Internal Validity – unpacking the definition

- *the extent to which a significant IV-DV relationship is causal and not spurious*

- *…significant IV-DV relationship…*

  = the data from the different conditions are different and it isn't just due to chance

- *…is causal…*

  = the data from different conditions are different because of the <u>planned</u> difference between conditions

- *…and not spurious*

  = as opposed to the data from different conditions being different for some other reason

IVs, DVs, and EVs

- assertion: the easier it is to encode information, the the better the information will be stored in memory

Independent Variable – must be completely under the control of the experiment

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Dependent Variable – should be a labile (& non-qualitative) measured variable
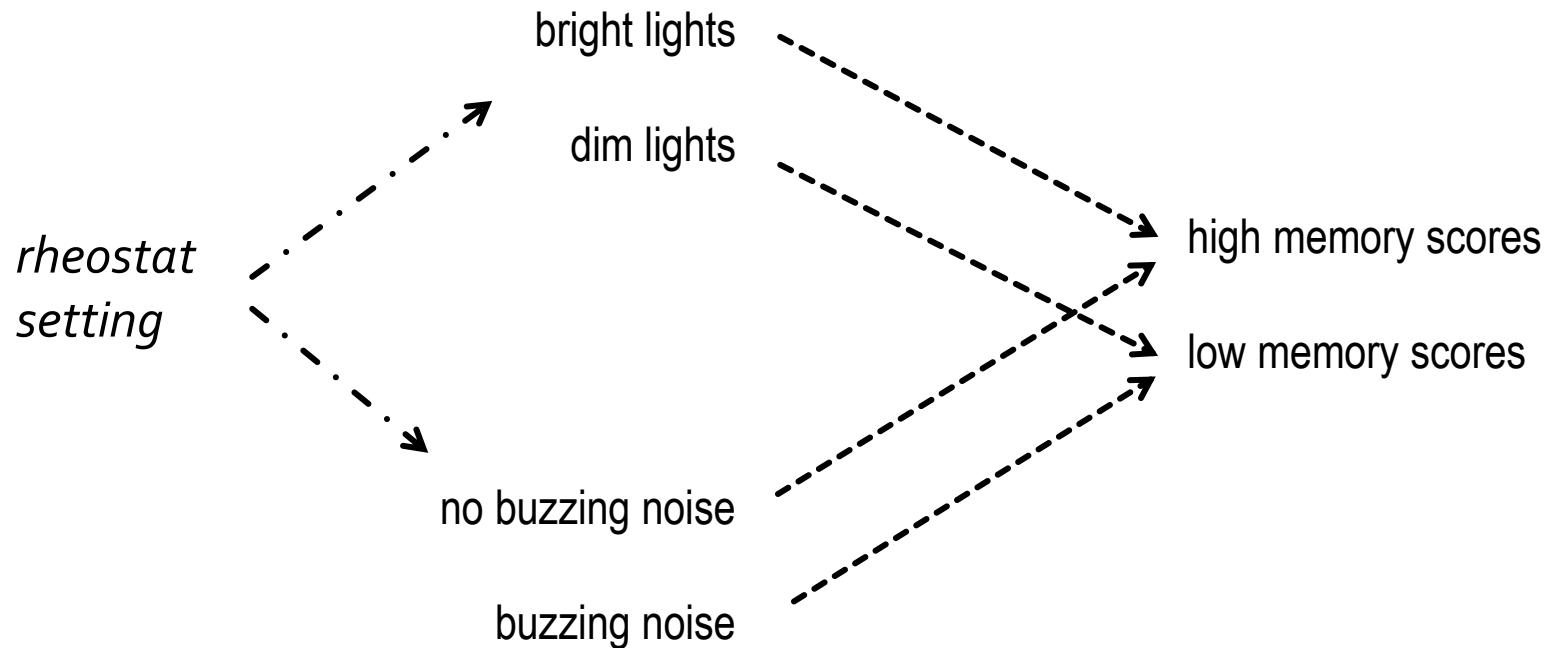
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Extraneous Variable(s) – anything other than the IV that could influence the DV

=

IVs vs Levels of the IV

- the IV is the variable; the entire range of values
- the levels of the IV are specific values; those used

we rarely include all possible values of the IV in a single experiment

(we'll mostly discuss cases where only two are used)

in simple experiments, each level of the IV creates a separate "condition"

(note: this is like correlations in that you keep clear what values were and weren't included)

Why Confounds are a Problem

rheostat setting

bright lights

dim lights

no buzzing noise

buzzing noise

high memory scores

low memory scores

Looking for Possible Confounds

- in order to be a confound, the EV must change in parallel with the IV (e.g., they must be correlated)

- in order for a confound to be a problem, the EV must be capable of influencing the DV

Experimental Control

- *the ability of experimenters to hold everything other than the IV constant (across the conditions of an experiment)*

  this is the preferred way of maintaining high internal validity (i.e., eliminating confounds)

  if an EV is constant, it cannot be changing in parallel with the IV …

  so it can't be a confound …

  so it can't be an alternative way of explaining the results

Experimental Control Hierarchy

- there is more than one way to maintain high internal validity

    1. "hold it constant"

    2. "equalize on average"

    3. "measure and remove"

    4. run a "control experiment"