Cheat Sheet, Chapter 7 – Design

Design	The design of a study is the specification on how the research question will be answered
Internal validity	**causal relationship:** For example, when you evaluate whether your treatment or program causes an outcome to occur, you are examining a causal relationship.
	single-group threats: a threat to internal validity that occurs in a study that uses only a single program or treatment group and no comparison or control.
	multiple-group threat: an internal validity threat that occurs in studies that use multiple groups - for instance, a program and a comparison group.
	social threats to internal validity: threats to internal validity that arise because social research is conducted in real-world human contexts where people will react to not only what affects them, but also to what is happening to others around them.
Establishing Cause and Effect	**temporal precedence:** establishing that the hypothesized cause occurs earlier in time than the effect.
	covariation of the cause and effect: a criterion for establishing a causal relationship that holds that the cause and effect must be related or co-vary.
	third-variable or missing variable problem: in a two-variable cause-effect relationship, when the effect can be explained by a third variable other than the cause.
	plausible alternative explanation: any other cause that can bring about an effect that is different from your hypothesized or manipulated cause.
	control group: a group, comparable to the program group, that did not receive the program.
Compensatory program	**compensatory program:** a program given to only those who need it on the basis of some screening mechanism.
Single group Treats	**history threat:** a threat to internal validity that occurs when some historical event affects your study outcome. Hypothesis A specific statement of prediction.
	maturation threat: a threat to validity that is a result of natural maturation that occurs between pre- and postmeasurement.
	testing threat: a threat to internal validity that occurs when taking the pretest affects how participants do on the posttest.
	instrumentation threat: a threat to internal validity that arises when the instruments (or observers) used on the posttest and the pretest differ.
	mortality threat: a threat to validity that occurs because a significant number of participants drop out
	regression threat: a statistical phenomenon that causes a group's average performance on one measure to regress toward or appear

	closer to the mean of that measure than anticipated or predicted. Regression occurs whenever you have a nonrandom sample from a population and two measures that are imperfectly correlated. A regression threat will bias your estimate of the group's posttest performance and can lead to incorrect causal inferences.
Null case	The case where the null hypothesis appears to be correct. In a two group design, for example, the null case is the finding that there is no difference between the two groups.
Regression to the Mean	A regression threat, also known as a regression artifact or regression to the mean, is a statistical phenomenon that occurs whenever you have a nonrandom sample from a population and two measures that are imperfectly correlated.
Multiple-Group Threats	**selection history threat:** a threat to internal validity that results from any other event that occurs between pretest and posttest that the groups experience differently.
	selection-maturation threat: a threat to internal validity that arises from any differential rates of normal growth between pretest and posttest for the groups.
	selection-testing threat: a threat to internal validity that occurs when a differential effect of taking the pretest exists between groups on the posttest.
	selection-instrumentation: a threat to internal validity that results from differential changes in the test used for each group from pretest to posttest.
	selection-mortality: a threat to internal validity that arises when there is differential nonrandom dropout between pretest and posttest.
	selection-regression: a threat to internal validity that occurs when there are different rates of regression to the mean in the two groups.
Social Interaction Threats	**social interaction threats:** threats to internal validity that arise because social research is conducted in real-world human contexts where people react to not only what affects them, but also to what is happening to others around them.
	external validity: the degree to which the conclusions in your study would hold for other persons in other places and at other times.
	diffusion or imitation of treatment: a social threat to internal validity that occurs because a comparison group learns about the program either directly or indirectly from program group participants.
	compensatory rivalry: a social threat to internal validity that occurs when one group knows the program another group is getting and, because of that, develops a competitive attitude with the other group.
	resentful demoralization: a social threat to internal validity that occurs when the comparison group knows what the program group is getting and becomes discouraged or angry and gives up.
	compensatory equalization of treatment: a social threat to internal validity that occurs when the control group is given a

	program or treatment (usually, by a well-meaning third party) designed to make up for or "compensate" for the treatment the program group gets.
Introduction to Design	The research design tells you how all the elements in a research project fit together. A design includes the following elements: **Observation of measures, Treatments or programs, Groups, Assignment to group** and **Time.**
Types of Designs	**posttest-only randomized experiment:** an experiment in which the groups are randomly assigned and receive only a posttest.
	pre-post nonequivalent groups quasi-experiment: a research design in which groups receive both a pre- and posttest, and group assignment is not randomized, and there-fore, the groups may be nonequivalent, making it a quasi-experiment.
	posttest-only nonexperimental design: a research design in which only a posttest is given. It is referred to as nonexperimental because no control group exists.