seasons.



This **picture** 'describes' a desert environment.

Literature can well describe peoples' inner states.

History, Journalism and the like describe the physical, social and cultural environment.

Galileo; **How** does the world work, not **why**.

- Careful descriptions of the world can substantially change our knowledge or understanding.
- Prior to modern science knowledge was often via authorities rather than evidence;
 - i.e., the church, influenced by classical Philosophers.
- One of Galileo's major contributions was to not ask **Why** objects fall, a religious question, but **How they fall, a scientific (descriptive) question**.

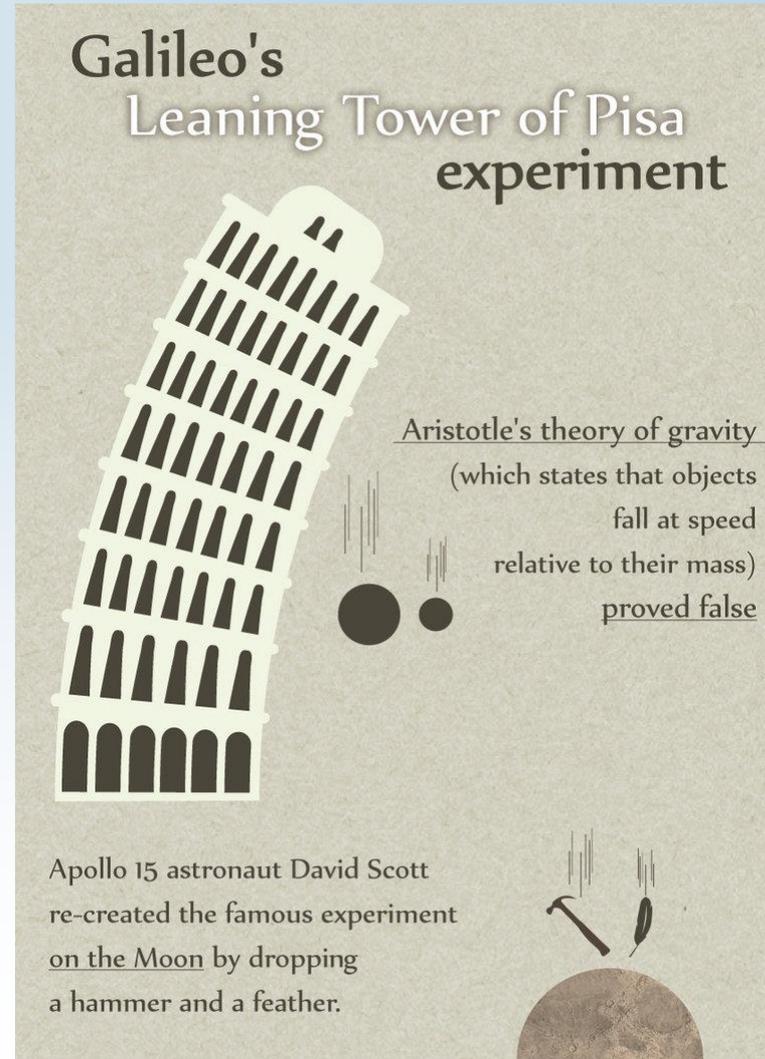
Galileo developed formulae that perfectly **described** the relation of time and distance for a falling object:

$$t = \sqrt{\frac{d}{16}}$$

Time it takes for an object to fall a given distance 'd'.

$$d = 16t^2$$

Distance an object will fall given time 't'.



Describing the World

There are two major ‘streams’ of descriptive research:

Qualitative

and

Quantitative

- Addresses “lived experience”; the sight, sound and feel of participants’ worlds.
 - Data can be textual descriptions, recordings, soundscapes*...
 - Methods include:
 - Focus groups,
 - Open-ended (free response) interviews,
 - [Direct observation](#)
- Captures mathematical or numerical characteristics of nature.
 - Data can be simple frequency counts – “how many...” – or complex correlations.
 - Methods include:
 - Surveys,
 - Structured interviews,
 - Archival data, e.g., Unified Crime Reports...

Describing the World

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-using soundscapes to understand nature.

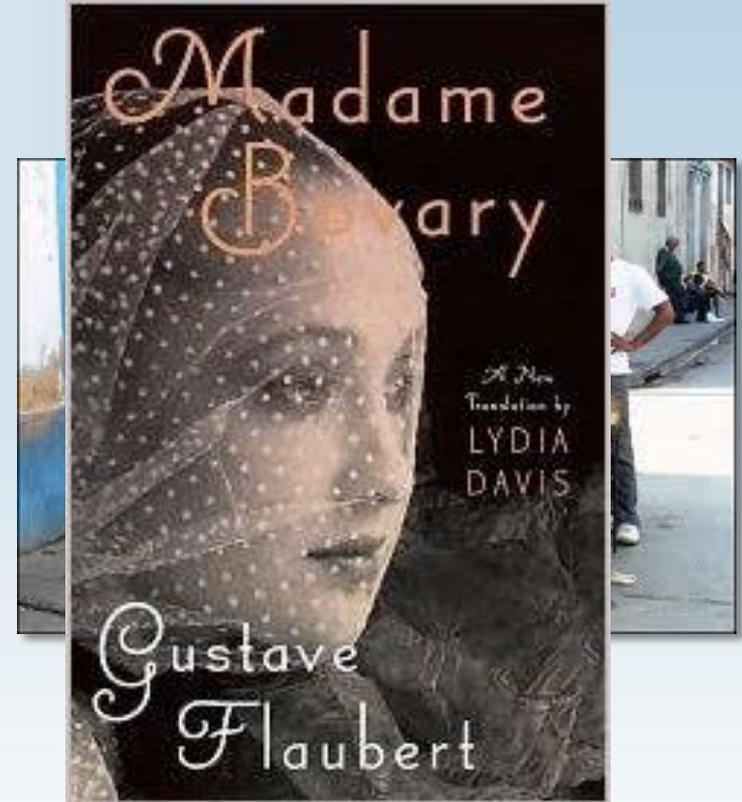


Describing the World

Science:
1. Description
2. Prediction

Qualitative Description

- ✓ **Simple observation:** Describe what goes on “in the wild”.
- ✓ Anthropology, sociology, ethnography, ethology, and similar disciplines rely on qualitative or observational data.
- ✓ The Humanities often have sensitive, qualitative description at their heart...



- Madame Bovary, even as fiction, provides a rich and sensitive description of provincial life in mid-19th century France.

Qualitative Description

- ✓ Observational data are typically structured:
 - ✓ Extensive field notes,
 - ✓ Checklists,
 - ✓ Behavioral counts,
 - ✓ Audio / Video...



- ✓ Many **quantitative** studies begin with **qualitative** descriptions of a target population.
- ✓ William H. (Holly) Whyte (1917-1999) is the mentor of Project for Public Spaces – [Human behavior in urban spaces](#)

Qualitative Description

- ✓ Social science descriptive studies often involve recording patterns of behavior in specific groups & places.
- ✓ Focus groups, group interviews, structured observations...
- ✓ These data are valuable for **formulating hypotheses**.



Focus Group Coding

Now is the time to craft the idea into more of a reality

- Who am I as a [your discipline] researcher and what kinds of questions do I want to answer? What do I want to describe in the world?
- Avoid the problems listed on the following slide
- The point of the exercise is to stretch your mind to approach your area of interest from as many different ways as possible so you can find the research question best for you.

Common Problems with Research Questions and How to Fix Them

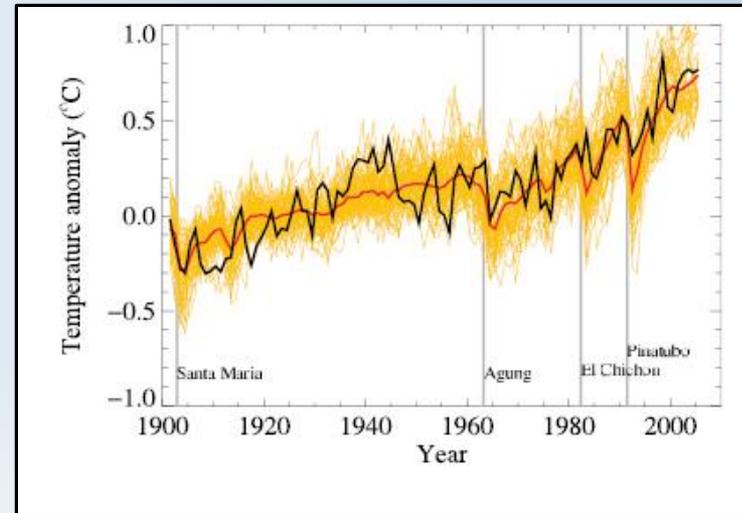
Draft Question	Problem	Sample revision
<ul style="list-style-type: none"> Should we teach sex-ed in elementary school? Do teachers need to receive training on how to create tests? 	<p>“Should” question – Back up and assess research that is relevant to answering a “should” question</p>	<ul style="list-style-type: none"> What are the differences in knowledge and attitudes of elementary school students who have been taught sex-ed and those not? What is the effect of training teachers how to create tests?
<ul style="list-style-type: none"> Could the overthrow of Allende’s leftist government in Chile have been prevented? 	<p>Counterfactual – this asks a “what if” question or tries to analyze something that did not happen. Instead, ask which factors were key for determining a certain outcome</p>	<ul style="list-style-type: none"> What were the most important factors that led to the overthrow of Allende’s leftist government in Chile?
<ul style="list-style-type: none"> What do the lyrics to the song “Single Ladies (Put a Ring on It)” by Beyonce reveal about modern female sexuality? 	<p>This question is limited to the author’s view, rather than an interpretation of empirical data on a social phenomenon (eg., how the song it is received/understood by specified audiences)</p>	<ul style="list-style-type: none"> How do high-school girls interpret Beyonce’s “Single Ladies (Put A Ring On It)?”
<ul style="list-style-type: none"> How do consumers react to new product concepts or ideas for advertising 	<p>Too broad – you’ll be overwhelmed by this topic</p>	<ul style="list-style-type: none"> What elements wearable technology engage the users’ intent to purchase?

<ul style="list-style-type: none"> Do predominately white people's neighborhoods have less pollution than the neighborhoods where people of color live? 	<p>Already answered – if scholars agree on the answer to your question, change it into a new question on the same topic</p>	<ul style="list-style-type: none"> How do advocates understand global warming in relation to the increasing pollution levels they already live with?
<ul style="list-style-type: none"> Do designers get paid more and get more prestige for their work after completing their graduate degree and have worked for a major advertising agency? 	<p>Multiple questions in the guise of one – Separate your question into separate questions and choose one.</p>	<ul style="list-style-type: none"> Do designers' prior experience relate to their salary? Do designers get paid more because they have worked for a major advertising agency?
<ul style="list-style-type: none"> Why are soccer fans more violent than football fans? 	<p>This question has a hidden assumption – Make the hidden assumption the focus of your research question OR state the assumption explicitly in your introduction and then built your research question around it.</p>	<ul style="list-style-type: none"> Are soccer fans more violent than football fans? Scholars X, Y and Z indicate that soccer fans are more violent than football fans. What causes soccer fans to be more violent than football fans?
<ul style="list-style-type: none"> What are the behavioral effects of Adderall when used by children? 	<p>Make it more meaningful to you—change your question into something that explores your interest's or social significance</p>	<ul style="list-style-type: none"> How widespread is the use of Adderall among college students? What are the factors that lead college students to use Adderall and other stimulants to improve their productivity?

2. Quantitative Description

✓ Tracking patterns or systems using numbers

- Surveys, polls...
- Archival data such as uniform crime reports.
- Epidemiological data; disease rates...
- Physical observations



- ✓ Useful for both developing and testing hypotheses.

2. Making Predictions

Science:
1. Description
2. Prediction

• Practical applications:

- What traits predicts talent in people?
- Can I predict which employees will be most successful?

- These applications (should) stem from a **theory**.
 - Delay of gratification and motivation → Talent
 - A specific personality constellation → Career Success...
- That is (or should be...) supported by empirical **evidence**.

Predictions

Science:
1. Description
2. Prediction

- Practical applications:

- Testing hypotheses:

✓ An hypothesis is a testable prediction

- Correlational research;

- I predict that cultures undergoing rapid economic change will be prone to irrational beliefs.

- Experimental research;

- I predict that interventions to stabilize economic conditions will decrease people's irrational beliefs.

Experimental designs and validity

Internal validity

- In experiments we manipulate (induce...) the Independent Variable.
- We then measure the Dependent Variable.
- **Experimental hypothesis:** the outcome (the level of the Dependent Variable) is caused by – and only by – the Independent Variable.
- **Internal validity:** How confident are we that the outcome was due only to the Independent Variable.
- **Confound:** A variable other than the IV that caused or influenced the result.
 - Did the participants in the experimental v. control groups differ on something other than the IV?
 - Were the procedures biased in some way...?

Examples of Field and Laboratory Experiments

Starts with a Question: Can People Be Wrong About Whether They Are Sexually Aroused?

Assumptions

- Sexual arousal may not be accurately attributed.
- Ambiguities of sexual arousal
 - Sexual stimulation may affect the brain, or the genitals, neither, or both
 - The disconnect between the brain and the genitals is greater among women than men.

Research Design: **Field** **Experiment**

- Dutton & Aron (1974) examined the mis-interpretation of arousal according to environmental feedback
- Male participants crossed either
 - a wobbly suspension bridge high over a canyon = high anxietyOR
 - or a solid bridge only 10 feet above a brook = low anxiety
- As each participant crossed the bridge, an attractive female research assistant approached and
 - administered questionnaire about some ambiguous pictures of people
 - gave him her phone number in case he had questions about the study

Is there a misattribution of arousal?

- IV: ?
- DVs: sexual themes in pictures; Later calls or does not call the attractive female E
- Hypothesis: Men who had crossed the scary bridge were _____ likely to call the attractive female E than those who had crossed the standard bridge.



- Results: confirmed hypothesis
- Conclusion: The arousal that occurred on the wobbly suspension bridge was fear, but participants misattributed it to sexual arousal because of the presence of the attractive research assistant

Methodological issues

- Experimental methods in field
- Naturalistic settings outside laboratory
- Field experiments have high external validity
- Less control over extraneous variables
- More difficult to obtain subjective measures (usually relies on observed behavior)

Do video game violence make people less responsive to victims

- Lab experiment Brad Bushman and Craig Anderson (2009) randomly assigned participants to play either
 - a violent video game (e.g., Duke Nukem or Mortal Kombat)
 - a nonviolent video game (e.g., Glider Pro, 3-D Pinball)
- After 20 minutes of play, the participants were left alone in a room while they filled out a lengthy (and bogus) questionnaire about video games.

Staged a fake fight

- Using professional actors.
 - Loud and disruptive.
 - Actor 1 was heard to threaten Actor 2.
 - Next, participants could hear a chair crashing to the ground and the door to the hallway was kicked twice.

They also heard this dialogue:

- Actor 2: (groan)
- Actor 1: Ohhhh, did I hurt you?
- Actor 2: It's my ankle, you bastard, it's twisted or something...I can't even stand up!
- Actor 1: Don't look to me for pity.
- Actor 2: You could at least help me get off the floor.
- Actor 1: You've gotta be kidding. Help you? I'm outta here [slams the door and leaves].

Are people less likely to help?

- IV: ?
- DVs: Noticing; Time to help
- Hypothesis: Participants who played violent games took _____ to help the injured and were _____ likely to “hear” the fight.

- Results: confirmed hypothesis
- Conclusion: media violence can desensitize individuals and reduce helping behavior

Methodological issues

- contrived nature
- potential for demand characteristics.
- highly unnatural “fight” with stilted dialogue breaking out improbably in a psychology laboratory (just after one has played a violent video game)

Final thoughts:

If you were to do an experiment on our focus group data, what would that look like?