

Personality Research

Psychological Measurement

Personality Research

- Current Theories of Personality
- Research Problems in Personality
- Measurement of personality
 - how do we measure the dimensions of personality
 - what do we measure when we measure
 - how well do we measure it

Lord Kelvin's dictum

In physical science a first essential step in the direction of learning any subject is to find principles of numerical reckoning and methods for practicably measuring some quality connected with it. I often say that when you can measure what you are speaking about and express it in numbers you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of science, whatever the matter may be. (Thomson, 1891)

Taken from Michell (2003) in his critique of psychometrics:

Michell, J. The Quantitative Imperative: Positivism, Naïve Realism and the Place of Qualitative Methods in Psychology, Theory & Psychology, Vol. 13, No. 1, 5-31 (2003)

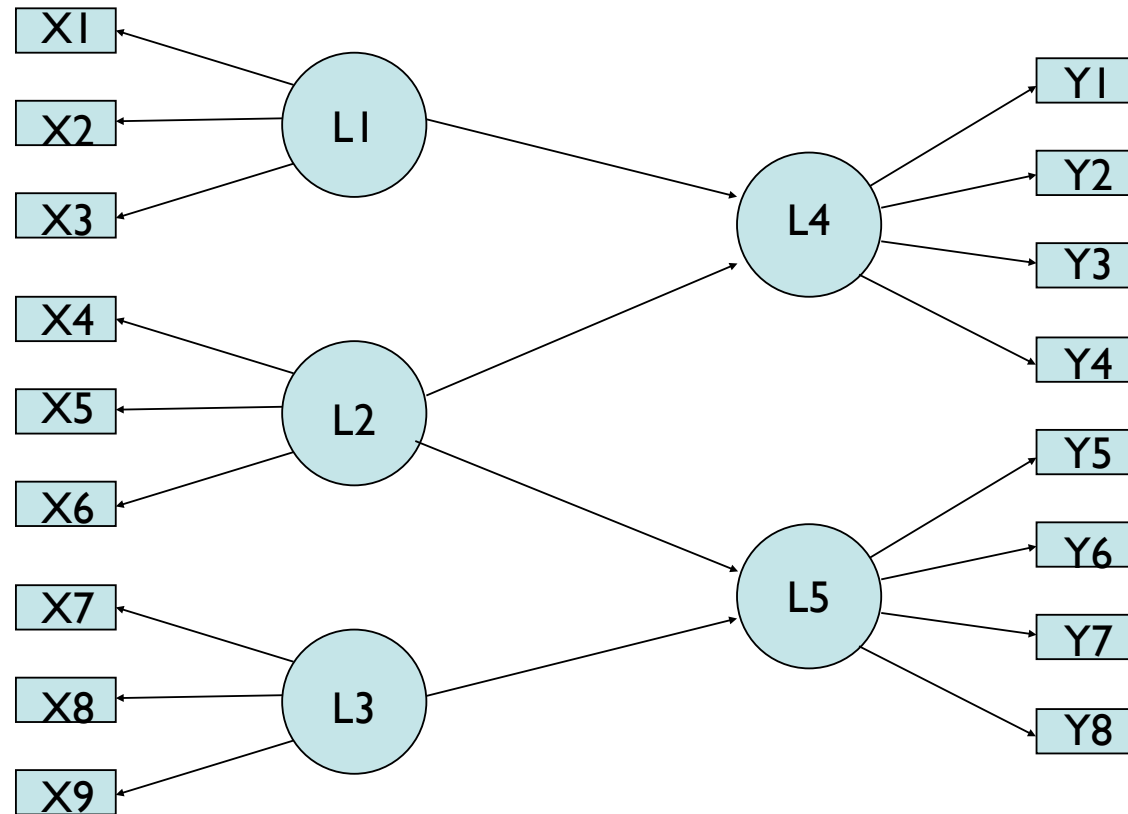
Psychometric Theory

- ‘The character which shapes our conduct is a definite and durable ‘something’, and therefore ... it is reasonable to attempt to measure it. (Galton, 1884)
- “Whatever exists at all exists in some amount. To know it thoroughly involves knowing its quantity as well as its quality” (E.L. Thorndike, 1918)

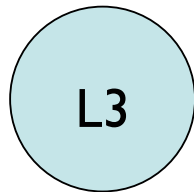
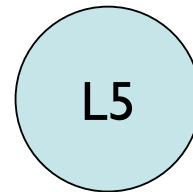
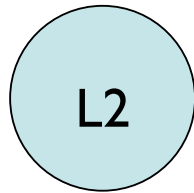
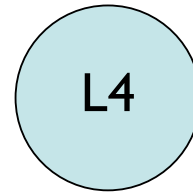
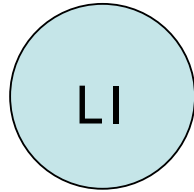
Psychology and the need for measurement

- The history of science is the history of measurement (J. M. Cattell, 1893)
- We hardly recognize a subject as scientific if measurement is not one of its tools (Boring, 1929)
- There is yet another [method] so vital that, if lacking it, any study is thought ... not be scientific in the full sense of the word. This further an crucial method is that of measurement. (Spearman, 1937)
- One's knowledge of science begins when he can measure what he is speaking about and express in numbers (Eysenck, 1973)

Psychometric Theory: A conceptual Syllabus



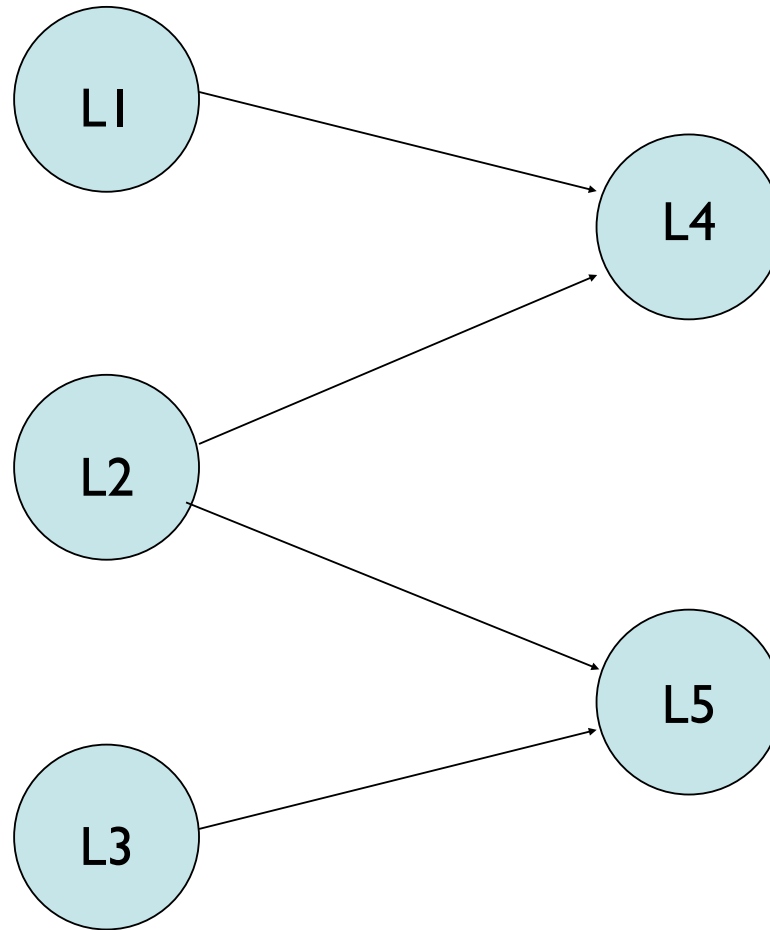
Constructs/Latent Variables



Examples of psychological constructs

- Anxiety
 - Trait
 - State
- Love
- Conformity
- Intelligence
- Learning and memory
 - Procedural - memory for how
 - Episodic -- memory for what
 - Implicit
 - explicit
- ...

Theory as organization of constructs



Theories as metaphors and analogies-I

- **Physics**

- Planetary motion
 - Ptolemy
 - Galileo
 - Einstein
- Springs, pendulums, and electrical circuits
- The Bohr atom

- **Biology**

- Evolutionary theory
- Genetic transmission

Theories as metaphors and analogies-2

- Business competition and evolutionary theory
 - Business niche
 - Adaptation to change in niches
- Learning, memory, and cognitive psychology
 - Telephone as an example of wiring of connections
 - Digital computer as information processor
 - Parallel processes as distributed information processor

Models and theory

- Formal models
 - Mathematical models
 - Dynamic models - simulations
- Conceptual models
 - As guides to new research
 - As ways of telling a story
 - Organizational devices
 - Shared set of assumptions

Observable or measured variables

X1

X2

X3

X4

X5

X6

X7

X8

X9

Y1

Y2

Y3

Y4

Y5

Y6

Y7

Y8

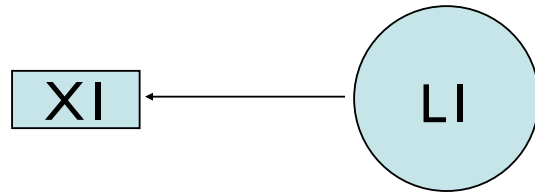
Observed Variables

- Item Endorsement
- Reaction time
- Choice/Preference
- Blood Oxygen Level Dependent Response
- Skin Conductance
- Archival measures

Theory development and testing

- Theories as organizations of observable variables
- Constructs, latent variables and observed variables
 - Observable variables
 - Multiple levels of description and abstraction
 - Multiple levels of inference about observed variables
 - Latent Variables
 - Latent variables as the common theme of a set of observables
 - Central tendency across time, space, people, situations
 - Constructs as organizations of latent variables and observed variables

A Theory of Data: What can be measured



What is measured?

Objects

Individuals

What kind of measures are taken?

Order

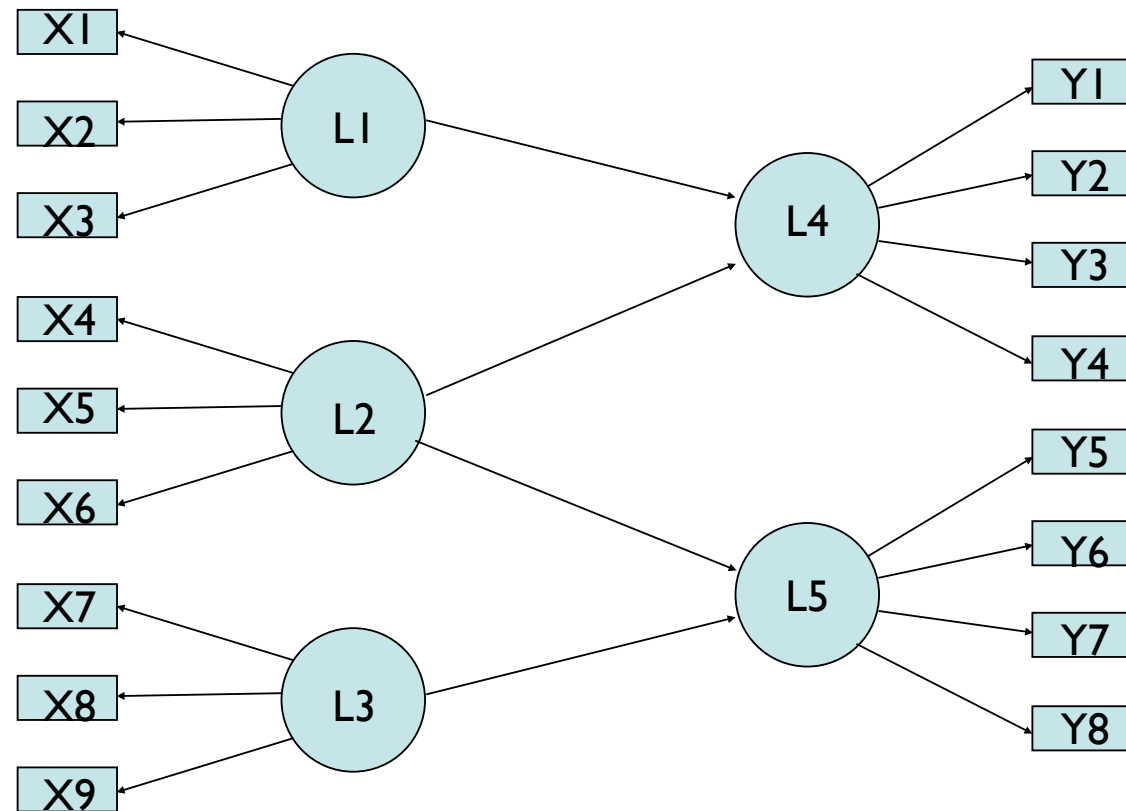
Proximity

What kind of comparisons are made?

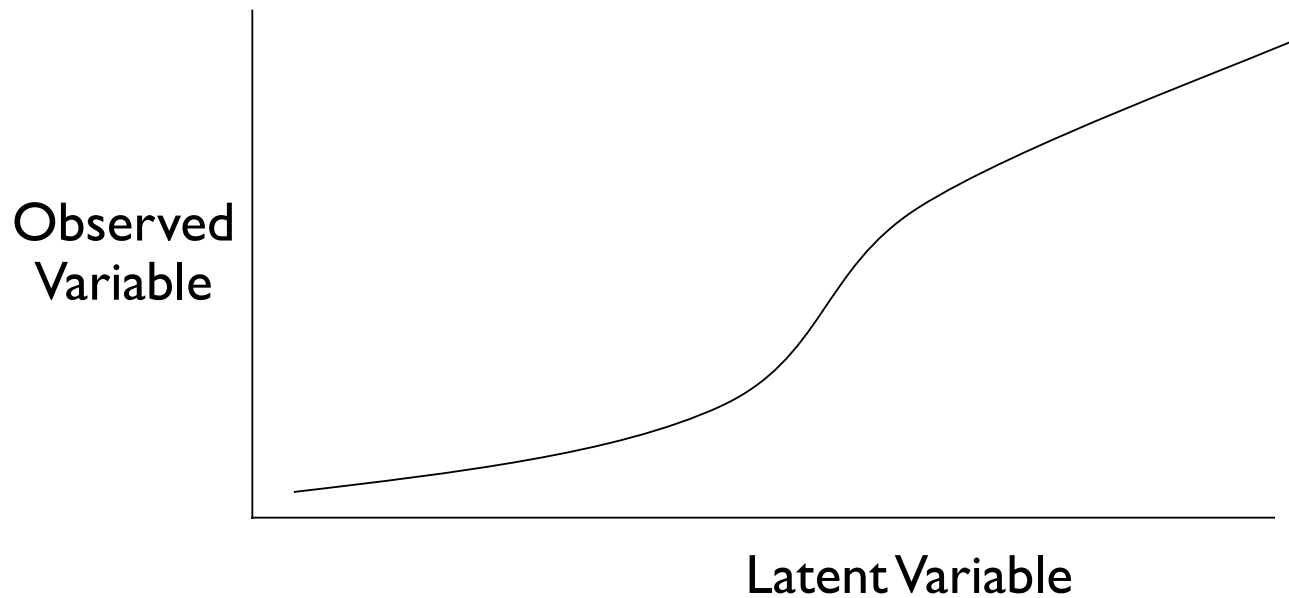
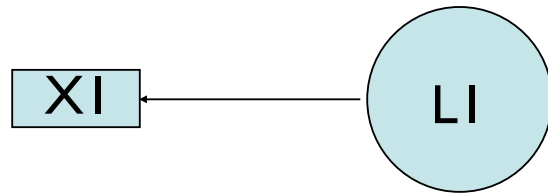
Single Dyads

Pairs of Dyads

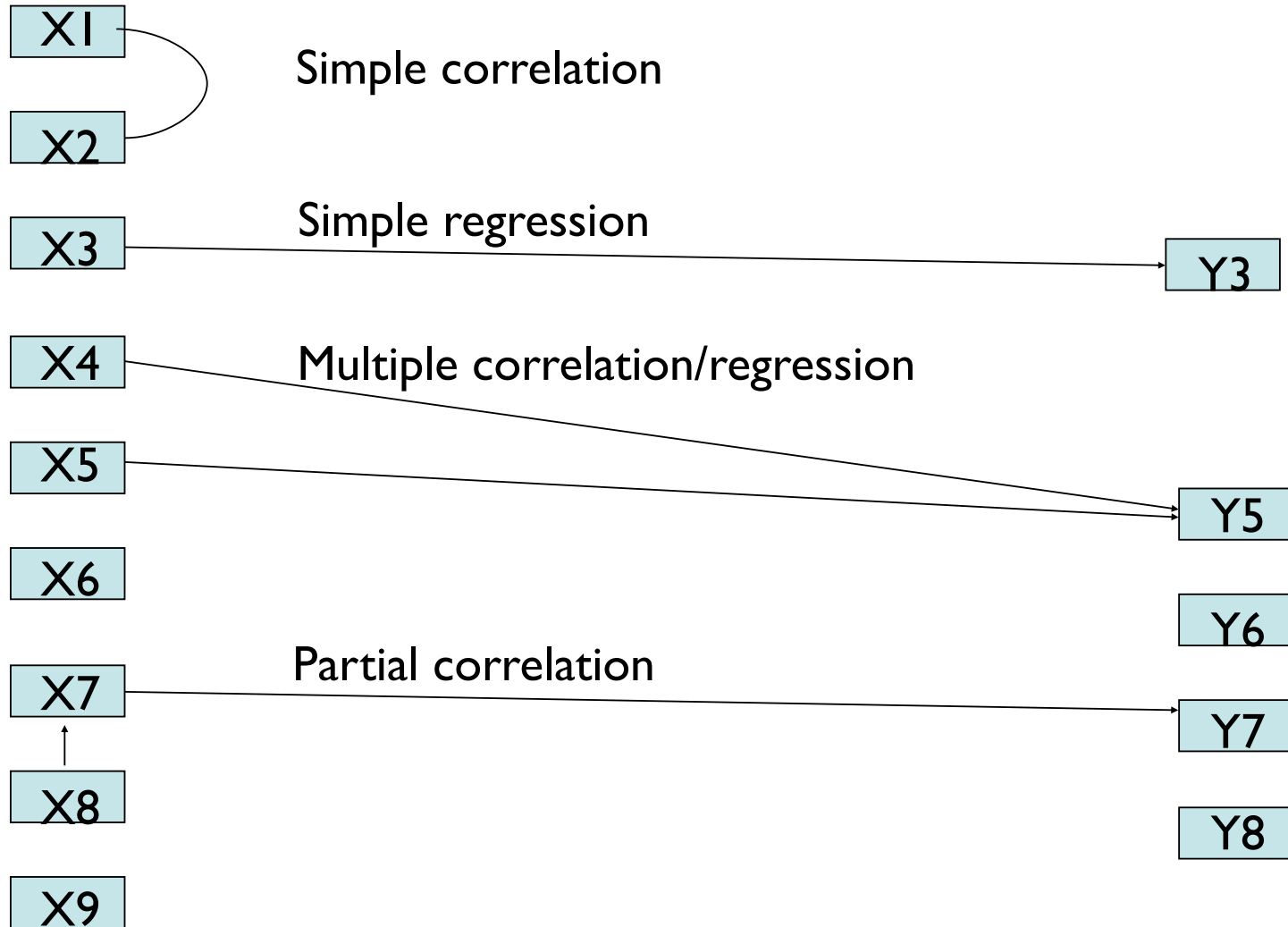
Psychometric Theory: A conceptual Syllabus



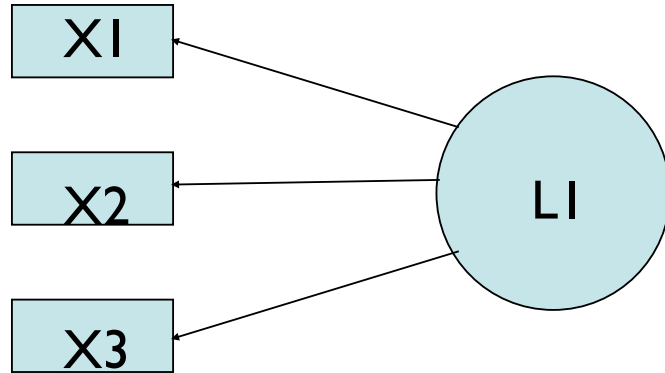
Scaling: the mapping between observed and latent variables



Variance, Covariance, and Correlation

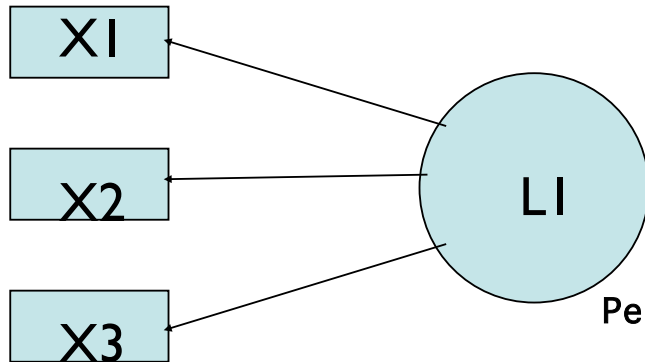


Classic Reliability Theory: How well do we measure what ever we are measuring

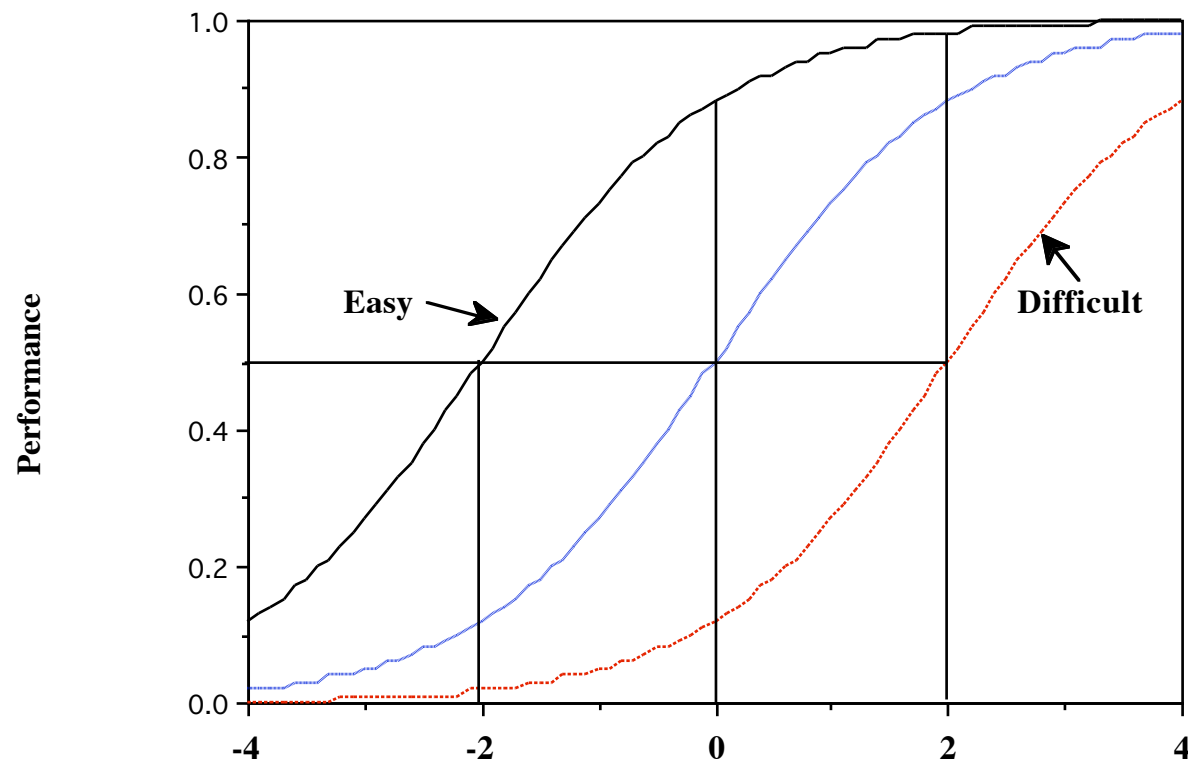


Modern Reliability Theory: Item Response Theory

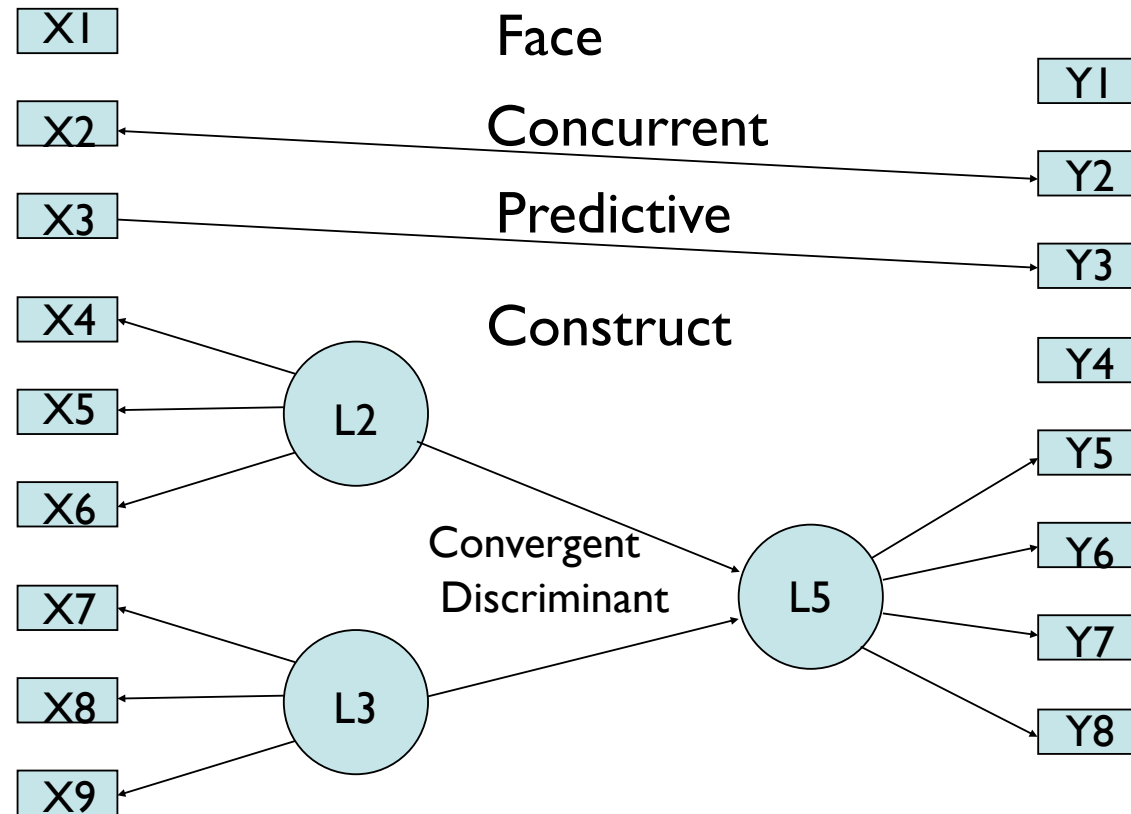
How well do we measure what ever we are measuring



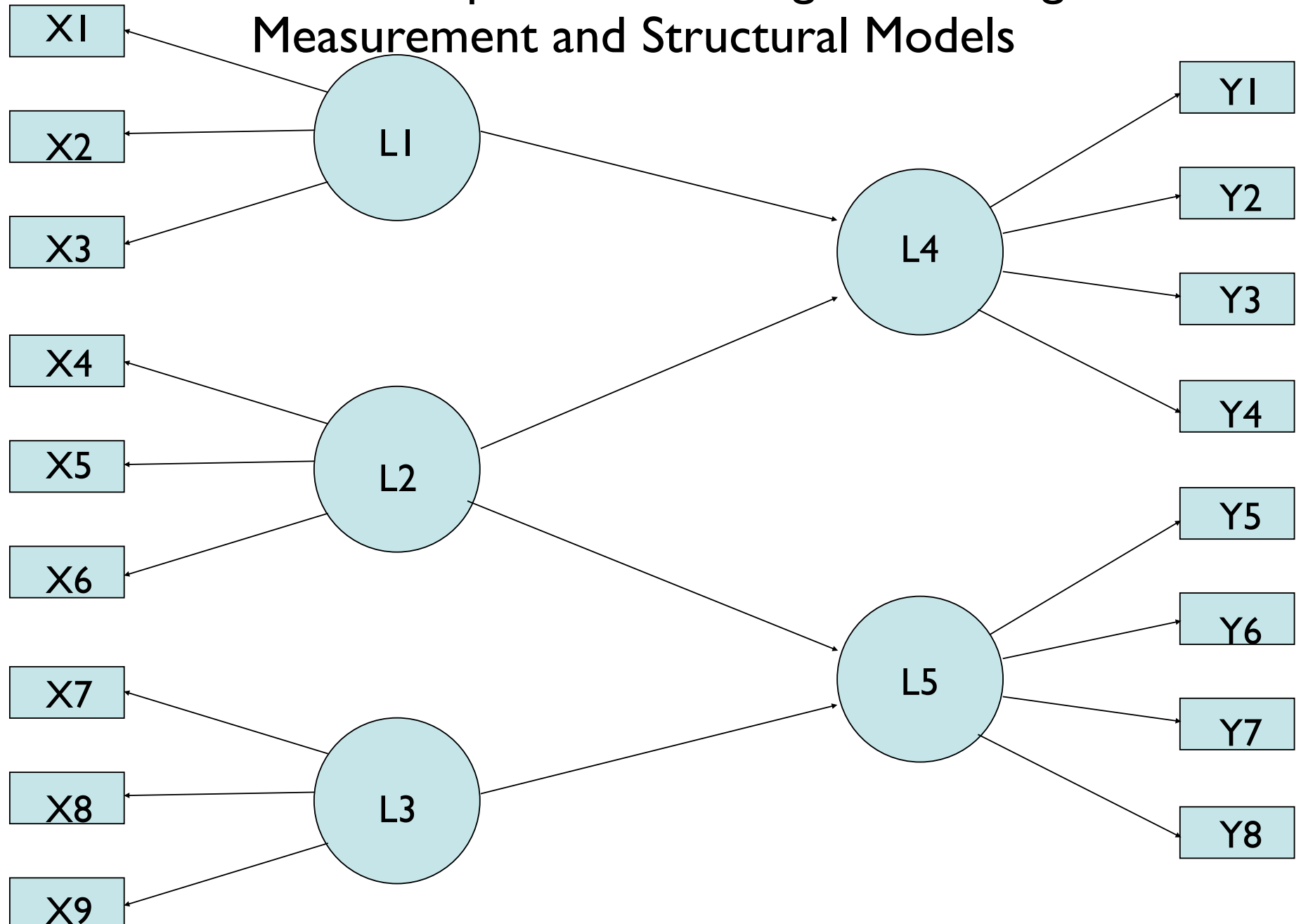
Performance as a function of Ability and Test Difficulty



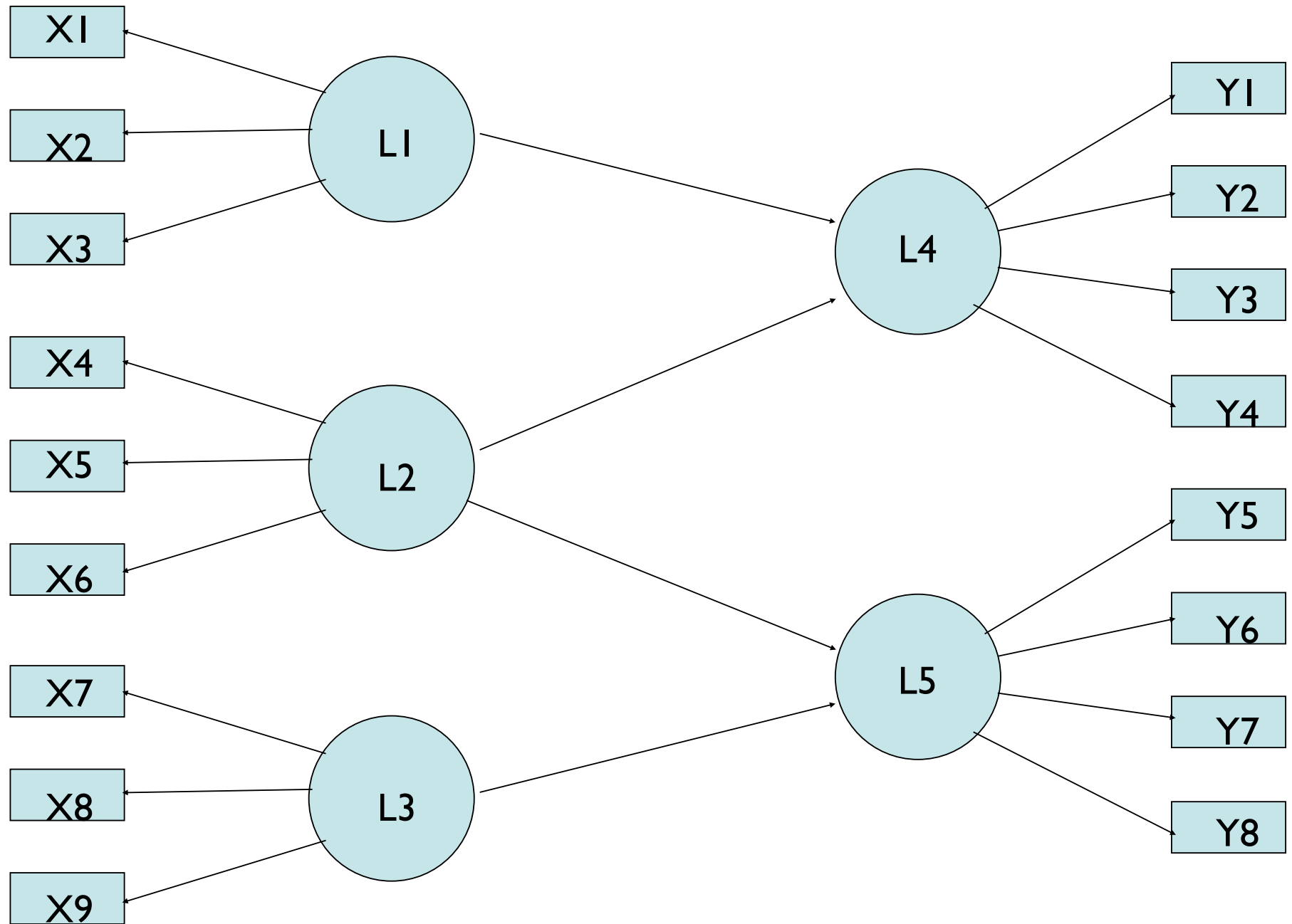
Types of Validity: What are we measuring



Structural Equation Modeling: Combining Measurement and Structural Models



Scale Construction: practical and theoretical



Traits and States: What is measured?

