Congratulations! You passed!
TO PASS 80% or higher

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GRADE
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Quiz 2

LATEST SUBMISSION GRADE
100%

1. What are the goals of experimental design in fMRI? — 1 / 1 point

- ○ To induce subjects to do or experience the psychological states being studied
- ○ Neither of these options
- ○ To effectively detect brain signals related to the psychological states being studied
- ◉ Both of these options

✓ **Correct**

2. Which of the following are factors that make an experimental design more efficient? (check all that apply) — 1 / 1 point

- ☑ Large rise and fall in predictors (predictor variance)

✓ **Correct**

- ☑ Low covariance among predictors (orthogonal predictors)

✓ **Correct**

- ☐ Small sample sizes (variance proportional to sqrt(n))

3. Parametric modulators are often included in the GLM analysis in order to: — 1 / 1 point

- ○ Correct for 'spin history' artifacts.
- ○ Allow for flexible HRF shapes.
- ○ Correct for normalization errors.
- ◉ Allow for trial-by-trial variation in the amplitude of the response related to a behavioral outcome.

✓ **Correct**

4. Which of the following temporal basis sets are generally thought to provide the most flexible estimates of the hemodynamic response function? — 1 / 1 point

- ◉ Finite Impulse Response
- ○ Canonical HRF + derivatives
- ○ A third-order polynomial function
- ○ Canonical HRF

✓ **Correct**

5. Which of the following are assumptions required for the GLM to give valid p-values? (check all that apply) — 1 / 1 point

- ☑ Observations come from same distribution

✓ **Correct**

- ☑ Data are independent observations

✓ **Correct**

- ☑ Errors are normally distributed

Correct

- [x] Homoscedasticity

Correct

6. In weighted least squares, the weights are often used to: 1 / 1 point

(check all that apply)

- [x] Correct for non-independence in repeated-measures designs

Correct

- [ ] All of these options
- [x] Adjust for inequality of variances (heteroscedasticity)

Correct

- [ ] Up-weight extreme values

7. Fill in the blanks. The brain can be oriented in _____ format (left side of brain is right side of displayed image) or _____ format (right side of brain is right side of displayed image) 1 / 1 point

- ( ) neurological, radiological
- (•) radiological, neurological

Correct

8. Variance inflation factors are ways of checking _____, and higher values are _____. 1 / 1 point

- ( ) Predictor orthogonality, good
- ( ) None of these options
- ( ) Predictor variance, good
- (•) Predictor orthogonality, bad
- ( ) Predictor variance, bad

Correct

9. Genetic algorithms are most useful when the error surface (fitness landscape) is _____, and in fMRI it optimizes the _____. 1 / 1 point

- (•) Not convex, sequence of which events to present and when
- ( ) Not convex, autocorrelation and high-pass filtering settings
- ( ) Convex, sequence of which events to present and when
- ( ) Convex, autocorrelation and high-pass filtering settings

Correct

10. When optimizing a design, there is a tradeoff between contrast detection power and: 1 / 1 point

(check all that apply)

- [ ] The ability to use a high-pass filter that removes much noise
- [x] The ability to infer when the activation happened relative to the onset of an event

Correct

- [x] HRF estimation efficiency

Correct

- [ ] The TR

11. Robust regression is good for automatically dealing with: **1 / 1 point**

(check all that apply)

- [x] Violations of normality caused by outliers

  ✓ **Correct**

- [ ] Small sample sizes
- [ ] Correction for multiple comparisons
- [x] Highly influential points that may otherwise skew a regression

  ✓ **Correct**

- [ ] Most violations of statistical assumptions