Chapter 12 Multiple-Choice Questions
Factorial Designs

Test yourself on these multiple-choice questions. Clicking on the letter of your choice will give you immediate feedback on whether you are correct. Even when you are incorrect, you will receive feedback that will help you learn the material better so that you do well on the exam.

1. What term refers to the situation where two independent variables have an effect when they are in combination?
   (a) artifact
   (b) confounding variable
   (c) dependency
   (d) interaction

2. A 2 X 2 factorial design
   (a) is called a one-way ANOVA.
   (b) results in a four-cell matrix.
   (c) cannot yield interactions.
   (d) must include an organismic independent variable.

3. What does an A X B interaction mean in a two-way ANOVA?
   (a) There must be significant main effects for Factors A and B.
   (b) The main effects for Factors A and B must be short of significance.
   (c) The affect of factor A depends on the level of factor B.
   (d) If there are significant main effects, they must be interpreted first before interpreting the interaction.

4. In the dark-fears study,
   (a) the main effects seemed to be due to the interaction.
   (b) there were no main effects.
   (c) there was no interaction.
   (d) the interaction was due to the main effects.

5. Factorial experiments
   (a) include two or more dependent variables.
   (b) include two or more independent variables.
   (c) focus on unmeasured factors.
   (d) focus on organismic factors.

6. What is the major advantage of within-subjects designs over between-subjects design?
   (a) They require fewer participants.
   (b) They require less time.
   (c) They are more sensitive.
   (d) They are better tests of causality.

7. Factorial designs allow us to study both _____ effects of the independent variables on the dependent variables.
   (a) main and interactive
   (b) dependent and independent
   (c) symbiotic and dichotomous
   (d) rank order and correlational

8. Which of the following statements is correct about interactions?
   (a) They are enhancements of the effect.
   (b) They are additive effects.
   (c) They are spurious effects.
   (d) They occur only in interaction with organismic dependent variables.

9. Within-subjects factorials
   (a) must include independent groups of participants.
   (b) are also called "repeated measures factorials."
   (c) use statistics that take into account the correlated nature of the data.
   (d) both b and c

10. What are the factors in a factorial design?
   (a) the independent variables
   (b) the dependent variables
   (c) the organismic variables
   (d) the experimental variables

11. In a repeated measures factorial design,
   (a) there must be at least two independent groups.
   (b) participants must be matched on at least two potentially confounding variables.
   (c) there is no problem of sequence effects.
   (d) sequence effects must be controlled.

12. A within-subjects factorial design
   (a) requires more participants than a between-subjects design.
   (b) assures equivalence of groups at the start of the study.
   (c) takes longer to carry out than a between-subjects design.
   (d) is a contradiction in terms.

13. What are the factors in the children's dark-fears research discussed in Chapter 12?
   (a) heart rate and frightening images
   (b) illumination and frightening images
   (c) the participants and the dependent variables
   (d) the independent and dependent variables

14. Factorial designs
   (a) include no more than one research hypothesis.
   (b) cannot test participants across more than one condition.
   (c) are ineffective when matched participants are included.
   (d) contain more than one null hypothesis.

15. What information is given in the factorial design notation, 2 X 3 X 2?
   (a) Interactions will be found.
   (b) The design has 12 independent variables.
   (c) The design has three independent variables, two levels of A, three levels of B, and two levels of C.
   (d) The design has two independent variables, three dependent variables, and two organismic variables.

16. Which of the following is correct about a mixed design?
   (a) It includes both a within-subjects and a between-subjects component.
   (b) It includes both ANOVA and chi-square statistical analyses.
   (c) It includes both a manipulated and a nonmanipulated variable.
   (d) either a or c

17. What is listed in the first column of an ANOVA summary table?
   (a) degrees of freedom
   (b) sums of squares
   (c) source of variation
   (d) significance level

18. Which of the following is correct?
   (a) If there are no main effects, there can be no interactions.
   (b) Whenever interactions are found, there must be main effects.
   (c) Whenever main effects are found, there must be at least one interaction.
   (d) When both interactions and main effects are found, the interactions are interpreted first.

19. Which of the following statements is true?
    (a) No more than four factors can be included in a factorial design.
    (b) Interactions with up to ten factors can be readily interpreted.
    (c) Any number of factors can be included, but interpretation of interactions is more difficult as the number of factors increases.
    (d) The number of factors has no bearing on the interpretation of results.

20. What is the appropriate statistical test for a factorial design?
    (a) the Modes test
    (b) ANOVA
    (c) *t*-test
    (d) chi-square

21. A 2 X 2 factorial
    (a) is essentially two designs that have been combined into a single study.
    (b) contains four factors.
    (c) does not have enough factors to show interactions.
    (d) is extremely difficult to interpret if interactions are found.

22. Unlike an ANOVA, the MANOVA procedure
    (a) has more than one dependent measure.
    (b) has only one dependent measure.
    (c) must have no more than one dependent measure.
    (d) must include at least three dependent measures.