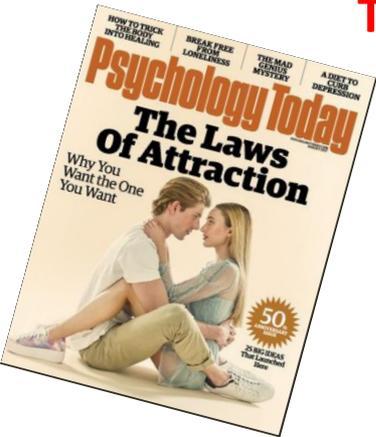


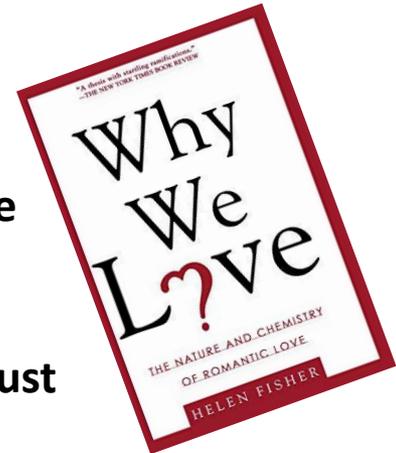
# Research Methods (HDFS 3390), Alan Reifman, Texas Tech University

## Theories and Hypotheses

### THEORY



- A relatively comprehensive **explanatory system** for some phenomenon.
- As an example, **many theories** attempt to answer the larger question of how people become romantically attracted to each other.
- Other related terms include: **conceptual model** (or just "**model**") and **framework**.



### HYPOTHESIS

- A relatively specific **prediction** of how two or more variables should be related (e.g., the more two people **share attitudes and interests**, the more likely they will be to **like each other**).
- Hypotheses are often derived from a larger theory.
- Prediction should be **testable** and **falsifiable**.

# Further Examples

## Stage Theories of Grieving

- [Kübler-Ross \(1969\)](#) proposed a sequence of **denial, anger, bargaining, depression, and acceptance** in how people cope with their own terminal illness or death of a loved one.\*
- Theory doesn't merely state that reactions will occur in a certain order (hypotheses). Rather, it discusses **why** each emotion will be felt and then diminish. For example, she refers to "a society bent on ignoring or avoiding death" as a context for denial, but also notes that one "cannot maintain denial forever" (pp. 11-12).
- This [JAMA article](#) provides a nice graphical depiction of what the hypotheses would predict the results to show (Figure 1) and what the results actually did show (Figure 2).

*\*Related theories have inserted a stage called "yearning" for the deceased between denial and anger, and removed bargaining.*

## Theories of Crime

- Vox reviews evidence [for and against 16 leading theories](#) of [drop in U.S. crime rate](#).

# Experts' Views on the Importance of Theory

- Essay by Werner Ulrich:

*"...theory is considered to be an important vehicle for knowledge generation – rightly so, for a number of reasons. To mention just a few basic reasons, theoretical conjectures **influence the questions we investigate** in the first place; they determine the choice of research methods; and they condition the way **we interpret research results** as well as the conclusions we draw with a view to practical action. ...it is not sufficient for knowledge that our beliefs or hypotheses conform to experience... we must also be able to explain **why** this is so. If I predict that it will rain tomorrow and this actually happens, it could simply be by chance... Similarly, if as a researcher or professional I apply some methodology and find that "it works," I should be able to explain why this is so, otherwise I cannot have faith in the results."*

- Social psychologists Abrams and Hogg (*Pers. Soc. Psych. Rev.*, 2004) write that:

*"A [meta] theory is like a good travel guide – it tells you where to go and where not to go, what is worthwhile and what is not, the best way to get to a destination, and where it is best to rest a while... it informs the sorts of questions one asks and does not ask, and it furnishes a passion that makes the quest exciting and buffers one from disappointments along the way" (p. 98).*

## Experts' Views on Theory (continued)

- Social psychologist Susan Fiske (*Pers. Soc. Psych. Rev.*, 2004) lists several criteria for a good theory (paraphrased below):
  - *It proposes casual relationships.*
  - *Attempts to be coherent (clear, logical, consistent).*
  - *Tells a good story*
  - *Seeks parsimony (simplicity).*
  - *Is testable.*
  - *Is "fertile" (inspires other scientists to test it and generate new research ideas).*
  - *Solves problems.*
- In the mental health field, the theory a therapist identifies with will guide the form of treatment (evaluation studies should also show the treatment to be effective).
- Famed biologist E.O. Wilson, in his 1998 book *Consilience: The Unity of Knowledge*, argues:  
*"Nothing in science -- nothing in life, for that matter -- makes sense without theory. It is our nature to put all knowledge into context in order to tell a story, and to re-create the world by this means."* Referring to a phenomenon in astronomy involving stars, which yields important information, Wilson notes that without the proper theory, *"they are no more than beautiful patterns of light"* (p. 56).

## Theories are Always a Work in Progress

Always "on trial" and can be abandoned when their predictions don't come true or new theories better explain the phenomenon in question.

Famed physicist [Richard Feynman](#) ([video](#)): "We never prove [a theory] right... it is simply not proved wrong... [can] be taken to be temporarily right"

Wikipedia list of "[Superseded Scientific Theories](#)" (see especially Steady State vs. the [Big Bang Theory](#))

Another example of a previously accepted theory being overturned: [The cause of stomach ulcers](#)

# Brief Exercise: Make the Prediction from These Theories

THEORY	HYPOTHESIS/PREDICTION
<p><b>"Broken Window" theory of crime and delinquency, which says that "nuisance-type" disorder, such as broken windows and graffiti, if left unrepaired, will give off the impression that local residents don't care about quality of life in the area, thus inviting a criminal element.</b></p>	<p>If a group of city workers and/or volunteers got together to clean up a neighborhood, paint the buildings, put in new windows, pick up the trash, etc., we would hypothesize (predict) that the crime rate in the neighborhood would go _____.</p>
<p><b>Einstein's Theory of <u>Relativity</u>, which says that space and time are integrated with each other ("spacetime") and that faster movement through space leads to slower movement through time (in tiny fractions of a second, not noticeable in everyday life).</b></p>	<p>If two clocks of extremely high precision were first synchronized to the same exact time, and then one clock was placed on an airplane to travel and the other left stationary, we would hypothesize (predict) that the clock that had flown would be running _____ than the clock that remained stationary.</p>

# Approaches to Scientific Research

## DEDUCTIVE

- Have Theories and Hypotheses, Then Gather Data to Test
- Referred to as: "THEORY-DRIVEN"
- Most Common Approach
- Will be Emphasized in this Course
- Usually Quantitative

## INDUCTIVE

- Gather Data, Then Form Theory
- Referred to as: "DATA-DRIVEN"
- Exploratory
- Used When an Area of Research is in Early Stages
- Often Qualitative

## Examples of Inductive Research

Study of why women drink in bars (Parks and colleagues, 1998, in the journal *Sex Roles*; available via TTU Library site)

National Weight Control Registry: Researchers have sought information from individuals who have maintained long-term weight loss, in order to help develop theories of successful weight loss.