

LEVELS OF MEASUREMENT IN RESEARCH

Social Work Research

November 3, 2021

Austin Oswald, Social Welfare PhD candidate at the CUNY Graduate Center



[Image](#) by Katrina Wright via Unsplash,
shared under the Unsplash license.

**HOW ARE
YOU?**

**ANY ISSUES, CONCERNS,
CELEBRATIONS, QUESTIONS,
PROVOCATIONS, DESIRES THAT
WE SHOULD KNOW ABOUT?**

AGENDA

- ❖ Check-in: how are you?
- ❖ Overview of key concepts
- ❖ Facilitated discussion
- ❖ Small group work
- ❖ Next steps

SEASONS OF LOVE

What comes to mind about research measurement when you hear this song?

HOW HAVE YOU OR YOUR COMMUNITIES BEEN MISMEASURED?

- Surveys/assessments/measures that do not include demographic questions about sexuality.
- Surveys/assessments/measures that perpetuate a gender binary.
- Deficits-based research that use depression scales, measures of suicidality, etc. to describe the LGBTQIA+ population.
- DSM considered “homosexuality” a mental illness until 1973; “Gender Dysphoria” was introduced in 2013.



HOW DOES MY EXPERIENCE APPLYING FOR JOBS CONNECT WITH CAMERON & STINSON'S PIECE ON GENDER (MIS)MEASUREMENT?

Tenure-track Assistant Professor of Social Work or Associate Professor of Social Work

[Position Details](#)

Columbia University in the City of New York, School of Social Work

EEO-1/Affirmative Action Voluntary Self Identification Form



This form is an equal employment opportunity (EEO) form. Responses will be accessible only by administrators and EEO officers.

1. Gender *

To help us comply with federal and state equal employment opportunity recordkeeping and other legal requirements, we invite you to provide your gender below. All information will be considered confidential and kept separate from your applicant file.

- Female
- Male
- I don't wish to answer
- Other

Application Steps

- 1 Documents 
- 2 Personal Information 
- 3 Forms**
 - EEO-1/Affirmative Action Voluntary Self Identification Form
- 4 Review & Submit

DATA EQUITY: QUANTIFYING RACISM, RACE, AND ETHNICITY

- Grouping people in socially constructed categories based on heredity, ancestry, culture, residential space, shared belief system (aka race) is discriminatory.
- We have an imprecise understanding of race for everyone except white people, particularly white men.
- The US decennial census (est. 1790) is saturated in power based on who counts and who matters.
- Race is often considered a control/independent variable, but it's not.



[Image](#) of Dr. Alyasha Sewell via Emory College of Arts and Sciences Department of Sociology

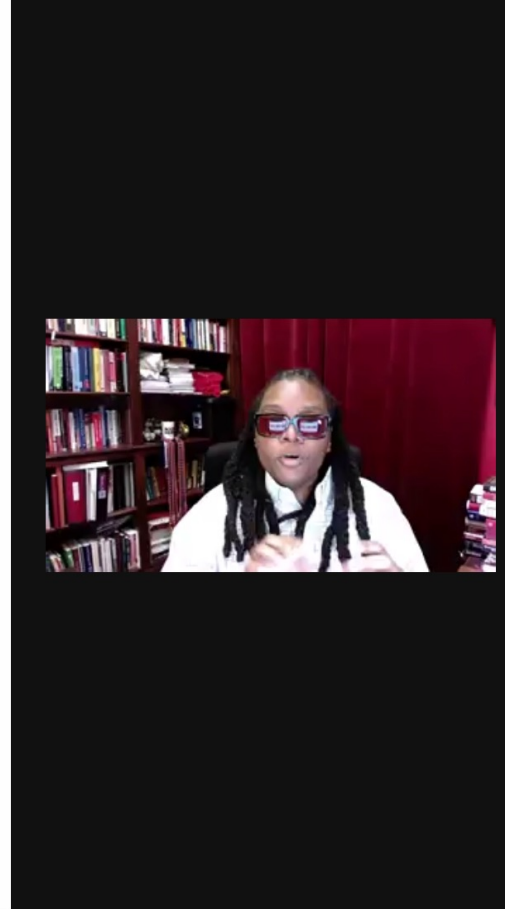
RACE IS OFTEN CONSIDERED A *CONTROL VARIABLE*

Something that is constant and unchanged in an experiment.

Strongly influences values of an outcome

Held constant to test the relative impact of independent variables

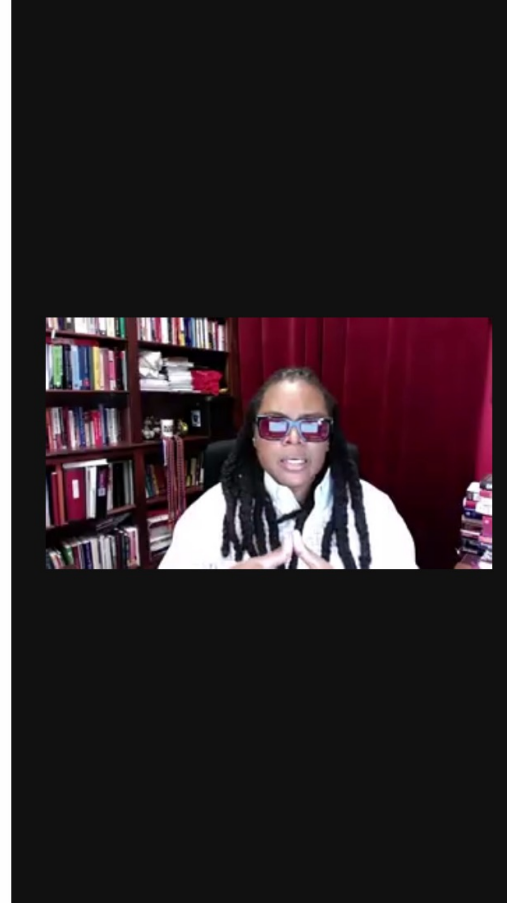
BUT...It is NOT



RACE IS OFTEN CONSIDERED AN *INDEPENDENT VARIABLE*

Table 1
Summary of General Steps in the Scientific Method for Developing Independent Variables as Applied to Depression, Racial Categories, and Racial Categorization Constructs

Step 1: Catalyst psychological phenomenon	Step 2: Formulation of theory	Step 3: Independent variable defined	Step 4: Operational definition
Defining psychological phenomena			
Behaviors Attitudes Processes	Biological Environmental Intrapsychic		Experimental manipulations Measurement
Depression as the psychological phenomenon			
Symptoms (e.g., sadness, loss of appetite)	Biological	Serotonin deficits	Measured serotonin
	Environmental Intrapsychic	Negative cognition Social support	Frequency of negative thoughts
Racial categories as the psychological phenomenon			
Nonspecific	Categories	Categories (e.g., Black, White, Asian)	Self-description Researcher observation Archival data Combination procedures
Racial categorization constructs as the psychological phenomenon			
Low test scores In-group bias Resilience	Stereotype threat Racial identity Racism theory	Stereotype threat conditions Racial identity attitudes Level of racism	Experimental manipulations Scores on a scale



LEVELS OF MEASUREMENT

Nominal, Ordinal, Interval, and Ratio

Least
Precise

Most
Precise



NOMINAL VARIABLE

Categorical variable without order.

- Gender (cisgender male, cisgender female, transgender, nonbinary...)
- Binary variables or dichotomous variables
 - Cat/Dog – Pass/Fail – Depressed/Not Depressed

ORDINAL VARIABLE

Categorical variable with an order.

- Rank order in a race (1st, 2nd, 3rd—doesn't give us the time difference)
- Education level (high school diploma, undergraduate diploma, graduate diploma)

INTERVAL VARIABLE

Continuous variable that doesn't have an absolute zero.

- Test scores (IQ, SAT)
- Temperature

RATIO VARIABLE

Continuous variable that has a true meaningful zero.

- Height or weight
- Age

FREQUENCY (CATEGORICAL AND CONTINUOUS VARIABLES)

		gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	59	42.4	42.4	42.4
	Female	80	57.6	57.6	100.0
	Total	139	100.0	100.0	

Analysis: Frequency/percent in each category; mode

		age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20.00	1	.7	.7	.7
	21.00	1	.7	.7	1.4
	22.00	1	.7	.7	2.2
	24.00	3	2.2	2.2	4.3
	25.00	2	1.4	1.4	5.8
	67.00	1	.7	.7	99.3
	73.00	1	.7	.7	100.0
	Total	139	100.0	100.0	

Analysis: Frequency/percent in each category; mean, median, mode; addition, subtraction, multiplication, division of variables

IDENTIFY THE LEVEL OF MEASUREMENT (NOMINAL, ORDINAL, INTERVAL, RATIO)

- Hair color of women on the US Olympic soccer team.
- Ages of students in a statistics class.
- Sea level measurement for a particular geographical location.
- Numbers on the shirts of a men's basketball team.
- The annual salaries for professors at SSSW.
- The ratings of a movie ranging from “poor,” “good,” and “excellent”.

VALIDITY

- **Content validity:** Evidence that the content of a test corresponds to the content of the construct it was designed to cover.
- **Ecological validity:** Evidence that the results of a study, experiment, or test can be applied, and allow inferences, to real world conditions.
- **Criterion validity:** scores obtained on one measure are like scores with a validated measure of the same phenomenon.
- **Predictive validity:** the ability of a measure to predict scores on a criterion measures in the future.

RELIABILITY

- **Test–Retest Reliability:** the ability of a measure to produce consistent results when the same entities are tested at two different points in time.
- **Internal reliability:** all the items on the scale “hang together” and are correlated in some way (Cronbach’s alpha).
- **Interrater reliability:** when multiple researchers use the same instrument to rate the same thing, their ratings should be similar.

FACILITATED DISCUSSION



[Image](#) by Volodymyr Hryshchenko via Unsplash, shared under the Unsplash license.

NEXT WEEK

Session	Date	Topic	Assignments Due
10	11/10	Sampling methods in quantitative and qualitative research	