Psych 840

for the 21st Century?

Goals:

1) For me, to have fun.

2) For you, to see (together, all at once):
   likelihood
   matrix algebra
   computing in R and C++…

3) …so you can ultimately do projects
   like those described last Monday

The Plan (first half)

Base Topic	Statistical Methods	Matrix Algebra	Computing
Bock's Chapter 4	Polynomial Regression	√	R: minimal I/O, matrices
Bock's Chapter 4	Polynomial Regression	√	C++: minimal I/O, matrices
IRT: Estimating θ	Univariate Nonlinear ML+	√	R; C++: the list library
Bock & Jones Chapter 2	Multivariate Nonlinear ML+	√	R; C++: The minimizers
Johnson & Albert Ch. 1-3	MCMC	√	R: MCMCpack

The Plan (continued)

Bock & Lieberman	IRT: Highly Multivariate ML	√	R: item response data handling
Bock & Aitkin	IRT: An EM-like Algorithm	√	R; C++: the list & matrix libraries
Albert +	IRT: MCMC	√	R: MCMCpack plus the list & matrix libraries
Bock &Baargmann + Joreskog + Rubin & Thayer	Factor Analysis	√	From IRT to Factor Analysis
	Your Presentations		

The plan for today:

1) This introduction

2) Your introductions
   - specifically, your computing backgrounds

3) A bit of history of computing…