$$\mathbf{x} = \mathbf{B}'\mathbf{y}$$
$$\mathbf{y} = \mathbf{F}\mathbf{x} + \mathbf{e}$$

principal component system

$$\mathbf{V}\mathbf{D}\mathbf{V}'$$

(V: patterns; D: eigens; V′: patterns)

$$\mathbf{R}$$

(R: correlation matrix)

$$\mathbf{U}^2 + \mathbf{\Lambda}\mathbf{\Psi}\mathbf{\Lambda}' + \mathbf{E}$$

(U²: unique; Λ: patterns; Ψ: correlation; Λ′: patterns; E: error)

common factor system

$$\mathbf{y} = \mathbf{F}\mathbf{x} + \mathbf{e}$$
$$\mathbf{x} = \mathbf{B}'\mathbf{y} + \boldsymbol{\delta}$$

Complexity of Factor Patterns

Λ 1

F_1	F_2	F_3
0.00	0.50	0.90
0.30	0.00	0.74
0.00	0.25	0.79
0.96	0.00	0.00
0.77	0.00	0.12
0.73	0.00	0.00
0.00	0.55	0.00
0.00	0.72	0.06
0.00	0.88	0.00

Λ 2

F_1	F_2	F_3
0.00	0.00	0.90
0.00	0.00	0.74
0.00	0.00	0.79
0.96	0.00	0.00
0.77	0.00	0.00
0.73	0.00	0.00
0.00	0.55	0.00
0.00	0.72	0.00
0.00	0.88	0.00

Λ 3

F_1	F_2	F_3
0.00	0.00	1.00
0.00	0.00	1.00
0.00	0.00	1.00
1.00	0.00	0.00
1.00	0.00	0.00
1.00	0.00	0.00
0.00	1.00	0.00
0.00	1.00	0.00
0.00	1.00	0.00

Crawford-Ferguson Complexity Function

	F_1	F_2	F_3	
$c(\mathbf{s}_{i.})$	0.00	0.02	0.90	Word Meaning
$c(\mathbf{s}_{i.})$	0.17	0.01	0.74	Sentence Completion
$c(\mathbf{s}_{i.})$	0.05	0.12	0.79	Odd Words
$c(\mathbf{s}_{i.})$	0.96	0.00	0.01	Mixed Arithmetic
$c(\mathbf{s}_{i.})$	0.77	0.10	0.08	Remainders
$c(\mathbf{s}_{i.})$	0.73	0.10	0.17	Missing Numbers
$c(\mathbf{s}_{i.})$	0.16	0.55	-0.04	Gloves
$c(\mathbf{s}_{i.})$	0.04	0.72	0.05	Boots
$c(\mathbf{s}_{i.})$	-0.03	0.88	0.02	Hatchets

$$f(\mathbf{L}) = (1-\kappa)\sum_{i=1}^{m} c(\mathbf{s}_{i.}) + \kappa \sum_{j=1}^{p} c(\mathbf{s}_{.j})$$

Λ

0.00	0.02	0.90
0.17	0.01	0.74
0.05	0.12	0.79
0.96	0.00	0.01
0.77	0.10	0.08
0.73	0.10	0.17
0.16	0.55	-0.04
0.04	0.72	0.05
-0.03	0.88	0.02
$c(\mathbf{s}_{.j})$	$c(\mathbf{s}_{.j})$	$c(\mathbf{s}_{.j})$