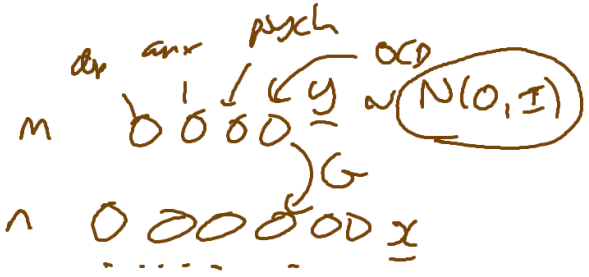


$$\underline{x} = G\underline{y} + \underline{\varepsilon} \rightarrow N(0, (\sigma_1^2 \cdots \sigma_n^2))$$

$$P(\underline{x}|\underline{y}) = N(G\underline{y}, (\sigma_1^2 \cdots \sigma_n^2))$$

$\underline{\varepsilon}$

$\underline{x} \sim N(0,$

$$P(\underline{y}|\underline{x}) = \frac{P(\underline{x}|\underline{y}) \cdot P(\underline{y})}{P(\underline{x})} = \frac{1}{(2\pi)^{n/2}} e^{-\frac{\underline{y}^T\underline{y}}{2}} \cdot \frac{1}{(2\pi)^{n/2} \prod \sigma_i} e^{-(\underline{x}-G\underline{y})^T \Sigma^{-1} (\underline{x}-G\underline{y})/2}$$

$\underline{x} \sim$

$$= A \cdot e^{-(\underline{y}-\underline{\mu})^T \Sigma^{-1} (\underline{y}-\underline{\mu})}$$

$$-\frac{1}{2}\left[\underline{y}^T\underline{y} + \underline{y}^T G^T \Sigma^{-1} G\underline{y}\right] = -\frac{1}{2}\underline{y}^T \left[I + G^T\Sigma^{-1}G\right]\underline{y}$$

U: $U^T U = I$

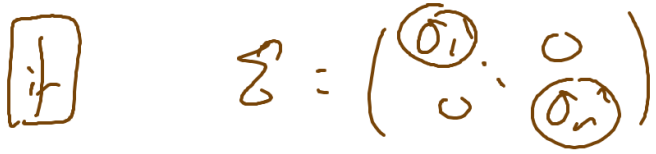
$x = Gu + \varepsilon$ $\quad u \sim N(0, I)$ $\quad \varepsilon \sim N(0, \Sigma)$

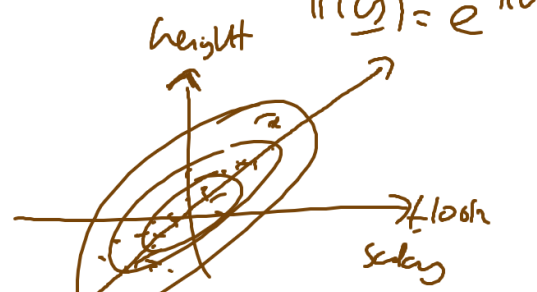
$E[x] = E[Gu + \varepsilon] = G \cdot E[u] + E[\varepsilon] = 0$

$Cov[x] = G \cdot Cov(u) G^T + \Sigma = GG^T + \Sigma$

$G \Rightarrow G \cdot U \qquad UU^T = I$

x: $P(x \mid x : G)$





1. download Claire's data ←

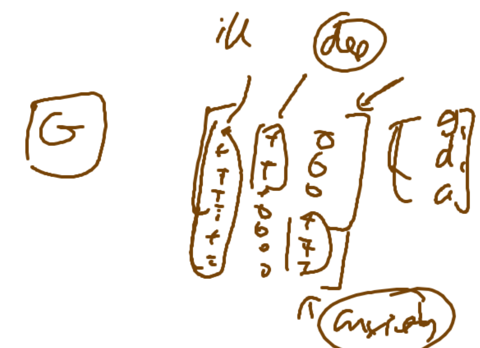
|| 2. understand f.a. (rel. PCA) ... ← ||

3. replicate Lu's analysis ↔ . - - ->

4. bifactor

commonality

$\underline{x} = G\underline{y} + \underline{\varepsilon}$



5. Gaussian scale mixture

$\underline{x} = \alpha G\underline{y} + \underline{\varepsilon}$

EM: expectation / maximization

ML
=

FA: (EM)

↑ do