Types of True Experiments

<u>Pre- and post-test with control.</u> You want to measure the effect of a single level of a single treatment on the outcome or dependent variable. Example: No training in financial management versus 3 hours of tutoring.

TR	Pre	Tr	Post
CO	Pre	NoTr	Post

<u>Pre- and post-test with multiple treatments</u>. You want to measure the independent effects of more than one hypothesized direct cause on the dependent variable. Example: Classroom instruction versus on-line instruction for information provided by service technicians.

TR1	Pre	Tr1	Post
TR2	Pre	Tr2	Post
CO	Pre	NoTr	Post

<u>Pre- and post-test with multiple levels of a single treatment.</u> E.g., how much is enough to get an effect? You want to measure the threshold level at which one treatment has a direct causal effect on the outcome. Example: 2 days of training, 1 week of training, 1 month of training.

TR1	Pre	Tr1	Post
TR2	Pre	Tr2	Post
TR3	Pre	Tr3	Post
CO	Pre	NoTr	Post

<u>Factorial designs.</u> You want to know about the interactions between two different kinds of treatments (factors) and between the levels of each factor. Example: You want to examine the effect of two settings for training (classroom versus on-line) and three intensities of training (2 days, 1 week, 1 month) and how they interact. This is an example of a randomized complete block design.

BL1	Pre	Classroom + 2 days (F1L1 x F2L1)	Post
BL2	Pre	Classroom + 1 week (F1L1 x F2L2)	Post
BL3	Pre	Classroom + 1 month (F1L1 x F2L3)	Post
BL4	Pre	On-line + 2 days (F1L2 x F2L1)	Post
BL5	Pre	On-line + 1 week (F1L2 x F2L2)	Post
BL6	Pre	On-line + 1 month (F1L2 x F2L3)	Post

<u>Pre and post-test with blocking on the outcome variable.</u> You want to reduce the potential impact of non-experimental variables on the outcome because there is some potential non-experimental variable that you ***cannot eliminate through screening***. Example: You want to examine the effect of training on reducing errors in information provided by teleservice technicians. You hypothesize that the effect will be greatest for difficult or complex questions and least for routine or easy questions. You cannot know ahead of time how many questions of each type the teleservice technician will receive.

Hard			**Moderate**			**Easy**		
Pre	Tr1	Post	Pre	Tr1	Post	Pre	Tr1	Post
Pre	NoTr	Post	Pre	NoTr	Post	Pre	NoTr	Post

Solomon Four-Group. You are concerned that testing may have an effect on the outcome – that people will become sensitized to the treatment or that they will simply learn to answer the questions "better" from taking the test. Example: You want to examine the effect of nutrition education on dietary habits. You are concerned that a pre-test will, in and of itself, have an effect because participants will become more aware of what they are eating and alter their

Treatment	Pre	Tr1	Post
		Tr1	Post
Control	Pre	NoTr	Post
		NoTr	Post

Multiple Post-test. You want to know if a treatment persists over time. Example: You want to know if a nutrition education program changes dietary behavior at all and, if so, is the effect persistent over time.

Treatment	Pre	Tr1	Post1	Post2	Post3	Post4	Post5
Control	Pre	NoTr	Post1	Post2	Post3	Post4	Post5

Switching Replications. You want to know either if a treatment persists over time *or* you have ethical reasons for wanting to make sure that all people who could potentially benefit from the intervention get it eventually. Example: You want to deliver a nutrition education program to everyone eventually if there is a treatment effect.

Treatment	Pre	Tr1	Post 1	NoTr	Post 2
Control	Pre	NoTr	Post 1	Tr	Post 2

Post-Test Only. You cannot conduct a pretest or for some reason it is undesirable to do so. The latter is *rarely* a valid reason for a post-test only design. Example: You want to examine the effect of a new childbirth program to the Lamaze birthing program on the quality of the birthing experience for women. You decide to screen (appropriately) to limit your study to women who are having their first child because the effect of previous birthing experience would obviously be very important. You clearly cannot conduct a "pre-test of quality of the birthing experience" until *after* the birth of the child.

New Program	Tr	Post
Old Program	Tr	Post