

Two Factor ANOVA

.....

1

Factorial Designs

.....

- Often researchers want to study the effects of two or more independent variables at the same time
 - Does it matter where a list of words is studied, on the beach or under water?
 - Does it matter where a list of words is recalled, on the beach or under water?

2

Factorial Designs

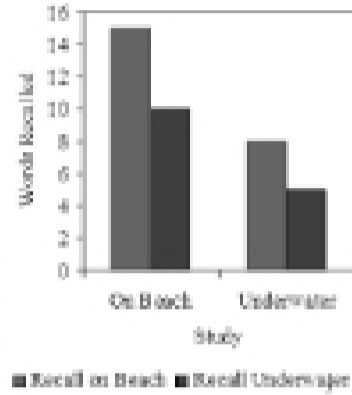
.....

- *Factor* is another name for *independent variable*
 - The preceding example has two factors: where you study and where you recall
- In a *factorial design*, all possible combinations of the factors are present

3

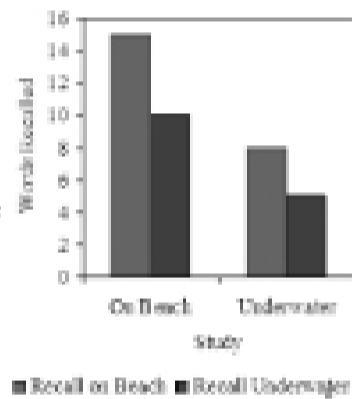
Main Effects

- ⊕ $H_0: \mu_{\text{study on beach}} = \mu_{\text{study underwater}}$
- ⊖ When looking at the main effect of one IV, you should ignore the existence of the other IV
 - ⊕ Compare all conditions that have one level of the IV to all conditions that have the other level of the IV



Main Effects

- ⊖ For the main effect of where the words were studied:
 - ⊕ Is the average of the values of the left two bars (conditions in which people studied on the beach), $(15 + 10) / 2 = 12.5$, different from the average of the values of the right two bars (conditions in which people studied underwater), $(8 + 5) / 2 = 6.5$?
 - ⊖ Remember \bar{X}_{gk}



Main Effects

- ⊖ For the main effect of where the words were recalled:
 - ⊕ Is the average of the values of the green bars (conditions in which people recalled on the beach), $(15 + 8) / 2 = 11.5$, different from the average of the values of the blue bars (conditions in which people recalled underwater), $(10 + 5) / 2 = 7.5$?
 - ⊖ Remember \bar{X}_{gk}

