Quiz 3 - Regrade Submission 1

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1. If all the principal components are extracted from a set of variables, then all communalities must be equal to 1.

Original answer: False
Explanation: This is true because the communalities indicate how much of each variable is explained by the components. If all possible components are extracted, then all the variability is explained (PCA just reorganizes variance rather than parsing it into different sources like factor analysis).

4. The structure matrix contains the correlations between the variables and the principal components.

Original answer: False
Explanation: This is true because the structure matrix is indicating the relationship between an indicator and a principle component, that can be rescaled to loadings, the original variables, etc. using other parts (e.g. the pattern matrix).

5. The sum of the squared correlations between variables an a particular principal component is equal to the communality for that principle component.

Original answer: True
Explanation: The communalities are the sum of squared correlations between each variable each each component. So the sum is across components, within a variable, while the statement implies that the sum is across variables, within a component.