Basic Experimental Designs

Based largely on Cambell and Stanley (1963)

Prelude:
An exp. has TREATMENTS or INTERVENTIONS (abrv. X)
An exp. has OBSERVATIONS or MEASUREMENTS (abrv. O)

A. Three experimental designs which often lack internal validity
   - we may use these in life, but these are not preferred designs for scientific experiments

1. The One Shot Deal or the One Group, Post-Test Only Design

Symbolized as: \( X \quad O \)

So, in this design a group of subjects experiences the treatment or manipulation or intervention and then is measured.
   - lacks pre-test control
   - lacks control group which does not receive treatment

2. One shot deal with useless control – or non-equivalent groups with post-test only

Symbolized: \( X \quad O_A \quad O_B \)

   - still lacks a pre-test control
   - has a group which did not receive treatment (B), but the division of subjects into groups A and B is not random, hence group B is a non-equivalent control (ie useless).

3. One group, pre and post-test design.

Symbol: \( O_1 \quad X \quad O_2 \)

   - HAS a pre-test
   - Lacks a control group which receives no treatment
B. Some Experimental Designs that CAN be A OK

1. **One shot deal with useful control** – randomized groups with post-test only

   **Symbolized:** $T \quad O_A \quad O_A$

   Here, the experimental and control groups have been randomly assigned

   - Still lacks a pre-test control
   - Because the exp and control groups are randomly assigned and are equivalent, this design has more internal validity than one shot deal with useless control.

2. **Pre and post-tests with randomized groups**

   **Symbolized:** $O_1 \quad T \quad O_2$

   $O_1 \quad O_2$

   This design looks for a CHANGE in some variable caused by the treatment
   - Has pre-test control
   - Has useful no-treatment control

3. **Time Series Design** (a quasi exp design – more real world)

   **Symbolized:** $O_1 \quad O_2 \quad O_3 \quad O_4 \quad T \quad O_5 \quad O_6 \quad O_7 \quad O_8$

   May have control group with all measures but no treatment.