Ch. 13: Clinical & Counseling

- Common Settings
- Overview of Strategies / Designs
  - Deductive
    - Logical/Content
    - Theoretical
  - Empirical
    - Criterion group
    - Factor analytic
- Frequently used tests
  - MMPI
  - 16PF
  - NEO

Clinical and Counseling Settings

- Hospital
  - Inpatient
    - acute
    - long-term
  - Outpatient
- School
  - Counseling (educational)
  - Counseling (psychological)
- Vocational
- Motivational/Performance

Types of Tests

- IQ & Achievement
- Personality
  - structured ("objective")
  - unstructured ("projective")
- Clinical
  - Diagnostic
    - Depression, Anxiety, etc.
 - Symptom checklists
- Neuropsychological

Design Theories

- Deductive (aka "Top Down" or "Theory-driven")
  - Use reason, clinical experience and common sense to choose test items that are face-valid to the construct being assessed.

- Empirical (aka "Bottom-Up" or "Data-driven")
  - Look for patterns in large groups of data
  - Data tells us what groups/dimensions/factors exist
  - Don't assume face validity or response style

Design Theories

Deductive → Logical-content → Content
Logical-content → Intuitive
Logical-content → Rational
Deductive → Theoretical

Empirical → Criterion group → Contrasted Group
Criterion group → External
Criterion group → Empirical
Criterion group → Criterion-keyed
Empirical → Factor Analytic
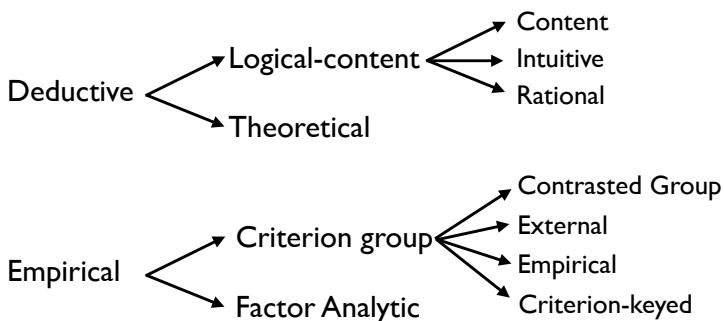
Logical-Content

- Deductive
  - Logical-Content
    - aka "Content approach", "Intuitive approach", "Rational approach"
    - include face-valid questions about the topic being measured, such as "did you wet the bed last night?"
    - assumes that test-takers answer consistently and honestly
    - simple, and simplistic

Logical-Content Tests

- Woodsworth Personal Data Sheet (1920)
  - Developed in WWI to identify soldiers who would fail in combat
  - 116 Yes/No questions -- all face valid.
    - "Do you drink a fifth of whiskey a day"?
    - "Do you frequently daydream?"
  - rarely used today.
- Mooney Problem Checklist (1950)
  - yes/no to many problem items "I'm having trouble with money"
  - sometimes used today. Why?

Criticism : Logical-Content

- Major assumptions:
  - Test subjects are being honest, w/o intent to deceive
  - Items have single objective interpretation
    - e.g. "I never drink too much alcohol"
- In most cases, these assumptions are flawed.
- Criticisms basically sunk this design in the late 1940s
- Exception: Mooney Problem checklist (non-confrontational situation - someone seeking help)

Theoretical

- Deductive
  - Theoretical
    - Underlying theory of constructs used to create test questions.
    - Example (from Freud)
      - Depression =
        - Anaclitic (anger at parents)
          - "do you get along with Mom & Dad?"
        - Introjective (self loathing)
          - "do you fall short of your goals?"

Criticisms of Theoretical Approach

- What evidence that the theory / construct / sub-constructs exist?
- Example:
  - Depression - what theory to use?
    - Psychodynamic?
    - Cognitive?
    - Behavioral?
    - Medical?
    - ...

Criterion-Group

- Empirical
  - Criterion Group
    - aka "Contrasted Group", "External strategy"...
    - Give test items to a group that has some disease, disorder or diagnosis (e.g. "Schizophrenics")
    - Compare (contrast) with performance in an "normal" group
    - Items which strongly distinguish the groups are kept.
    - Cross-validate results with other group(s)

Criterion-Group Example

Question	Bullies	Non-Bullies
1. Do you like to hurt others?	N	N
2. Do you like watching Boxing?	Y	Y
3. Do you like Hello Kitty?	**N**	**Y**
4. I am always a good person	Y	Y

Cross-Validation

- Method of giving a more fair, accurate estimate of reliability by essentially "repeating the study" with new subjects
- Use the prediction equations (formulas) on a "fresh" sample
- Guards against "over fitting" data in the first experiment (e.g. Shrinkage)
- If cross-validation groups differ in demographics, increases generalizability.

Cross-Validation Example

- Researcher #1 does a study in their hospital showing that Schizophrenic patients say "Yes" to the question "I'm afraid of the color blue" at a much higher rate than control subjects.
- This test item can diagnose Schizophrenia?
- Researcher #2 attempts to cross-validate this study at a different hospital with a different set of patients and controls, and does not find the same effect.
- Why?

Criterion-Group Tests

- Minnesota Multiphasic Personality Inventory
  - Most popular / well researched test
  - Revisions
    - MMPI-2 : 1989; revised norms in 2003; 567 items
    - MMPI-2-RF : 2008 ; shortened to 338 items
  - 10 clinical scales
  - Focused more on psychopathology
  - Good psychometrics
- California Psychological Inventory - 3 (CPI-3)
  - 20 scales
  - focused more on health than illness
  - psychometrics are fair, not great

MMPI Design

- Goal : detect abnormal psychology
- Subjects: Eight criterion groups (psychiatric inpatients) plus normal* control group
- Method: Items which contrasted criterion group with normal group, AND which passed cross-validation at P<.05 level were kept.
- Test items were grouped into scales, the scales were named after the criterion group

- Later: additional scales added: Mf and Si

MMPI-2

- 567 true/false items
- About 2 hours to administer
- Item content appears to be simplistic face valid statements "I like mechanics magazines" but are not necessarily scored in a face-valid way.
- Each item contributes to one or more <u>Clinical Scales</u> or <u>Content Scales</u>
- Additional <u>Validity Scales</u> attempt to correct for response styles, faking bad or good, etc.
- Scales are normed to T-Scores (mean 50, sd 10)

MMPI Clinical Scales

#	Scale	Name	Interpretation
1	Hs	Hypochondriasis	physical complaints
2	D	Depression	depression
3	Hy	Hysteria	immaturity
4	Pd	Psychopathic Deviate	authority conflict
5	Mf	Masculinity-Femininity	stereotypic m/f interests
6	Pa	Paranoia	suspicion, hostility
7	Pt	Psychasthenia	anxiety
8	Sc	Schizophrenia	alienation, withdrawal
9	Hy	Hypomania	elevated mood & energy
0	Si	Social Introversion	introversion, shyness

MMPI Validity Scales

#	Scale	Name	Interpretation
1	L	Lie scale	naive attempt to fake good
2	F	F scale	"Frequency" scale: attempt to fake bad
3	K	K scale	(sophisticated) defensiveness
4	VRIN	Variable response inconsistency	random responding
5	TRIN	True response inconsistency	"yes" bias

MMPI Profile

L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
45	74	35	50	78	52	42	51	52	86	53	43	64
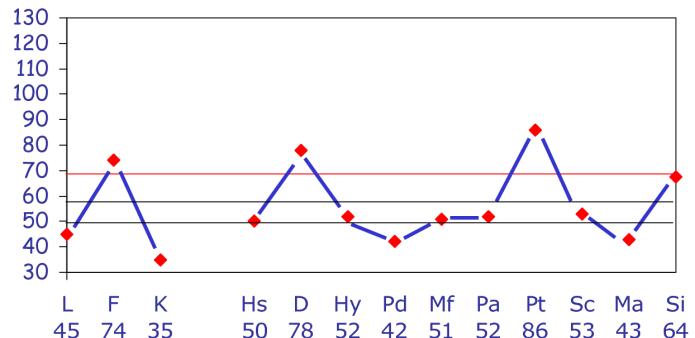
MMPI Extensions

- 567 items includes lots of detail
- More than one way to score the MMPI
- Novel scoring methods
  - Face-valid content measures.
    - e.g. "somatic symptoms checklist"
  - Other clinical groups or disorders (alcoholism, etc.)

MMPI Psychometrics

- Overall reliability is good. Not as high as the best IQ tests.
- Median test-retest coefficents range from 0.50 to 0.90, average 0.80s
- Scales are poorly designed -- many items contribute score to more than one scale. Thus the scales are highly intercorrelated.
- Keyed poorly (e.g. all items on the L scale are keyed false) so sensitive to response style
- Scores are affected by demographics (age, gender, IQ, and to a lesser extent, ethnicity)

MMPI Validity

- Thousands of studies have been done on the MMPI supporting its Construct validity
- Used and researched in a very wide range of subjects, settings, disorders.

Criticism : Criterion-Group

- Major assumptions:
  - People/Patients can be grouped, groups show consistent features and are independent
  - Face validity of response is not important, but responses should be consistent
  - Scales can predict membership in criterion group
- Flaws:
  - Criterion group assumes a lot about patterns of behavior. Neglects possible commonalities across groups.

Factor-Analysis

- FA of the MMPI-2 suggests there may be only 2 major factors! ("positive affectivity" and "negative affectivity")

Empirical Analysis

Multivariate data often appears to form natural groups

Depression x Anxiety
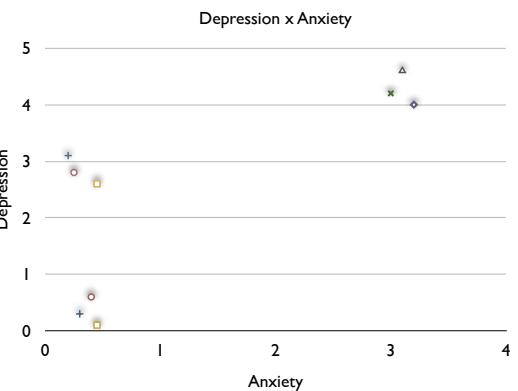
Empirical Analysis

"Natural" groupings in data are determined statistically

Depression x Anxiety
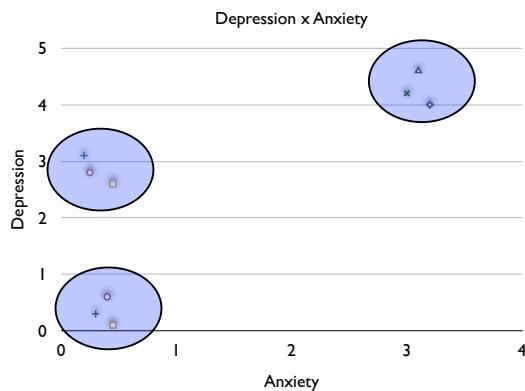
Empirical Analysis

Groups are then named using logical/ content analysis

Depression x Anxiety

Clinically Depressed

The Worried Well

Normal
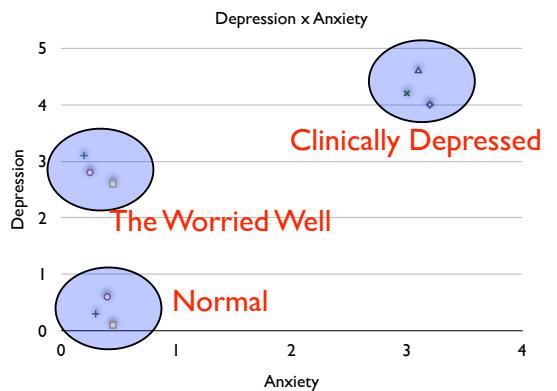
Validity & Factor Analysis

- Convergent Validity : strong correlation
- Divergent Validity: weak correlation

Measurement   *Construct*

Love
Like
IQ
GPA

Affection

Intelligence
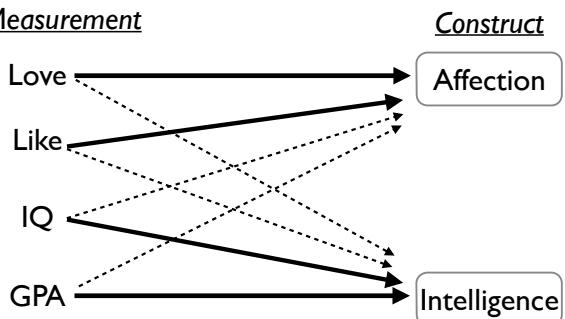
Factors?

- What if you don't know what the factors are?

Factor Analysis

- Patterns within correlation matrix
- Compute *Factors* which account for maximum variance
- Factors: How many? Naming them?

Correlation Matrix

Measure	Factor 1	Factor 2
Love	**0.75**	0.17
Like	**0.87**	0.05
IQ	-0.02	**0.65**
GPA	0.10	**0.91**

Factor-Analytic

- Empirical
  - Factor-Analytic
    - Rather than assuming face-validity (logical-content strategy) or identifiable groups (criterion-group strategy) we look for natural groups and patterns in the data
    - Assume that groups seen in the data are not random or accidental, but causal
    - Examine the groups for commonality, reduce extraneous variables
    - Examine the Content, name the factors

Factor-Analytic : 16PF

- Cattell's 16 Personality Factor Questionnaire (16PF)
  - Started with 4504 traits from the dictionary, narrowed it down to 171 traits.
  - Gave these 171 test items to college students
  - Factor Analysis reduced these to 16 distinct factors (with 4 uber-factors)
  - Extensive norms for age, gender, reading level, etc.
  - Similar test available for adolescents and children

16PF Factors

| Scale	Low	High
A	cool, reserved	warm, outgoing
B	concrete, dull	abstract, bright
C	affected by feelings	emotionally stable
E	submissive, humble	dominant, assertive
F	sober, restrained	enthusiastic, spontaneous
G	expedient, indulgent	conscientious, conforming
H	shy, timid	bold, venturesome
I	tough-minded	tender-minded, sensitive
L	trusting, easy going	suspicious, skeptical
M	practical, down to earth	imaginative, absent-minded
N	forthright, genuine	shrewd, calculating
O	self-assured, secure	apprehensive, insecure
Q1	conservative, traditional	experimenting, liberal
Q2	group-oriented, joiner	self-sufficient, resourceful
Q3	undisciplined, lax	following self image, compulsive
Q4	relaxed, tranquil	tense, frustrated

Criticism : Factor-Analytic

- Major assumptions:
  - Data groupings (factors) found are stable
  - Factors can be examined for content and named
- Flaws:
  - Factor analysis method allows multiple solutions
  - # of factors is arbitrary (16 or 5 or 4?)
  - Naming factors : face-valid examination of data

Factor Analysis

of groups, and group boundaries can be arbitrary
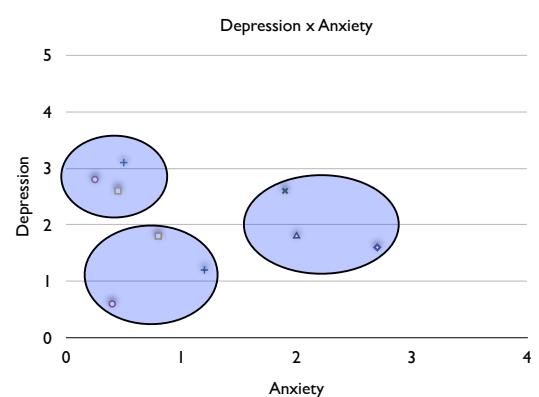
Depression x Anxiety

Factor Analysis

Depression x Anxiety

3 groups?
Or only
two?
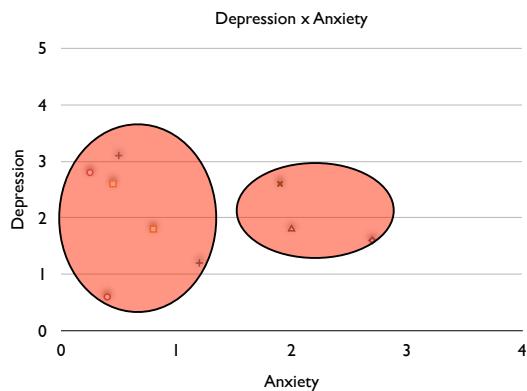
The "Big 5"

- Many researchers find 3 to 5 personality factors a good balance
- The 16PF factors reduce to 4 (or 5) bigger factors

Big 5 Personality Factors

Scale	Description
N	Neuroticism
E	Extraversion
O	Openness to experience
A	Agreeableness
C	Conscientiousness

NEO Personality Inventory

- Focus
  - NEO : "positive psychology" - health & style in normals
  - MMPI : psychopathology in abnormals
- Versions
  - NEO : 3 factors (N,E,O)
  - NEO-PI: 5 factors (N,E,O, A,C)
  - NEO-PI-R
  - NEO-FFI (60-item version of NEO-PI-R)
  - NEO-PI-3

NEO Facets

Scale	Description	Facets				
N	Neuroticism	anxiety	hostility	depression	self-consciousness	impulsiveness	vulnerability to stress
E	Extraversion	warmth	gregariousness	assertiveness	activity	excitement-seeking	positive emotion
O	Openness to experience	fantasy	aesthetics	feelings	actions	ideas	values
A	Agreeableness	trust	straight-forwardness	altruism	compliance	modesty	tender-mindedness
C	Conscientiousness	competence	order	dutifulness	achievement striving	self-discipline	deliberation