2. The Nature of Research

Key Terms:

- applied vs. basic research
- case study
- causal-comparative (ex post facto) study
- correlational research
- data
- debriefing
- demographics
- differential/differences-between-groups research
- directional vs. non-directional hypothesis
- empirical approach
- experimental vs. non-experimental research
- experimental group vs. control group
- formative vs. summative evaluation
- hypothesis
- independent vs. dependent variable
- inductive vs. deductive research
- informed consent
- longitudinal research
- needs assessment
- observational research
- participant (subject)
- population vs. sample
- predictor vs. criterion (outcome) variable
- program evaluation research
- qualitative vs. quantitative research
- random assignment
- research question vs. research purpose vs. research hypothesis
- survey
- theory
- treatment (manipulated variable)
- variable

Key Principles:

2.1 The empirical approach requires researches to decide why they want to make observations, whom they want to observe, as well as how and when to observe.

2.2 Researchers can observe an entire population or a sample.

2.3 In choosing how to observe, researchers strive to use available instruments but might need to develop new instruments.
2.4 Experimental research is used to explore cause-and-effect relationships, where an experimental treatment is manipulated to see whether it produces changes.

2.5 True experiments make use of random assignment.

2.6 Experiments can also be conducted with non-randomly assigned groups, or with a single group.

2.7 The form of measurement used in a study does not constitute a treatment and thus cannot be used to determine whether a study is experimental or non-experimental.

2.8 Experimental studies often cannot be conducted due to ethical or practical problems with the treatment.

2.9 Causal-comparative studies look to the past to try to identify possible causes but do not directly manipulate the cause and thus are not a direct test of cause-and-effect relationships.

2.10 There are many different types of non-experimental research, each of which serves a different purpose, but non-experimental studies can never provide a direct test of cause-and-effect relationships.

2.11 Similar in many respects to causal-comparative is the design known as differential, of differences–between-groups, where two groups that differ in some pre-existing way are then examined for other possible differences.

2.12 All these "correlational" designs are essentially observational—they observe relationships between variables—and therefore non-experimental, and they cannot provide direct test of causal relationships: correlation does not prove causation.

2.13 Variables need to be defined in terms that are mutually exclusive and exhaustive.

2.14 Variables may be "naming" or "categorical" variables or may involve scores/measures.

2.15 In non-experimental studies, variables do not have to be classified as independent/dependent or predictor/criterion (outcome).

2.16 Non-experimental studies might distinguish variables, with the independent or predictor variable the one assumed to come first (and which might be a cause), and the dependent or criterion (outcome) variable the one that comes after (and therefore might be the effect).

2.17 Experimental studies always distinguish between independent and dependent variables and must have at least one of each.
2.18 In an experiment, the independent variable is the treatment variable, the one that is manipulated.

2.19 In non-experimental studies, the independent variable is not manipulated; there is no treatment.

2.20 Experiments that combine two or more independent variables are used to not only study the effect of each independent variable by itself but also the effect of the combination.

2.21 Program evaluation is applied research focused on a treatment (the program) but usually without full experimental qualities.

2.22 Researchers must consider the ethical implications of their proposed research, focusing on the protection of research participants from harm and protecting their right to privacy.

2.23 Research participants have a right to knowledge of the purpose of the research prior to participation and must give their informed consent.

2.24 Research participants need to be debriefed after their participation.

2.25 Research studies are designed to both test hypotheses derived from theories (deductive research) and to collect observations/data on which theories can be built (inductive research).

2.26 Psychologists strive to develop theories that explain trends across groups and that can also explain exceptions.

2.27 Developing and testing theories involve all the various types of research—case studies, surveys, correlational studies, causal-comparative studies, experimental studies, etc.—and no one type of study is inherently superior to any other.