**Understand and can account for, exemplify and discuss concepts below:**

**Stipulative and lexical definitions:**

UNDERSTAND:

Stipulative: states how the author herself intends to use a word

Lexical: reports common usage

In both cases: the definition always contains a “definiendum” (that which is to be defined), a “definiens” (that by which it is defined) and are connected with a “defining connective”.

There are essentially 3 options when developing a stipulative definition in order to increase precision:

1. Retain but redefine the original word, e.g. force, weight, risk
2. Assign a qualifier to the original term before redefining it, e.g. electrical resistance, physical pendulum
3. Introducing a work that is new for the context, e.g. leukemia (blood cancer), sodium chloride (salt)

EXEMPLIFY:

An ion… “definiendum”

Is… “defining connective”

An electrically charged atom or molecule. “definiens”

DISCUSS:

Bad to define a stipulative which contradict the lexical meaning.

You can create a stipulative definition as you wish, but not if you don’t must.

What type of stipulative definition is preferred in which situation.

Create a stipulative definition, can it then become a lexical definition? (if used frequently enough)

**Narrowness and broadness (as applied to definitions):**

UNDERSTAND:

Narrowness: can only use definition in a small area

Broadness: can use it in a larger area

Narrowness is good to prevent confusion (if not a similar definition exists in a related field)

Broadness is good for general understanding.

I would say that they are each opposites.

EXEMPLIFY:

If I define a word for my specific project in, e.g. robotics then wouldn’t be narrow.

If I define a work for my daily life, e.g. a name for when it is raining and snowing at the same time, it would be broader, since more people could use it.

DISCUSS:

I guess broad/narrowness depend on how many people that can/will be able using the the definition.

Is a narrow definition always better in science?

**Vagueness and ambiguity:**

UNDERSTAND:

Ambiguity: have different meanings

Vagueness: no sharp limit

Both are types unclarity.

EXEMPLITY:

Ambiguity: within the limits of what is common (normal)

Within the limits of what is harmless (normal)

Vagueness: bald, since you can still have hair

DISCUSS:

Clarity is good for science.

When is vagueness/ambiguity good?

**Hypothesis (what they are and what makes them good or bad):**

UNDERSTAND:

Hypothesis: a proposed explanation for a phenomenon

Good if clear (no vagueness and no ambiguity). Can be tested, e.g. be falsifiable.

* A statement can be either true or false
* A statement that is not necessarily true nor false
* A statement that either has some generality (e.g. “all X in domain D…”), or that is about some unobservable (exclude statements like “this table is red”)

EXEMPLIFY:

“I am taller than you.”

DISCUSS:

Need to have testability, e.g. falsifiable and can in practice perform the test

**Direct, aided and indirect observations:**

UNDERSTAND:

Direct: natural

Aided: could use natural senses but is helped a bit

Indirect: Observing something else that answer questions about/ is connected to the “real” object of observation

EXEMPLIFY:

DIRECT: with your eyes

AIDED: glasses, microscope

INDIRECT: thermal images, timer & distance measure (velocity cars)

DISCUSS:

The more you introduce them more potential for errors.

If you can observe it direct/aided it is still a good idea (if possible) to observe if indirectly for independent measurement

Sometimes direct of more prone to errors (e.g. distance measures)

Direct typically only gives qualitative properties

**Operationalization:**

UNDERSTAND:

To operationalize a property of interest is to provide a way of linking it to a directly observable effect.

Need to follow a couple of quality criteria:

* Property of interest: must be well defined to allow for valid inferences
* Stable relation: Must be valid according to our best knowledge
* Stable relation: Must be sufficiently stable for practical purposes
* Effect: Must be publicly observable with sufficient precision

Effect <- stable relation <- property of interest

We go the pother way in our inference, i.e.

Directly observe (effect) -> hypothesis (stable relation) -> infer (property of interest)

EXEMPLIFY:

Effect: Stable relation: Property of interest

Mercury column height Linear relation of mercury Temperature

And temperature

DISCUSS:

Can go wrong, (operationalize the wrong way)

Operalizationalism a way is thinking operationalization is interpret

**Construct validity:**

UNDERSTAND:

Refers to the degree to which inferences can legitimately be made from the operationalizations in your study to the theories constructs on which those operationalizations were based.

The degree to which a test measures what is claims to be measuring.

A single study does not prove construct validity

Construct validity examines the question: “Does the measure behave like the theory says a measure of that construct should behave?”

EXEMPLIFY:

“you might try to find out of an educational program increases emotional maturity in elementary school age children. Construct validity would measure if your research is actually measuring emotional maturity”.

DISCUSS:

How to perform a construct validity test?

It is usually verified by comparing the test to other tests that measure similar qualities to see how highly correlated the two measures are.

**Scales (nominal, ordinal, interval, ration, absolute):**

UNDERSTAND:

Nominal: e.g. assigning samples identifying numbers

Ordinal: e.g. Mohs scale for hardness

Interval: temperature in Celsius

Ratio: length, volume, temperature in Kelvin.

Absolute: counting objects, probability

EXEMPLIFY:

Nominal: the numbers serve as “labels”, e.g. 1-Male, 2-Female

Ordinal: reports the ranking and ordering of the data without establishing the degree of variation between them, e.g. 1. Very unhappy, 2-Unhappy, 3-Ok, 4-Happy, 5-Very happy

Interval: know order and the exact difference between the values, e.g. difference between 60 and 50 degrees is the same a the difference between 80and 70 degrees

Ratio: order, exact value between and have an absolute zero, e.g. volume

Absolute: each individual has a natural unit, cannot be divided or multiply, probability (has lower and upper bound)

beginning at a natural minimum, leaving only one direction in which to progress, e.g. pressure has a natural minimum and can therefore be measured absolutely. Length, area, and volume, are absolute but distance not (no natural zero)

DISCUSS:

Ratio is Interval which is Ordinal which Nominal

Nominal Ordinal Interval Ratio

Named -“- -“- -“-

Ordered -“- -“-

Proportional intervals -“-

Absolute zero

But how to relate absolute?