

# Review of Factor Analysis

$$Y = E[Y] + l F + e$$

*where*

*l = factor\_loadings*

*p = # responses*

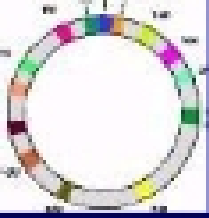
*m = # factors\_indicated\_byF*



# Assumptions

$$E[F] = 0, Cov[F] = \begin{bmatrix} ? & & & & \\ & ? & & & \\ & & ? & & \\ & & & ? & \\ & & & & ? \end{bmatrix} \quad 0 \quad \begin{matrix} 0 \\ ? \\ ? \\ ? \\ 1 \\ ? \end{matrix}$$

$$E[e] = 0, Cov[e] = \begin{bmatrix} ? & & & & \\ & ? & & & \\ & & ? & & \\ & & & ? & \\ & & & & ? \end{bmatrix} \quad 0 \quad \begin{matrix} 0 \\ ? \\ ? \\ ? \\ y_p \\ ? \end{matrix}$$



# covariances

$$\text{cov}[Y] = I I' + \begin{matrix} \text{?} \\ \text{?} \\ \text{?} \\ \text{?} \\ \text{?} \end{matrix} \begin{matrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{matrix} \quad \begin{matrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{matrix} \quad \begin{matrix} \text{?} \\ \text{?} \\ \text{?} \\ \text{?} \\ \text{?} \end{matrix}$$

$y_p$

$$\text{cov}[Y, F] = I$$