Research Methods (HDFS 3390),
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Intro to Measurement

Quote from article:

How do they do it? Mostly they just ask people. Daniel Kahneman, a psychologist at Princeton University who won the Nobel prize for economics in 2002, reckons people are not as mysterious as less nosy economists supposed. "The view that hedonic states cannot be measured because they are private events is widely held but incorrect," he and his colleagues argue. Generally, people can say how they feel at a given moment, on a scale of zero to ten.

And if this smacks of hearsay not science, the new "hedonimetrists" can appeal to other kinds of evidence, better calculated to impress. They can look into people's eyes; or better still, their brains. People who confess to feeling happy also grin more than others. And they mean it: they smile with their eyes (a contraction of the orbicularis oculi facial muscles), not just their mouths. People's self-reports also tally roughly with what electrodes planted on their scalp reveal about the frequency and voltage of electrical waves in their left forebrain, which sparks up when they are feeling good.

Important Points About Measurement

- **Conceptual vs. operational definitions (**detailed notes below**)**

- **Should follow from theory**

    o **Niehuis developing a <u>measure</u> of relationship disillusionment (loss of positive feelings) based on Huston's <u>disillusionment model</u> (see especially paragraph beginning "Social science has a name...").**

    o **Hendrick and Hendrick <u>developing a measure of love styles</u> based on Lee's theory. The following article can be downloaded from the TTU library website:** **Hendrick, C., &Hendrick, S.S. (1986). A theory and method of love.** *Journal of Personality and Social Psychology, 50,* **392-402.**

- **Open- vs. closed-ended (<u>here</u> and <u>here</u>)**

- **Types of variables: Nominal, ordinal, and ratio (**detailed notes below**)**

- **Number of categories (choices) to use (e.g., religious affiliation -- should you list only a few major categories or a large number of detailed categories for respondents to select?)**

- **Exhaustive (answer options should "exhaust" the possibilities) and mutually exclusive**

- **If possible, should use existing measures (good quality already established)**

- **If possible, should use multiple specific measures, either different question wordings on the same general topic (<u>immigration example</u>), or a combination of self-report and physiological measures (emotion example shown above; <u>sexual-behavior example</u>)**

Conceptual, Mid-Level, and Operational Definitions

DEFINITION	RATINGS OF CITIES (*Places Rated Almanac*)	SCHOOL SPIRIT (Fall 2000 & 2005 Class Projects)	SEXUAL ORIENTATION (*Sex in America*)
CONCEPTUAL (abstract, general)	Quality of life	Pride and enthusiasm for one's school	Sexual preference for same, other, or both genders
MID-LEVEL (more specific than conceptual, but not totally specific)	Housing, jobs, education, climate, health care, crime, etc.	Public displays, attitudes, behavior	Behavior, attraction/desire, self-identification
OPERATIONAL (specific, concrete way in which something is measured)	Mid-level categories can each be broken down into even more specific statistics.

Go to Google Books, search on Places Rated Almanac, then on Scoring. | Displaying school decal on car window, wearing school garb, attitude surveys, alumni donation rate (details). | Mid-level categories can each be broken down into specific survey items.

Go to *Sex in America*, search on "circle," then go to p. 251; search on "attracted" then go to p. 281. |

Importance of this topic: The percentage of Americans considered LGB would vary widely, depending on which operational definition you use. The best answer to questions on the proportion of Americans with different sexual orientations would therefore appear to be "It depends."

Operational Definition	% Men	% Women
Behavior (Past 12 Months)	3*	1
Behavior (Past 5 Years)	4	2
Behavior (Since Age 18)	5	4
Behavior (Since Puberty)	9	4
Attraction (Attraction Item)	5	4
Attraction (Appeal Item)	4	6
Self-Identification	3	1
Affirmative Response in Any One Area	10.1	8.6
Affirmative Responses in All Three Areas	2.4	1.3

Nationally representative survey of over 3,000 Americans age 18-59.
*For behavior, attraction, and self-identification, approximate values based on bar graph.

Still More Examples of Operational Definitions!

Here are some "Best City" or "Worst City" lists – Before looking at the linked articles, see what ideas you can come up with for <u>what kinds of operational (concrete, specific, measurable) indicators could be used</u> to measure a given conceptual domain.

- **"Brainiest" Cities (link)**
  What things about a city could indicate how "brainy" its residents are?

- **Best Walking Cities and Neighborhoods (here and here)**
  What things about a city could indicate its conduciveness to walking?

- **"Drunkest" Cities (here and here)**
  What things about a city could indicate its propensity for heavy drinking?

- **Most "Vegan-Friendly" Cities (link)**
  What things about a city could indicate its friendliness to vegans and vegetarians?
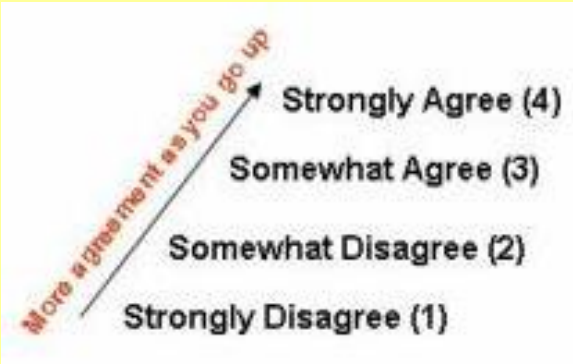
- **"Fittest to Fattest" Cities**
  Cities ranked "fittest" to "fattest" by *Men's Health* magazine. According to a prior article from the Texas Tech *Daily Toreador*, these are the operational definitions of child weight healthiness:

  - *"According to the magazine, cities were ranked based on the implementation of nutrition and physical-activity programs, the state's physical education requirements, children's fitness by federal standards, adult fitness in general, the number of sports camps, the number of fast food restaurants and the amount of fast food children consume."*

- **What Qualifies as a Planet?**
  When the International Astronomical Union changed the operational definition in August 2006 for what makes something a planet, Pluto no longer qualified.

Types of Variables

VARIABLE TYPE	DEFINITION	EXAMPLES
Nominal	**Can't put answer choices in logical order (numerical values arbitrary)**	<u>**Favorite type of movie**</u>**: Comedy (1), Action (2), Drama (3), Other (4)**
Ordinal **Advanced Topic in Ordinal Measurement** So you're designing a survey with some items you've just developed. • Should you label the scale from 0 (or 1) to the maximum possible score, or from negative X to positive X? • Should you just make the endpoints visible (e.g., 1 and 5) or show all values along the way (e.g., 1, 2, 3, 4, 5)? • Should you add verbal labels? • The online journal *Survey Practice* has an <u>article</u> on this topic (April 2009).	**Can put in order, but only crudely (e.g., attitude items):** Strongly Agree (4) Somewhat Agree (3) Somewhat Disagree (2) Strongly Disagree (1) (More agreement as you go up) **Can't be sure difference in intensity between 1 and 2 is the same as between 2 and 3, etc.**	**Harry Potter example...** USA TODAY Snapshots® 4/19/01 Just mad about 'Harry' How much kids ages 6-17 say they like Harry Potter: Think it's the best 17% Really like 21% Like 21% Don't care either way 28% Don't like 5% Really don't like 2% Can't stand 4%
Ratio*	**Can put in precisely spaced order**	<u>**Height**</u> **(in inches), weight (in pounds), minutes, seconds, etc.**

*Ratio variables have "true zero." In rare cases where a variable meets all the criteria for ratio, including equal-interval spacing, but has arbitrary zero (e.g., ° F), this is an "interval" variable. The name "ratio" comes about as, using height for example, 72 inches maintains a 2:1 ratio to 36 inches.

Another Way to Look at Types of Variables

	Can Answer Choices Be Put in a Progression?	Does Progression Have Scientific Precision?
Nominal	No	N/A
Ordinal	Yes	No
Ratio	Yes	Yes