WEB PAGE FOR CHAPTER 18

MULTIPLE CHOICE QUESTIONS

- 1 A factor can be considered to be an underlying latent variable:
 - (a) on which people differ
 - (b) that is explained by unknown variables
 - (c) that cannot be defined
 - (d) that is influenced by observed variables
 - (e) none of these

2 Variables that are orthogonal are:

- (a) moderately correlated with each other
- (b) perfectly related to each other
- (c) rotated
- (d) totally unrelated to each other
- (e) none of these
- 3 Factor analysis is concerned with:
 - (a) analysis of correlation matrices
 - (b) correlating mean values
 - (c) frequency counts
 - (d) abstract concepts
 - (e) none of the above

4 Factor analysis requires that variables:

- (a) Are measured at nominal level
- (b) Are abstract concepts
- (c) Are not related to each other
- (d) Are related to each other
- (e) Are standardized
- 5 The decision about how many factors to retain is based on:
 - (a) personal choice
 - (b) Kaiser's rule
 - (c) Scree test
 - (d) Both (a) and (c)
 - (e) Both (b) and (c)
- 6 The unrotated matrix is rotated because:
 - (a) the calculations are easier
 - (b) more factors are extracted
 - (c) rotated factors are significant
 - (d) interpretation is easier
 - (e) all of these

Kaiser's rule says:

- (a) select all factors where p < .5
- (b) select factors with eigenvalues that add up to 1
- (c) select factors with eigenvalues 1 and above
- (d) select the factor with the biggest eigenvalue
- (e) none of the above

- 8 It is possible to extract:
 - (a) more variables than factors
 - (b) more factors than variables
 - (c) as many factors as there are intercorrelations
 - (d) only factors with eigenvalues above 1
 - (e) none of the above
- 9 Look at the following table and state:
 - (a) how many factors would you keep: 1, 4, 6, or 8?
 - (b) how much variance is accounted for in a four factor solution: 5.930, 48.410, 46.193, or 1.305?
 - (c) how many variables were included in this study: 2, 4, 6, or 8?

Component	Eigenvalues	% of variance	Cumulative %	Rotation sums of squared loadings	% of variance	Cumulative %
1	5.804	26.38	26.380	5.235	23.795	23.795
2	2.030	9.227	35.611	2.438	11.081	34.877
3	1.511	6.869	42.480	1.673	7.603	42.480
4	1.305	5.930	48.410	1.324	5.713	46.193
5	1.176	5.344	53.754	0.991	3.478	49.671
6	1.139	5.177	58.931	0.951	3.113	52.784
7	0.902	4.420	63.351	0.915	2.512	55.296
8	0.863	3.925	67.276	0.876	1.978	57.274

SPSS ACTIVITIES

1 Access SPSS Chapter 18 Data File C and conduct a Factor Analysis on the attitude questionnaire items to determine the factor structure of the attitude scale. There are 10 items equally divided between attitudes to two brands of a product responded to by 104 persons. Write an interpretation of the printout and discuss the results in class.

DISCUSSION QUESTIONS

- 1 Discuss in groups: 'Factor analysis has the spurious aura of objectivity but close inspection reveals a number of crucial subjective elements'. Critically evaluate this statement.
- 2 Work in groups and carefully inspect the two tables below and answer the questions.
 - (a) How many factors are important? What cumulative percentage of variance is not explained by their loadings when rotated?
 - (b) Is a strong general factor apparent? Give reasons for your answer.
 - (c) Could you provide a distinctive name with reasons for each of the extracted rotated factors?

Total Variance Explained									
	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings			
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.161	39.702	39.702	5.161	39.702	39.702	3.675	28.272	28.272
2	1.875	14.425	54.128	1.875	14.425	54.128	2.633	20.251	48.523
3	1.057	8.128	62.256	1.057	8.128	62.256	1.785	13.733	62.256
4	.932	7.170	69.426						
5	.772	5.935	75.362						
6	.675	5.191	80.552						
7	.585	4.501	85.053						
8	.473	3.637	88.690						
9	.427	3.281	91.971						
10	.364	2.797	94.768						
11	.263	2.024	96.793						
12	.246	1.890	98.682						
13	.171	1.318	100.000						

Extraction Method: Principal Component Analysis.

	Component			
	1	2	3	
Employees here do not get on with each other		401	.573	
Work interferes with my social life	.328		.729	
I spend too much time travelling to work			.823	
I can always manage to solve difficult problems if I try hard enough		.752		
If someone opposes me, I can find the ways and means to get what I want		.678		
I am certain that I can accomplish my goals	.363	.682		
I am confident that I could deal efficiently with unexpected events	.589	.552		
Thanks to my resourcefulness, I can handle unforeseen situations	.644	.492		
I can solve most problems if I invest the necessary effort	.465	.544		
I can remain calm when facing difficulties bee I can rely on my coping abilities	.776			
When I am confronted with a problem, I can find several solutions	.829			
If I am in trouble, I can think of a good solution	.768			
I can handle whatever comes my way	.703			

Rotated Component Matrix(a)

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 6 iterations.

ANSWERS TO MULTIPLE CHOICE QUESTIONS

- 1 (a)
- 2 (d)
- 3 (a)
- 4 (d) 5
- (e) 6 (d)
- 7
- (c) 8
- (e) 4; 46.193; 8. 9

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