Comparative Characteristics of Design Groups

True & Quasi-Experiments

Kind of Question	Does a theory-based intervention produce a predicted outcome
Objective	Test hypothesized relationship between treatment and result
Conclusions about Causality	Direct cause and effect
Use of Interventions	Required
Temporal Component	Created by the researcher (treatment must occur before effect)
Sampling Logic	Replication with control of all characteristics that may affect the outcome of the study (screening)
Contributions to Theory	Primarily theory-testing
Typical Types of Analyses	Statistical or qualitative tests for differences between comparison groups pre and post-treatment or intervention
Contributions to Explanatory Power	Very strong because these are the only designs that allow us to know that an intervention actually has an effect; major limitation is the very reduced number of factors that can be tested in a single experiment.
Type of Generalization	Theoretical (or analytical to use Yin's term)

Cross-Sectional

Kind of Question	What predictor characteristics co-vary with a given outcome characteristic? How much does each of several predictor characteristics contribute to the variance in an outcome characteristic? Do the relationships between predictor and outcome characteristics differ for two or more comparison groups?
Objective	Identify indirect, mediated, and/or hierarchical relationships among variables a single group. Describe the strength of the co-variance among predictor and outcome characteristics Compare the nature and strength of the indirect, mediated, and/or hierarchical relationships for two or more comparison groups
Conclusions about Causality	With adequate sample selection and use of comparison groups, tentative conclusions regarding potential causality can be made
Use of Interventions	None
Temporal Component	None except in repeated point-in-time designs
Sampling Logic	Statistical representation with regard to characteristics of interest in the study, primarily characteristics associated with the predictor variables; screening can be used to eliminate potential or known sources of variance that are of no interest to the researcher
Contributions to Theory	Theory building, with limited theory testing when alternative theoretical explanations are included in the defining variables for the study
Typical Types of Analyses	Model development, including simple regression models, structural equation models and qualitative modeling
Contributions to Explanatory Power	Typically weak due to lack of comparison groups and/or competing theoretical explanations, although an exception is when they are used as a follow up to study the effectiveness (as opposed to direct cause and effect) of an intervention as it moves beyond the CRT stage. Many intervention projects are never examined beyond pre- and post-test (and even that rarely) during initial phases of project implementation. Stronger control during initial implementation (an experimental approach) followed by a cross-sectional study to examine the strength of the response to treatment as variance increases can be extremely useful.
Type of Generalization	Usually statistical, although qualitative models are sometimes proposed that

	can provide for some theoretical generalization based on the degree to which alternative theoretical explanations are evaluated

Longitudinal

Kind of Question	How do individual (life history) and aggregate (group) processes interact over time to produce distinctive outcomes? What life history events cause what happens over time to individuals vary from what happens to the group of which they are a part? How do historic events affect both groups and individuals and the interactions between the two, over time?
Objective	Understand and explain the interactions between individual life history effects and historic or cohort effects Identify and explain the individual (life history) characteristics that create differences between individual and group outcomes Identify and explain the impact of specific historic events on group, individual, and cohort by individual interactions
Conclusions about Causality	Fairly strong conclusions regarding causal relationships can be drawn, but are subject to the theoretical strength of the study and many sampling considerations, including how to reduce the effects of mortality
Use of Interventions	None, although some longitudinal studies are started as a result of a unique or unusual historic event (9/11 impact on air quality; trauma of Katrina for New Orleans residents) or change in policy (testing in schools, welfare to work, etc.) that occurs. Often, the absence of comparable pre-event or pre-policy change data prevent the researcher from drawing unambiguous conclusions about cause and effect.
Temporal Component	Can be retrospective or prospective, but must include a time component by definition – otherwise, it is not a longitudinal study
Sampling Logic	Statistical
Contributions to Theory	Very useful for comparing theoretical perspectives; often used to strengthen theoretical understanding of interventions (such as on-going projects or changes in policy) that affect broad segments of the population of interest
Typical Types of Analyses	Often statistical, such as time series analysis, complex statistical models of change over time; can include qualitative modeling
Contributions to Explanatory Power	Often make strong contributions, particularly where comparisons between groups (including cohorts) are made that allow researchers to disentangle broad societal effects from life history effects; they are the only design that allows us to do this. Especially strong when studies are extended over a long enough period of time to permit the researcher to document the impacts of policy changes.
Type of Generalization	Statistical, with theoretical generalization possible when alternative theoretical perspectives are represented in the variables selected for the study

Case Studies

Kind of Question	How and why did an observable state or conditions (an outcome at some point in time) come about?
Objective	Understand and explain the processes and events that have led or contributed to one or more states or conditions of interest (explanatory case study) Explore the distinguishing characteristics of phenomena for which a well-developed body of theory and/or knowledge is missing (exploratory case study)
Conclusions about	Explanatory case studies, particularly multiple case studies based on

Causality	competing or alternative explanations, can provide strong support for hypothesized explanations of causality Exploratory studies typically only provide propositions or hypotheses for future research
Use of Interventions	None
Temporal Component	Commonly include a historic component in that past processes and events are examined
Sampling Logic	Replication logic, especially in multiple case designs in which cases are selected to resemble each other with regard to shared characteristics in terms of one or more outcome or observable states or conditions
Contributions to Theory	Theory building and theory testing, particularly multiple case designs
Typical Types of Analyses	In the social sciences, to date, most analyses have been qualitative due in part to the limited number of cases included and the failure to replicate studies as a whole (as opposed to replication within a study through multiple cases), but other disciplines such as the earth, physical and biological sciences have accumulated enough evidence to develop strong statistical models of development processes
Contributions to Explanatory Power	Case studies make strong contributions because they study and explain processes and outcomes in historic and situational context; exploratory case studies often make important contributions for the direction of future research
Type of Generalization	Theoretical or analytical in many cases, but as the number of cases examined increases, statistical generalization becomes possible