Ch. 13: Clinical & Counseling

- [2-day Version]

Ch. 13 - Part 1

Ch. 13: Clinical & Counseling

- Settings / Situations
- Test Types
- Test Designs
  - Deductive
    - Logical Content
    - Theoretical
  - Empirical
    - Criterion Group
    - Factor Analysis
- Example tests

Clinical and Counseling Settings

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

Types of Tests

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

Logical Reasoning

- Deduction
  - logical certainty
  - premises —> conclusion
    - All swans are white
    - Susan is a swan
    - Therefore, Susan is white
- (Empirical) Induction
  - less certain: evidence —> probability
  - All of the swans we have seen are white
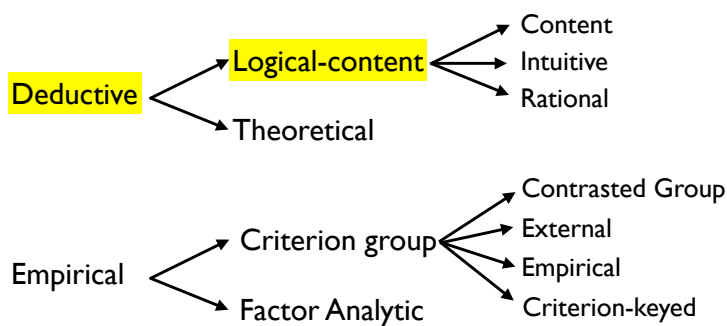 - Thus, all swans are probably white

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Design Theories

- Deductive (aka "Top Down" or "Theory-driven")
  - Use reason, clinical experience and common sense to create test questions that are face-valid or content-valid.

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

Design Theories

Deductive → Logical-content → Content, Intuitive, Rational

Deductive → Theoretical

Empirical → Criterion group → Contrasted Group, External, Empirical, Criterion-keyed

Empirical → Factor Analytic

Logical-Content

- Deductive
  - Logical-Content
    - aka "Content approach", "Intuitive approach", "Rational approach"
    - straightforward questions
      - e.g. "did you wet the bed last night?"
    - assumes subjects are honest
    - assumes *face validity*
    - Pro: simple
    - Con: simplistic, naive

Logical-Content: Woodsworth

- Woodsworth Personal Data Sheet (1920)
  - Developed in WWI to identify soldiers who would fail in combat
  - 116 Yes/No questions
    - "Do you drink a fifth of whiskey a day"?
    - "Do you frequently daydream?"
    - …
- All questions are Face valid
  - rarely used today
  - why?

Logical-Content: Mooney

- Mooney Problem Checklist (1950)
  - yes/no to many problem items "I'm having trouble with money"
  - All questions face valid
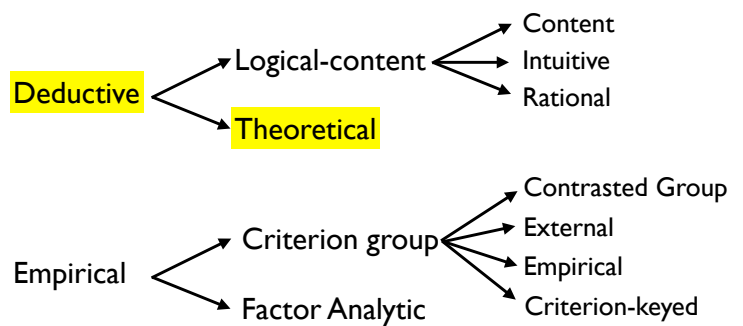 - Sometimes used today
    - Why?

Criticism : Logical-Content

- Major assumptions:
  - Subjects are being honest
  - Items have one objective interpretation
    - e.g. "I never drink too much alcohol"
- Assumptions are flawed
- This design rarely used post 1940

Design Theories

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

Empirical
- Criterion group
  - Contrasted Group
  - External
  - Empirical
  - Criterion-keyed
- Factor Analytic

Theoretical

- Deductive
  - Theoretical
    - Theory of constructs (dimensions, factors, facets, etc.) 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?
    - Social
    - ...

Project Example: Measuring Depression

- Theory
- Measurement
- Reliability / Validity

Design Theories

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

Empirical
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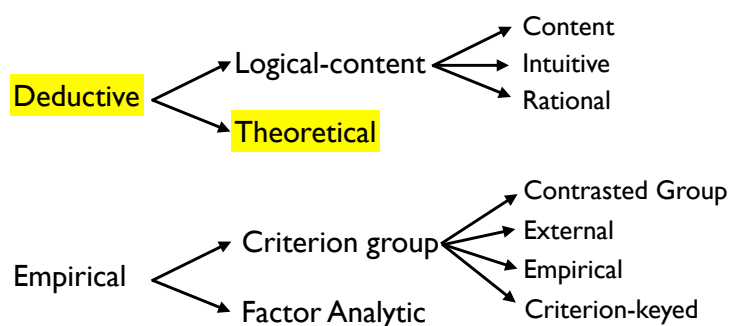
Theory & Construct, Measures

- Theories:
  - Psychodynamic
  - Modern CBT
- Measures
  - BDI-II
  - HAM-D

Getting a Review Article

- The Hard Way
  - library.csusm.edu
  - search PsycINFO for 'depression'
    - over 200,000 hits
  - choose: methodology = literature review
    - over 9000 hits

  - Browse through results
  - Ouch!

Getting a Review Article

- The Easy Way
  - annualreviews.org
  - select Journals / Psychology
  - search for 'Depression / In This Journal'
    - ~600 results
    - more relevance

Depression : the Construct

- Examples of different theories and ways to define the construct of 'depression'

Psychodynamic Theory of Depression

- depression = inverted hostility
- Angry at parents, but parents needed for survival
- "anger turned inward"
- "self hatred"

Psychodynamic Theory of Depression

- Subtypes (Factors):
- *Anaclitic* depression : (perceived) loss of relationships one depends on
  - Facets: helpless, fears of abandonment, separation anxiety
- *Introjective* depression : failure to meet own standards (harsh superego)
  - Facets: worthlessness, guilt, feelings of failure

Question Examples

- 2 Big factors
  - Anaclitic:
    "I feel like people always abandon me"
  - Introjective:
    "I usually fail to meet my standards"

- 2 facets within one factor (Anaclitic):
  - Helpless:
    "I often feel like there's no use trying"
  - Worthless
    "I feel like other people are better than me"

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Depression-modern theory

- Psychological (Emotional, Cognitive)
- Biological

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Depression-modern theory

- Psychological
  - depressed mood
  - anhedonia
  - poor concentration
  - ruminations (guilt, worthlessness)
  - suicidal ideation
- Cognitive Triad - negative thoughts:
  - about the world
  - about the future
  - about the self

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Depression-modern theory

- Biological:
  - weight change: unintentional loss or gain
  - sleep disturbances
  - psychomotor agitation or retardation
  - loss of energy

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DSM-5 : Major Depressive Episode

- 5 or more for 2 week period (*= required)
  - Depressed mood most of most days*
  - Anhedonia*
  - Significant weight gain or loss (5%/month)
  - Insomnia/hypersomnia
  - Psychomotor retardation/agitation
  - Fatigue/loss of energy
  - Worthless/guilty feelings
  - Trouble concentrating or indecisiveness
  - Suicidal ideation, plans, attempts

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Narrow down Topic

- Review Article
  - Field / Subfield
  - Clinical Psychology / Depression
- Refine / choose specific Construct
  - a sub-topic
  - theory
  - method
- Find an Original Research Article

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Original Research Article

- The hard(er) way:
- PsycINFO
  - search PsycINFO for keywords
  - e.g. "depression" + "stress"
    - 10,000 hits
  - e.g. "depression" + "anaclitic"
    - 150 hits
  - *If your construct is narrow, this method may work OK*
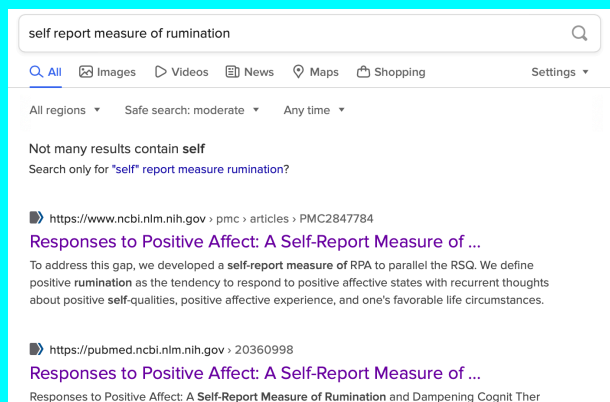
Original Research Article

- From your Review article, find the discussion of your Sub-Topic / Construct. It will have References
  - many references will be Original Research articles
  - find these articles
- Search for a specific measure of your construct.
  - Web search for "self-report measure of _____"

Example: Rumination

- "self report measure of _____"

Depression: Two different Constructs & Tests

- BDI
- HAM-D (HRSD)

Beck Depression Inventory

- Aaron T Beck - Psychiatrist (with cognitive focus)
- BDI (1961), BDI-1A (1976)
- BDI-II (1996) - in response to DSM-IV
- 21 item self report
- 0-3 points per item
- Scoring
  - 0-9 minimal depression
  - 10-18 mild depression
  - 19-29 moderate depression
  - 30-63 severe depression

BDI-II

BDI-II Questions

Sadness	Self-Criticalness	Loss of Energy
Pessimism	Suicidal Thoughts	Sleep Changes
Past Failure	Crying	Irritability
Loss of Pleasure	Agitation	Appetite
Guilty Feelings	Loss of Interest	Concentration
Punishment Feelings	Indecisiveness	Fatigue
Self-Dislike	Worthlessness	Interest in Sex

BDI-II Psychometrics

- Test-retest: r = 0.93
- Cronbach's Alpha = 0.91
- Correlation with HAM-D : r = 0.71

HAM-D aka HRSD

- Hamilton Rating Scale for Depression
- Max Hamilton - Psychiatrist 1912-1988
- 17 item *clinician* rating
- 0-7 rating for each question
- Scoring:
  - 0-7 : normal
  - 8-13 : Mild
  - 14-18 : Moderate
  - 19-22 : Severe
  - 23+ : Very Severe

HAM-D

HAM-D Questions

Depressed Mood	Retardation	Hypochondriasis
Feelings of Guilt	Agitation	Weight Loss
Suicide	Anxiety: Psychic	Insight
Insomnia: Early	Anxiety: Somatic	
Insomnia: Middle	Appetite	
Insomnia: Late	General Somatic Sx	
Work/Activities	Genital Symptoms	

HAM-D Psychometrics

- Often considered the "Gold Standard"
- Criticized for not being "Gold Standard"
- Bagby, Ryder et al (2004)
  - Reliability
    - test-retest: r= 0.81 to 0.98
    - Cronbach's alpha: 0.48 to 0.92
    - Cohen's kappa = 0.65 to 0.98

HAM-D Psychometrics

- Cons:
  - poor item characteristics
  - "Most of the items still measure multiple constructs, items that have consistently been shown to be ineffective have been retained, and the scoring system still includes differential weighting of items..."

Project Proposal

- Picking convergent & Divergent Factors
- Individual help

NEO-FFI-3 Facets

Scale	Description	Facets					
N	Neuroticism	anxiety	hostility	depression	self-conscious-ness	impulsive-ness	vulner-ability to stress
E	Extraversion	warmth	gregarious-ness	assertiveness	activity	excitement-seeking	positive emotion
O	Openness to experience	fantasy	aesthetics	feelings	actions	ideas	values
A	Agreeable-ness	trust	straight-forward-ness	altruism	compliance	modesty	tender-minded-ness
C	Conscientious-ness	compe-tence	order	dutifulness	achievement striving	self-discipline	delibera-tion

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Ch. 13 - Part 2

Design Theories - Review

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

Empirical
- Criterion group
  - Contrasted Group
  - External
  - Empirical
  - Criterion-keyed
- Factor Analytic

Criterion-Group

- Empirical
  - Criterion Group
    - aka "Contrasted Group", "External strategy"...
    - Give test questions to a group w/disease, disorder or diagnosis (e.g. "Schizophrenics")
    - Compare (contrast) question scores vs. a "normal" group
    - Questions which distinguish the groups are kept.
    - Cross-validate results with other group(s)

Criterion-Group Example

Question	Bullies	Non-Bullies
1. It feels good to hurt others	N	N
2. I like watching Boxing	Y	Y
3. I like Hello Kitty	**N**	**Y**
4. I am always a good person	Y	Y
5. Other people are weak	**Y**	**N**

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 diagnosis 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

- Strong Interest Inventory…
- MMPI…
- CPI…

Strong Interest Inventory

- Select one occupation ("bartender")
- Two samples
  - Criterion sample: people who are strongly representative (e.g. happy doing normal bartending tasks)
  - General sample: people from other occupations
- Administer test questions to both groups
- Keep only the questions that discriminate
- [Repeat this process for a each different occupation…]

Criterion-Group Tests

- California Psychological Inventory - 3 (CPI-3)
  - 20 scales
  - focused more on health than illness
  - psychometrics are fair, not great
- 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

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 looks like face valid statements "I like mechanics magazines"
- Item scoring is not based on face validity
- Each item contributes to one or more Clinical Scales or Content Scales
- Additional Validity Scales attempt to correct for response styles, faking bad or good, etc.
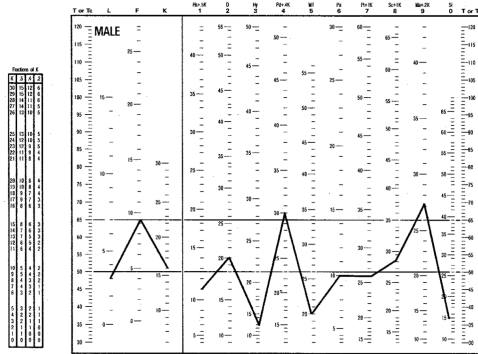- Scales are normed to T-Scores M (SD) = 50 (10)

MMPI-2 Profile for Basic Scales. Name: STEVE. Occupation: SALESMAN. Education: 12. Age: 30. Marital Status: MARRIED. MMPI-2 Code: 94-28/671:503 F-K/L. Scorer's Initials: JRG. MALE.
Fb: T=70
TRIN: T=65T
VRIN: T=61
MAC-R: RAW SCORE=29

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 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 Psychometrics

- Is the MMPI any good?
  - Reliability...
  - Validity...

MMPI Reliability

- Reliability is good but not as high as the best tests (such as IQ tests)
- Test-retest correlations r=0.50 to 0.90, mean ~0.80
- Scales poorly designed -- some items on multiple scales —> scales are highly intercorrelated
- Questions poorly designed: (all items on the L scale are keyed False) —> sensitive to response style
- Scores are correlated to demographics (age, gender, IQ, ethnicity...)

MMPI Validity

- Thousands of studies investigating MMPI 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.
  - Time-consuming and expensive to create tests

Factors?

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

Empirical Analysis

Multivariate data often appears to form natural groups

Depression x Anxiety
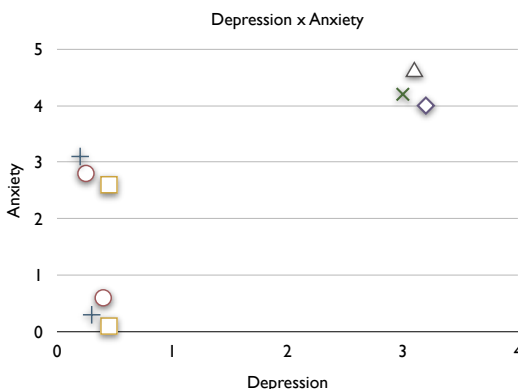
Empirical Analysis

"Natural" groupings in data are determined statistically
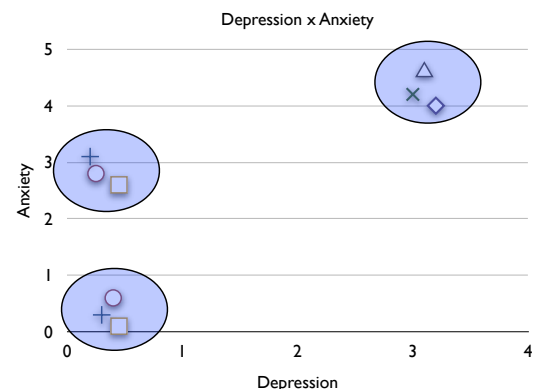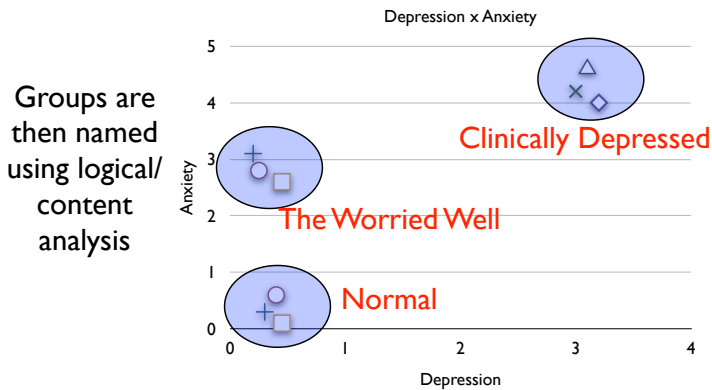
Depression x Anxiety

Empirical Analysis

Groups are then named using logical/ content analysis

Depression x Anxiety

Clinically Depressed

The Worried Well

Normal

Review : Design Theories

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

Empirical
- Criterion group
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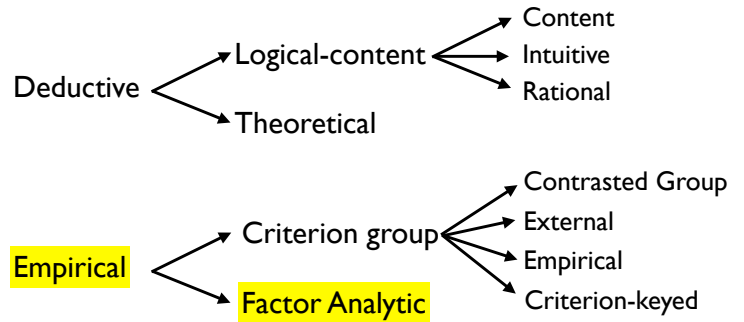
Factor-Analytic

- Empirical
  - Factor-Analytic
    - Ignore face-validity, content-validity or criterion-group
    - Look for natural patterns in the data
    - Assume patterns are meaningful (not random)
    - Reduce redundant variables or questions
    - Examine the content, name the factors

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**

Validity & Factor Analysis

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

Measurement

Construct

Love

Like

IQ

GPA

Affection

Intelligence
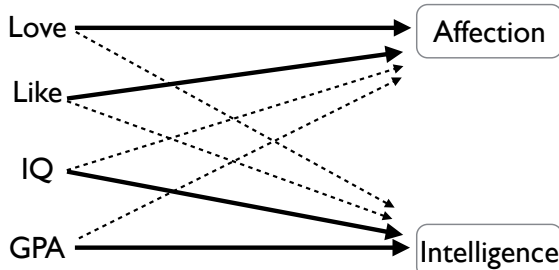
Factor Analytic Tests

- 16PF…
- Big 5…
- NEO…

Factor-Analytic : 16PF

- Cattell's 16 Personality Factor Questionnaire (16PF)
  - 4504 traits chosen from dictionary, reduced to 171 traits.
  - 171 questions given to college students
  - Factor Analysis: 16 distinct factors (with 4-5 higher factors)
  - Norms for age, gender, reading level, etc.
  - Test versions available for adolescents and children

Criticism : Factor-Analytic

- Major assumptions:
  - Data patterns (factors) are stable
  - Factors can be named from question content
- Flaws:
  - Factor analysis allows multiple solutions
  - # of factors is arbitrary (16 or 5 or 4?)
  - Naming factors : face-valid examination of data
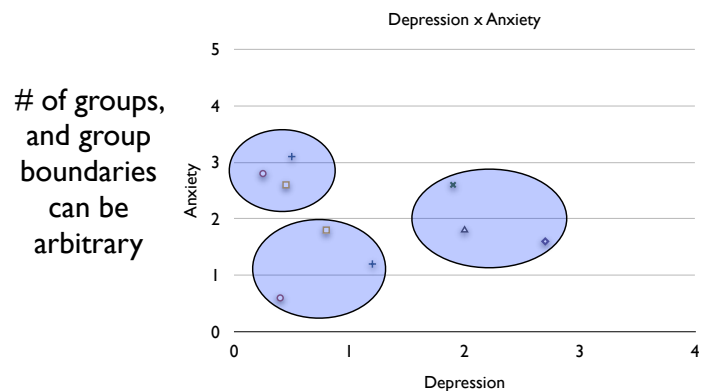
Factor-Analysis

- MMPI-2 has 10 scales

- Factor analysis of MMPI-2 suggests only 2 major factors:
  - "positive affectivity"
  - "negative affectivity"

- How many factors are there really?

Factor Analysis

of groups, and group boundaries can be arbitrary

Factor Analysis

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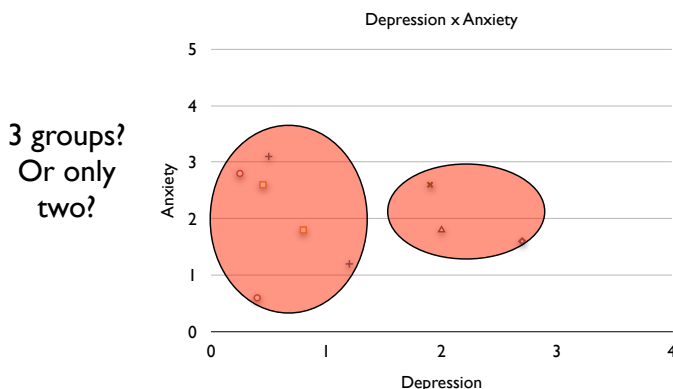
The "Big 5"

- 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

- MMPI : psychopathology in abnormal subjects
- NEO: "positive psychology" - health & style in normal subjects
- 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
  - <u>NEO-FFI-3</u> <— *the version you took in class*
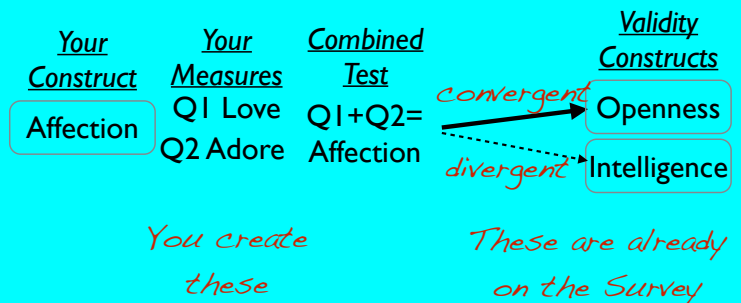 - The NEO Five-Factor Inventory-3: Four-Factor Version (NEO-FFI-3:4FV)

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

Project Proposal

Your Construct
Affection

Your Measures
Q1 Love
Q2 Adore

Combined Test
Q1+Q2=
Affection

convergent → Openness
divergent → Intelligence

Validity Constructs

You create these

These are already on the Survey

Project Proposal : FAQ - Part 1

- Articles : 1 Review, 1 Research
  - Review article doesn't have to be <u>AnnualReviews.org</u>
- Your construct
  - does not have to have Cog, Emo, Bio dimensions (like my *Anxiety* example)
  - 2 test items (must be same *construct* but should measure two different *factors* of the construct)

Project Proposal : FAQ - Part 2

- Anxiety
  - Factor 1: *cognitive anxiety*
    - I can't stop obsessing about bad things that might happen in the future. Rating scale: 1 (never) to 10 (always)
  - Factor 2: *physical anxiety*
    - When I worry, I feel my heart racing. Likert: SA, A, N, D, SD

- Measuring Reliability
  - which type?

Project Proposal : FAQ - Part 3

- Increasing Reliability
  - Add scores together to make combined score
  - Reverse coding?

(1) I am not a worrier

(6) At time I have felt bitter and resentful

Project Proposal : FAQ - Part 4

- Validity: Convergent & Divergent
  - you pick 2 other constructs
  - already on survey (GPA, NEO-FFI factors, Age)
  - or... work with another student
- Convergent
  - should correlate strongly (+ or -) with your combined measure
- Divergent
  - should not correlate at all (close to zero)

Proposals

- In-class work time