Psychology 371: Personality Research

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Outline

Personality

1. All people are the same, some people are the same, no person is the same. (Kluckhohn and Murray, 1948)
2. "Whatever exists at all exists in some amount. To know it thoroughly involves knowing its quantity as wall as its quality" (E.L. Thorndike, 1918)

Goals

1. To acquire an appreciation of current research in personality including taxonomic, biological, and cognitive approaches.
2. To acquire an understanding of the ways in which personality may be measured using current psychometric techniques.
3. To conduct original research in personality.

Requirements

1. Research proposal reviewing relevant prior research and proposing to answer a theoretical question. (May 8)
2. A mid term exam covering the theories of personality and methods of research discussed in class and in readings. (May 2)
3. A final research project reviewing the relevant literature, constructing and validating a personality scale (using a large personality-ability-interest data base.) (June 15)
4. A final exam (optional– June 13).

Readings

1. Readings will be assigned from relevant journals and texts. Most of these will be web accessible.
2. Check the syllabus and the associated outline on the web for handouts, course notes, and additional readings. These will be updated at least once a week. Class handouts will become available late in the evening before class.

Broad Brush Syllabus

1. Introduction to personality research
   - Place of personality in psychology
   - 5 Basic Questions
2. Descriptive taxonomies
3. Causal models of personality
4. Psychometric theory
5. Other current research techniques

Eysenck and the process of science

Prologue: two broad themes to be discussed and interwoven

1. The two disciplines of scientific psychology
   - 1.1 Two broad cultures of intellectual activity (Snow, 1959)
   - 1.2 Two broad cultures of psychology (Kimble, 1984)
   - 1.3 Two disciplines within scientific psychology (Cronbach, 1957, 1975) and (Eysenck, 1966, 1987a, 1997).
2. The process of theory construction and validation
   - 2.1 Science from hunch to law (Eysenck, 1976, 1985)
   - 2.2 Good theories as alive and generative: the example of theories of Extraversion.

I will emphasize the power of integrating psychometric and experimental techniques in a programmatic study of personality and individual differences.

The two cultures of intellectual inquiry

C.P. Snow (1959) considered two cultures of intellectual inquiry:

> *"I believe the intellectual life of the whole of western society is increasingly being split into two polar groups."* .. *"I felt I was moving among two groups–comparable in intelligence, identical in race, not grossly different in social origin, earning about the same incomes, who had almost ceased to communicate at all, who in intellectual, moral and psychological climate had so little in common ... one might have crossed an ocean."*

Kimble and the two cultures of psychology

Just as Snow considered the scientific versus humanistic cultures of English and American society, so did Kimble (1984) consider two cultures of psychology: the scientific and the humanistic.

> *"The remaining points of disagreement involve the items asking about most important values (scientific vs. human), source of basic knowledge (objectivism vs. intuitionism), and generality of laws (nomothetic vs. idiographic).*

Two competing tribes/paradigms within scientific psychology

But even within the culture of scientific psychology, we have two competing tribes who differ in their basic paradigmatic view of how to do science: the correlational vs. experimental paradigms discussed by Cronbach (1957, 1975) and Eysenck (1966, 1987a, 1997). Both pleaded for an integration of the two tribes. Neither was overly successful.
Others who have tried to reconcile these differences include Vale & Vale (1969), and Underwood (1975).
In a prior review Revelle & Oehlberg (2008) we reported that this dichotomy still continues. Today I will try to go beyond this dichotomy by showing how theory development and theory testing requires a mixture of the inductive power of correlations with the deductive power of experimental techniques. For we as individual differences psychologists are most able to unify the two disciplines.

The conventional dichotomy of research paradigms in psychology ala Cronbach (1957, 1975) and Eysenck (1966, 1987a, 1997)

Correlational

1. Influential founders
   - 1.1 Galton (1886)
   - 1.2 Pearson (1896)
   - 1.3 Spearman (1904)
2. Measurement of variances and covariances
   - 2.1 bivariate r, ϕ, $Yule_Q$
   - 2.2 multivariate R, factor analysis, principal components
   - 2.3 General Linear Model and its extension to multi-level modeling
3. Addresses threats to validity by statistical "control"

Experimental

1. Influential founders
   - 1.1 Wundt (1904)
   - 1.2 Gossett (Student, 1908)
   - 1.3 Fisher (1925)
2. Measurement of central tendencies
   - 2.1 bivariate t and F
   - 2.2 multivariate MANOVA
   - 2.3 General Linear Model and its extension to multi-level modeling
3. Addresses threats to validity by randomization

Two disciplines: two viewpoints

Table: The naive perspective from both sides–the other side is easy, why don't they just do it right? Our variables are complicated, well articulated, theirs are simple, just use any one.

Individual Differences	Experimental
Personality Ability	Task Performance

The experimentalist's challenge: what to measure

Measures

1. Giant 3
   - EPI
   - EPQ
2. Big 5
   - NEO-PI-R
   - IPIP B5
   - IPIP NEO
   - BFI
   - TIPI
3. Beyond the Big 5
   - HEXACO
   - IPIP HEXACO
   - BFAS
   - SAPA 3-6-12
   - ICAR-IQ
   - ...

Constructs

1. Extraversion
   - but which one? Costa vs. Goldberg
2. Neuroticism
3. Agreeableness
4. Conscientiousness
5. Openness-Intellect
   - but is it openness or is it intellect?
6. Honesty/Humility
7. Impulsivity
8. Sociability
9. Trust
10. ...

The challenge for individual difference researchers: what constructs to measure

Memory

1. Working memory
2. Iconic memory
3. Short Term memory
4. Long Term memory
5. Semantic memory
6. Episodic memory
7. Procedural memory
8. Autobiographical memory
9. False memory
10. Recall
11. Recognition

Attention

1. Sustained Attention
2. Allocation of Attention
3. Capturing Attention
4. Breadth of Attention
5. Local/Global Attention
6. Paying Attention

System I or System II

1. Fast, automatic
2. Slow, controlled, but lazy

The experimentalist's challenge: how to analyze, what to report

Analysis

1. Dimension Reduction
   - Principal Components
   - EFA
   - CFA
2. Structure
   - Path Analysis
   - SEM
   - Latent Growth Curves
3. Reliability analysis
   - Internal Consistency
   - Alternate Form
   - Test-Retest
4. Item Response Theory

Statistics

1. Measures of association
   - Pearson r, Spearman ρ
   - ϕ or $Yule_Q$
   - $r_{tetrachoric}$, $r_{polychoric}$
2. Goodness of fit
   - χ^2 or χ^2 difference
   - RMSEA or RMSR
   - Tucker-Lewis
   - BIC or AIC
3. Reliability
   - α
   - β
   - ω_h
   - ω_t

The challenge for individual difference researchers: which paradigm to use

Memory

1. Reaction time
   - Sternberg Memory Scanning
   - Ratcliff choice
   - Jacoby identification
2. Accuracy
3. Serial anticipation
4. Free recall
5. Cued recognition

Attention

1. Posner letter search
2. Erickson flanker task
3. Vigilance
4. dot probe
5. emotional "Stroop"
6. Eye tracking
7. Reaction Time

The extra subtleties of design

Personality

1. Item wording
2. Response alternatives
3. Appropriate sample size
4. Subject selection
   - restriction of range
5. generalization of subject characteristics

Experimental

1. number of practice trials
2. Inter Stimulus Interval
3. Stimulus Onset Asychrony
4. Type of randomization/counterbalancing
   - block randomization
   - complete randomization
   - counterbalancing
5. Data trimming procedures
6. Power/p-hacking

Theory testing is hard work

1. Confirmatory bias
2. Theory induced blindness
3. Seductive power of hindsite
4. Illusion of control
    - Under appreciation of chance
5. See *Thinking, Fast and Slow* Kahneman (2011)

Scientific progress and levels of theory

Eysenck (1976, 1985); Eysenck & Eysenck (1985)

1. Hunch
   - observations
   - deduction
2. Hypothesis
   - hypothesis development
   - hypothesis verification
3. Theory
   - Weak theory – confirmation studies
   - Strong theory –disconfirmation studies
4. Law

Eysenck, Lakatos, Popper and Kuhn

Eysenck (1983, 1985, 1987b, 1988); Eysenck & Eysenck (1985) followed Lakatos (1968) in suggesting that disconfirmation studies did not lead to theory rejection until a better theory was supplied.

> *"Purely negative, destructive criticism, like 'refutation' or demonstration of an inconsistency does not eliminate a programme. Criticism of a programme is a long and often frustrating process and one must treat budding programmes leniently. One can, of course, undermine a research-programme but only with dogged patience. It is usually only constructive criticism which, with the help of rival research programmes can achieve major successes; but even so, dramatic, spectacular results become visible only with hindsight and rational reconstruction." (Lakatos, 1968, p 183)*

Eysenck's theory as an adaptive and changing theory of personality

Eysenck (1983) thought that the building of paradigmatic personality research required critical analysis of theory and welcomed the publications of some of his strongest critics (e.g., Gray, 1981).

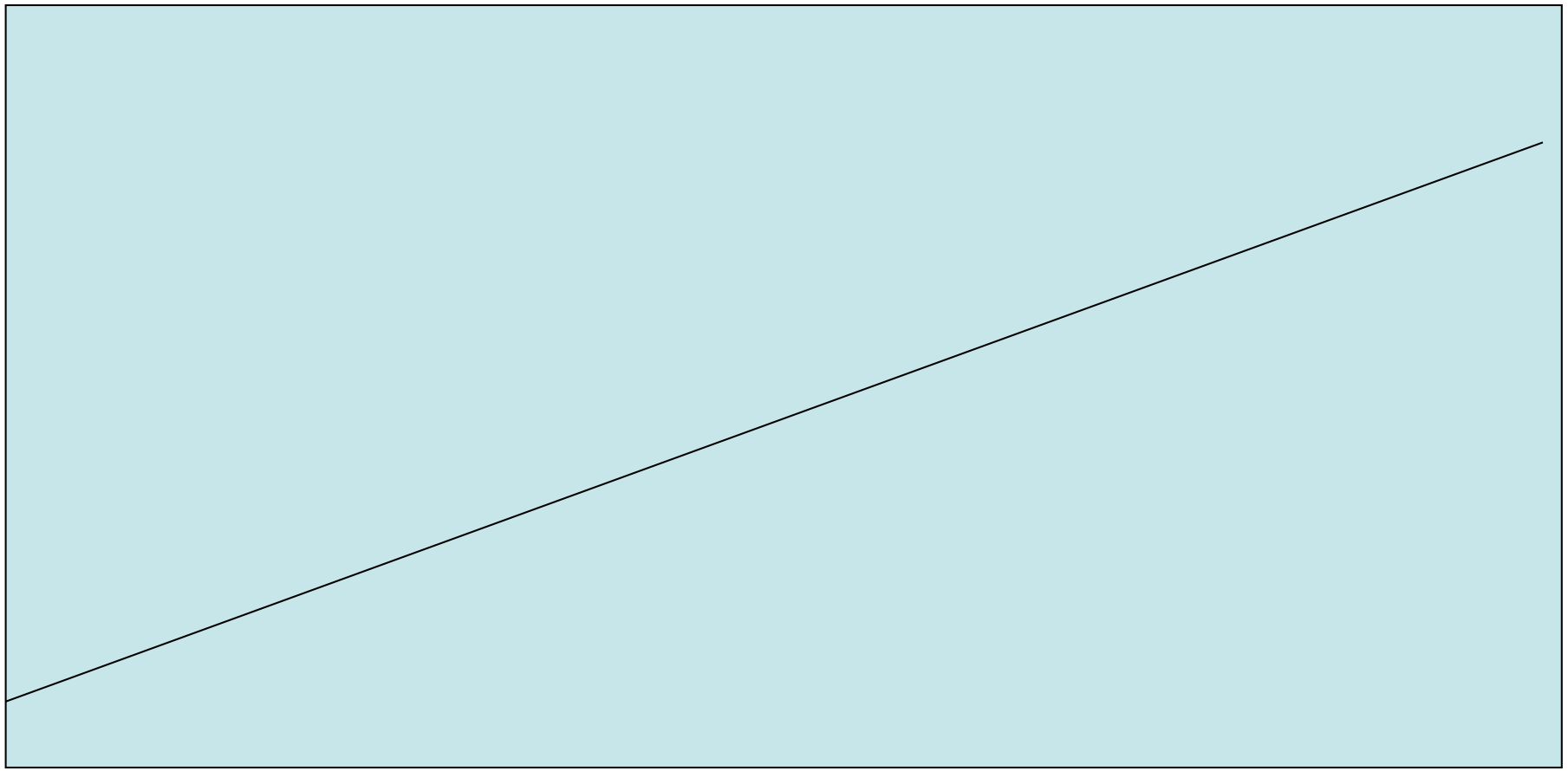
> *"the existence of anomalies should be no bar to the acceptance of the paradigm; the existence of such anomalies should merely act as a spur for the puzzle-solving capacities of ordinary science."*

Indeed, in his presidential address to this society, Eysenck (1983) spent much of the time discussing Gray's criticisms and then cheerfully announced that Gray was going to replace him at the Maudsley!

Types of Relationships

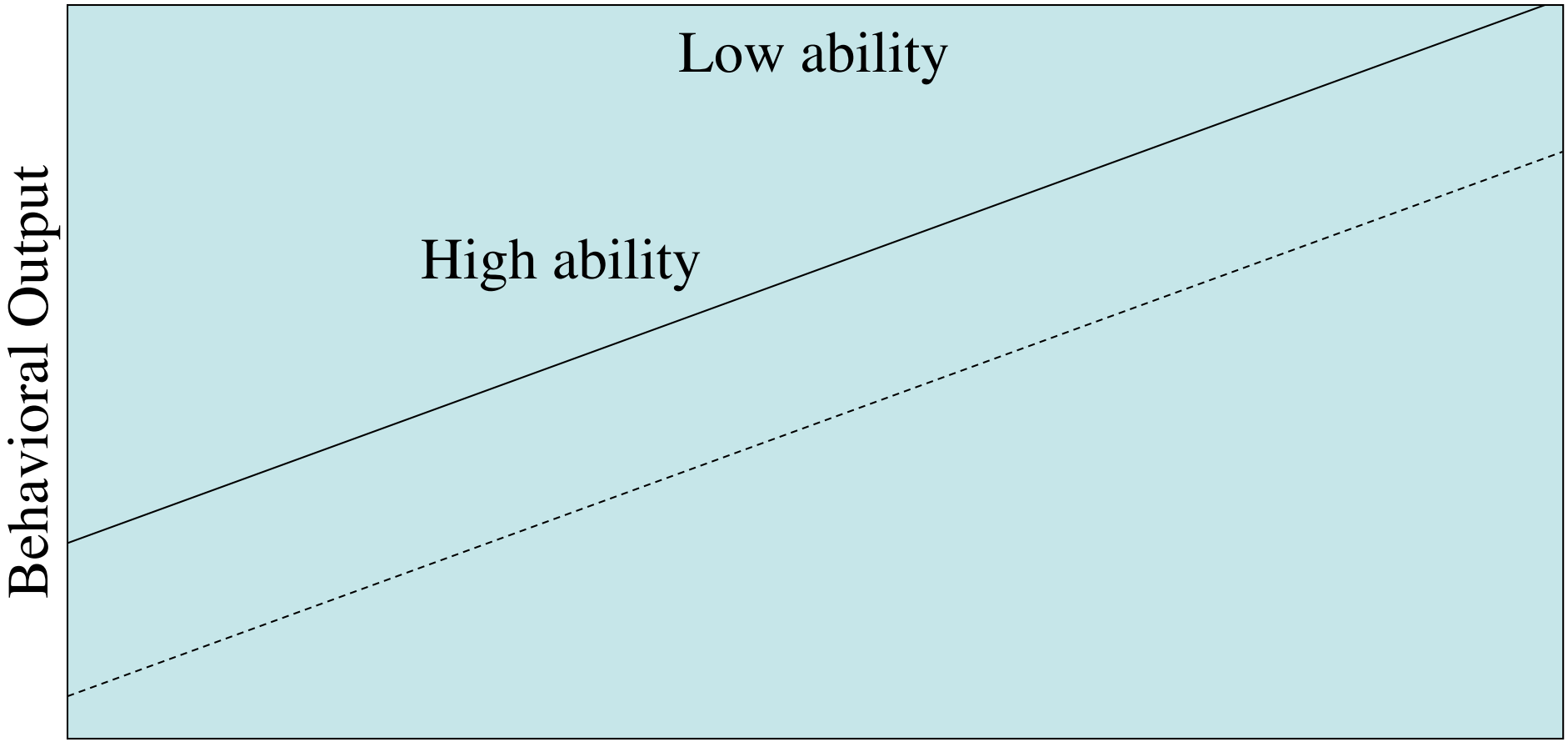
1. Behavior = f(Situation)
2. Behavior = f1(Situation)+ f2(Personality)
3. Behavior = f1(Situation)+f2(Personality)+ f3(Situation*Personality)
4. Behavior = f1(Situation * Personality)
5. Behavior = idiosyncratic

Types of Relationships: Behavior = f(Situation)



Neuronal excitation = f(light intensity)

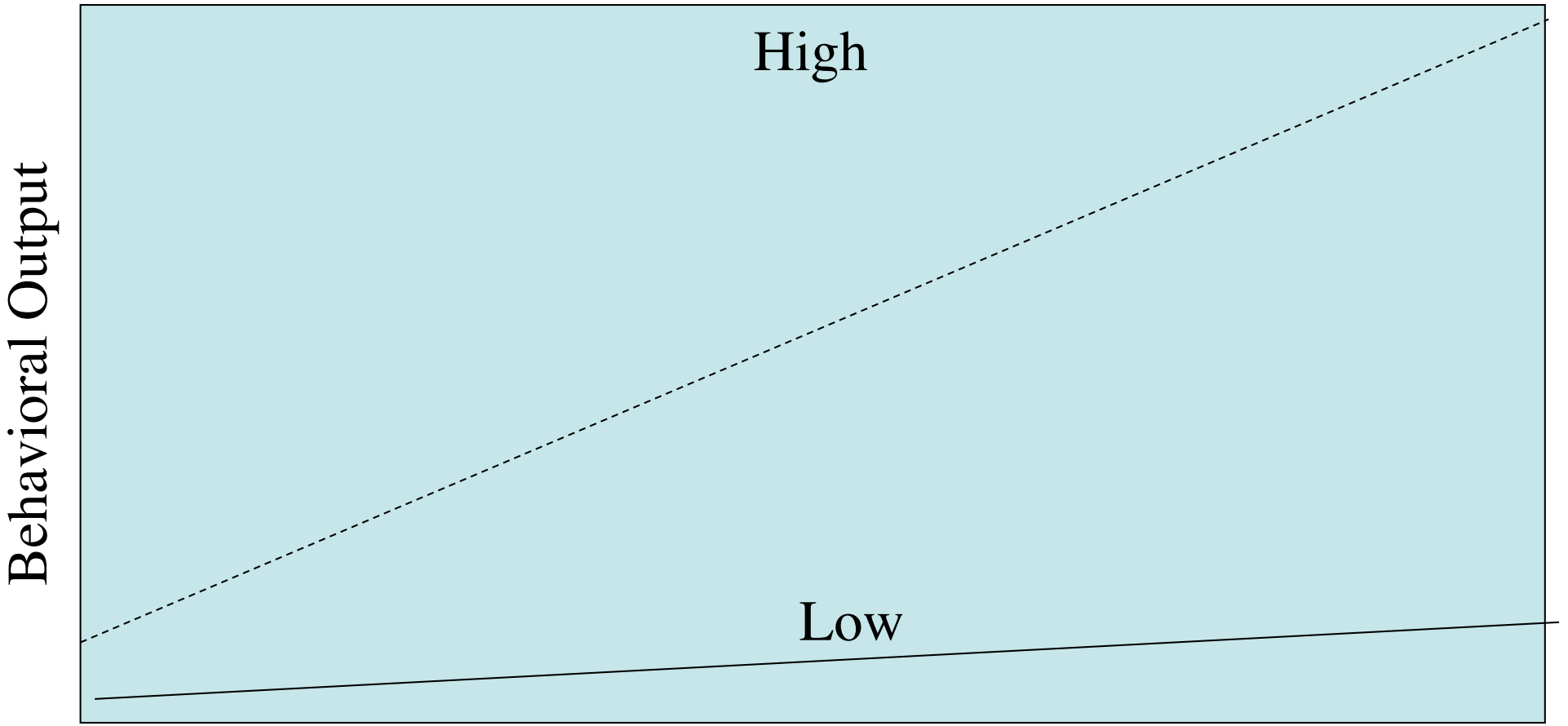
Types of Relationships: Behavior = f_1(Situation)+f_2(Person)



Probability of college = f_1(income) + f_2(ability)

Types of Relationships:

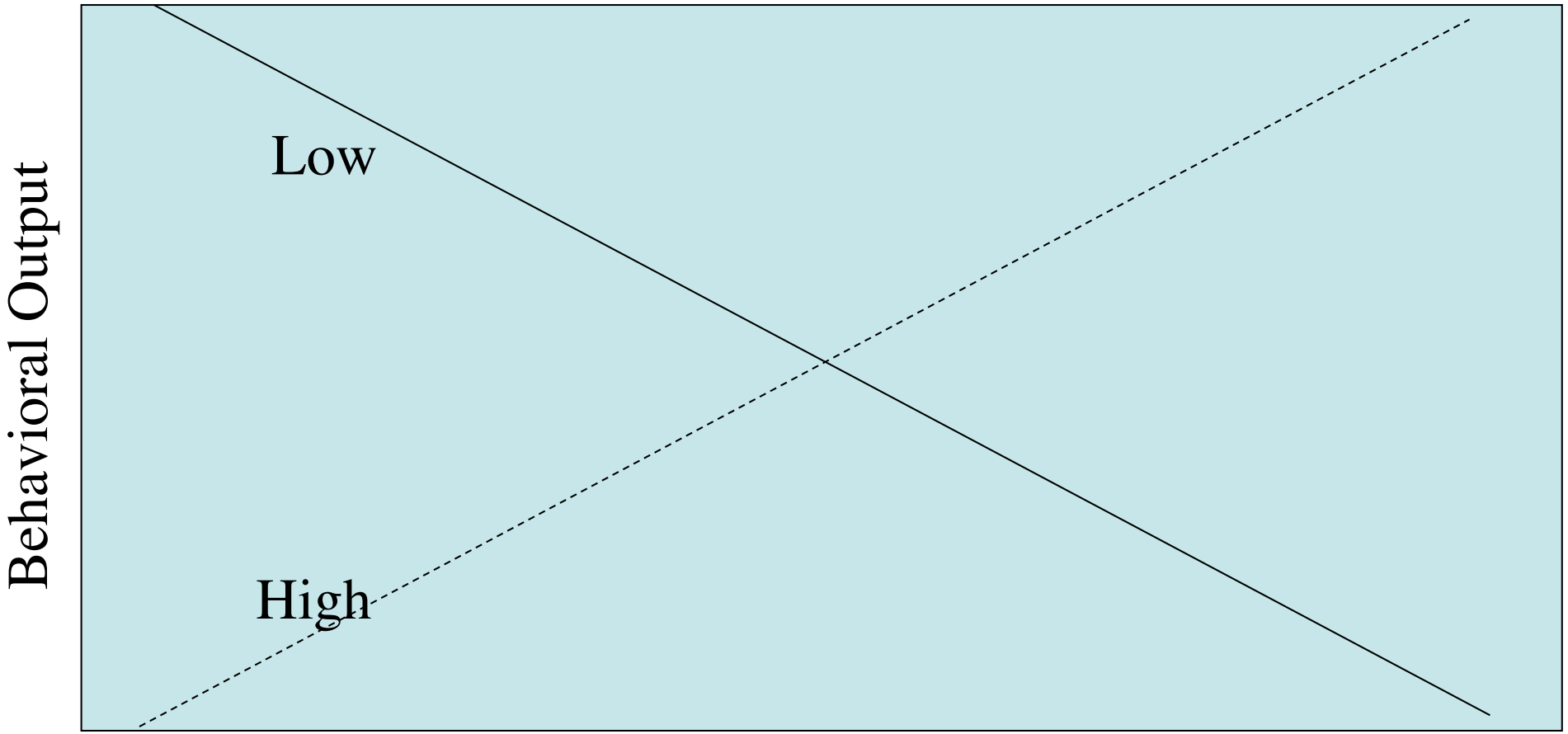
Behavior = f1(Situation)+f2(Personality)+
f3(Situation*Personality)



Avoidance = f1(shock intensity)+f2(anxiety) + f3(shock*anxiety)

Reading = f1(sesame street) = f2(ability) + f3(ss * ability)

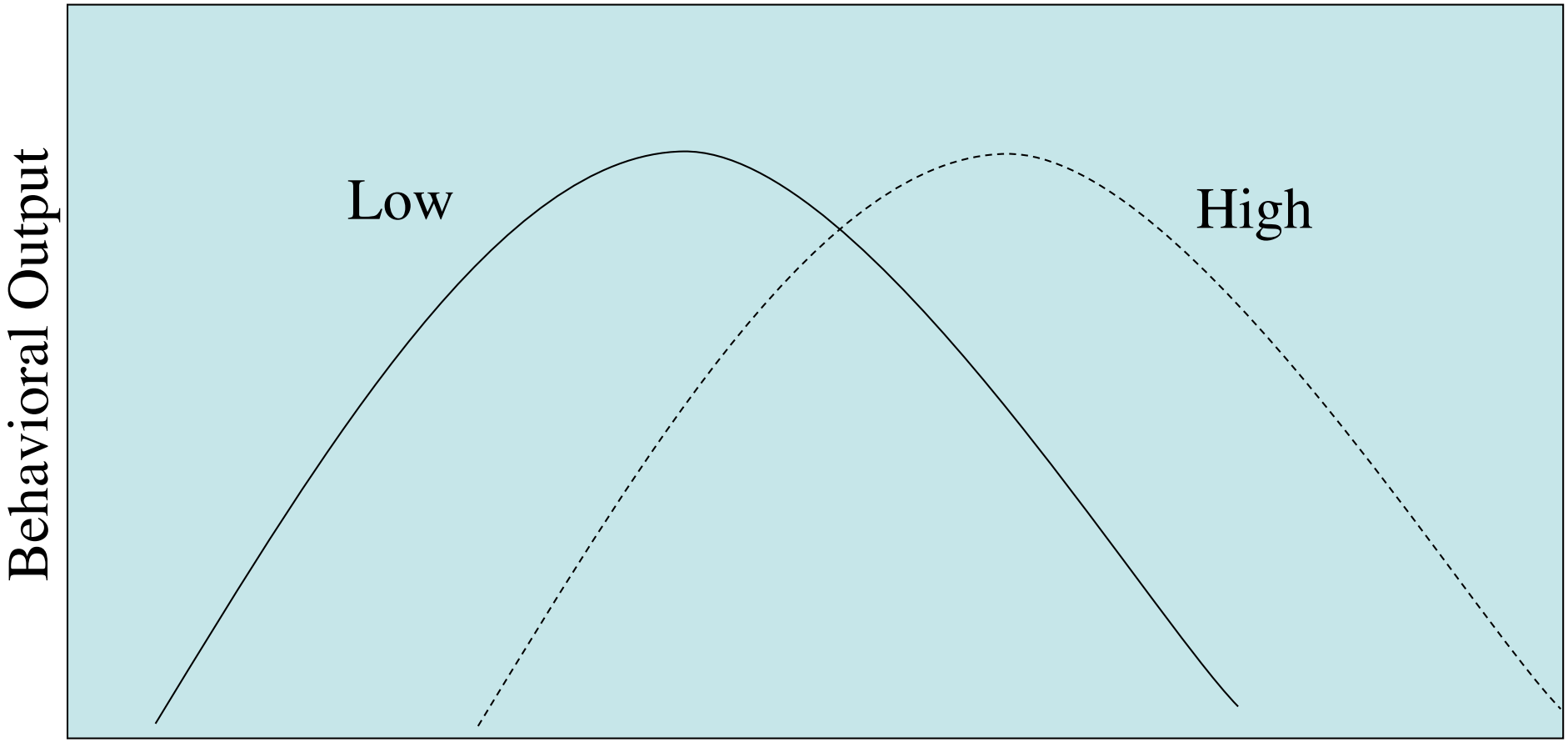
Types of Relationships: Behavior = f(Situation*Person)



Eating = f(preload * restraint)

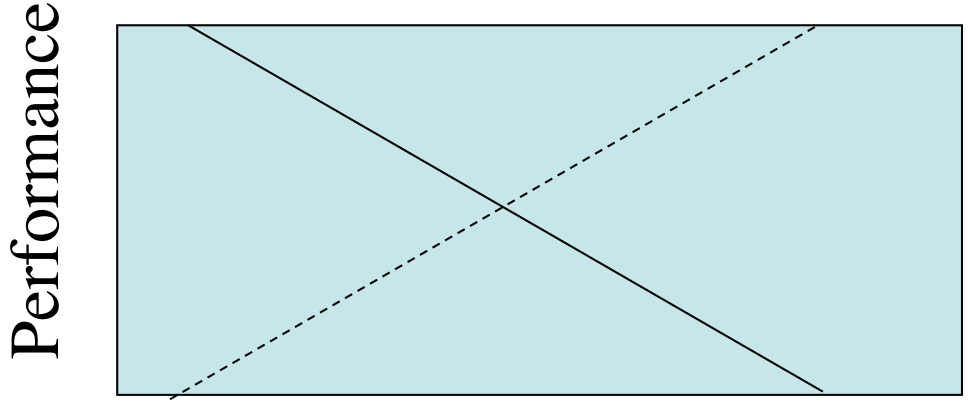
GRE = f(caffeine * impulsivity)

Types of Relationships: Behavior = f(Situation*Person)



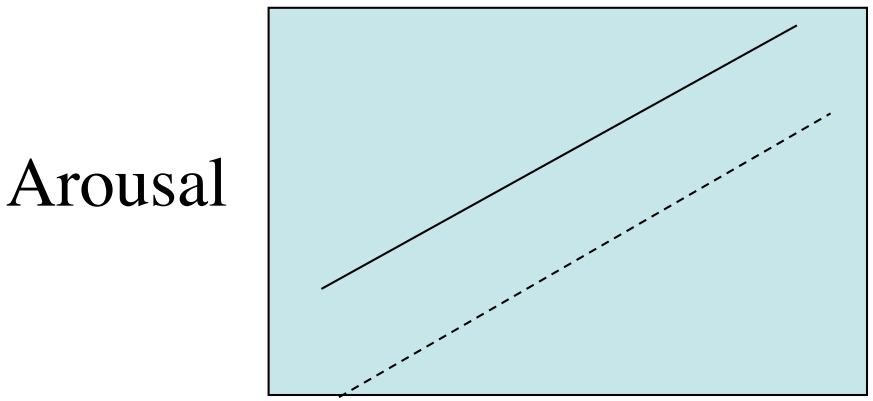
GRE = f(caffeine * impulsivity)

Persons, Situations, and Theory

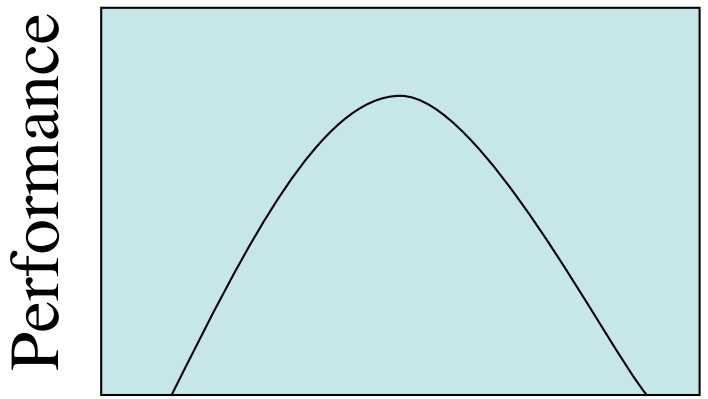


Observed relationship

Individual Difference



General Law



Place of personality in psychology

1. The study of personality is the core discipline of psychology
2. Personality is the coherent patterning of affect, behavior, cognition and desire (ABCD)
3. Five meta questions asked by personality research
4. Two approaches to the field (descriptive vs. causal)
5. Personality is the integration of multiple (brain) systems

Multiple approaches to personality

1. Psychology of the individual
   - Consistency and change in the life of a person
   - Coherence over situations and time
2. Individual differences
   - How many dimensions are needed?
   - What are they?
3. Stability of individual differences over time
   - Does knowing about individuals in one situation predict anything about other situations?

Multiple approaches to personality

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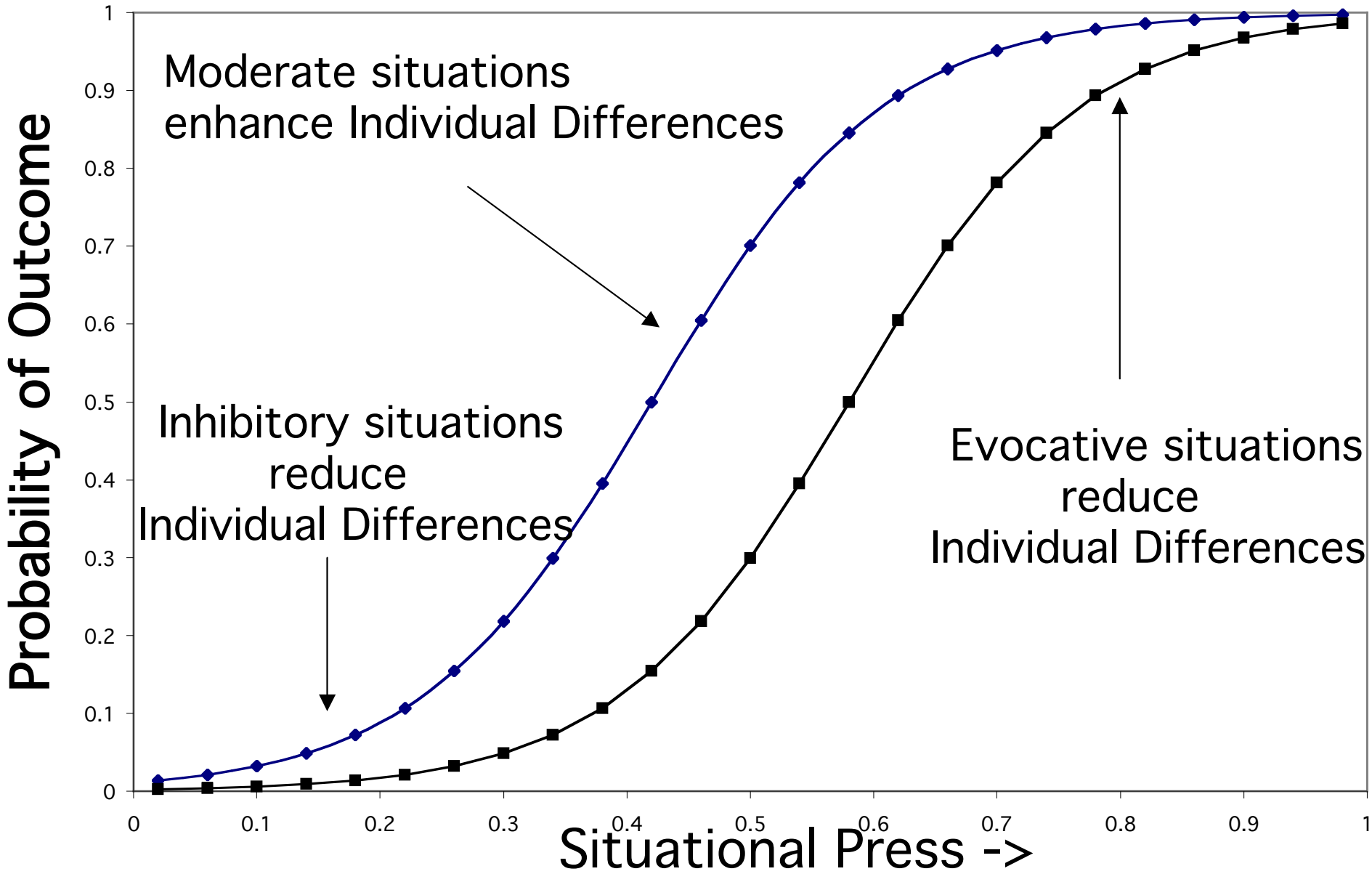
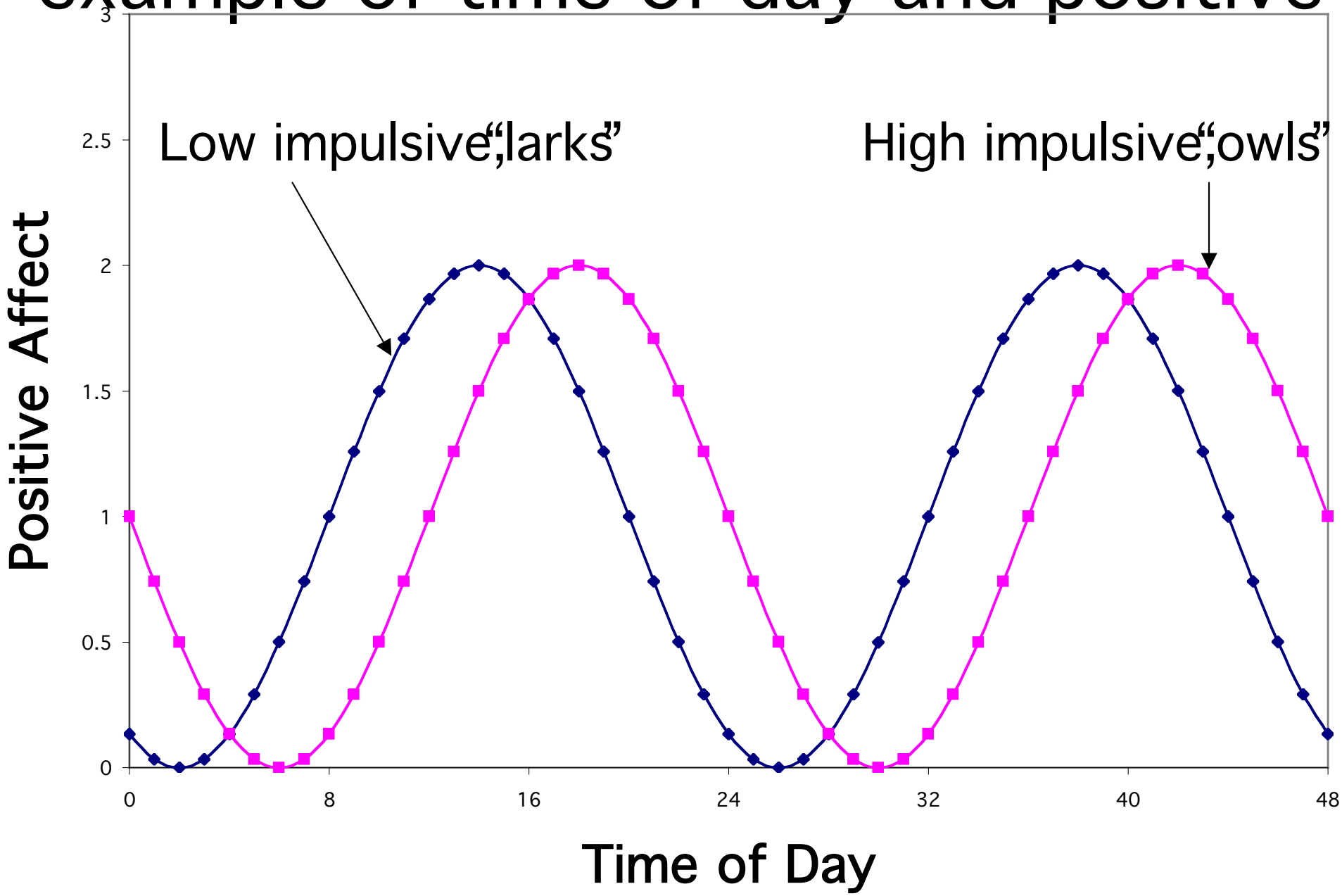
Personality Consistency: the power of the situation



Coherency of individual differences: example of time of day and positive a



Conley's meta analysis of personality stability

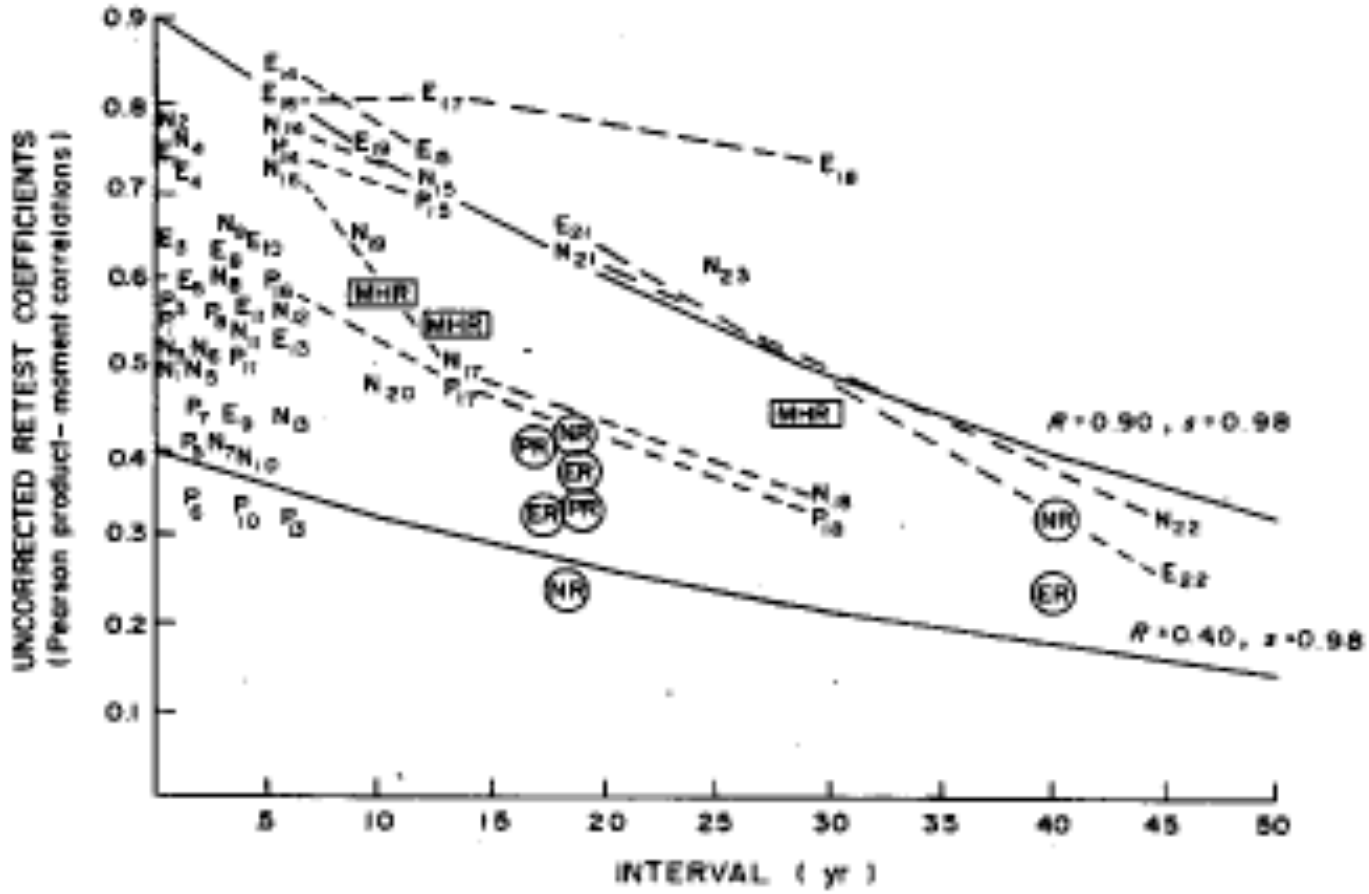


Fig. 3. Results of longitudinal studies of personality traits. (Numbers correspond to those in Table 3. N = neuroticism, E = extraversion, P = psychoticism.)

Year to year correlations (correcting for initial reliabi

Years	1	5	10	20	30	40
Consistent	.98	.90	.82	.67	.55	.45

Early Personality Research

I. Gideon

II. Plato

III. Theophrastus

IV. Hippocrates/Galen

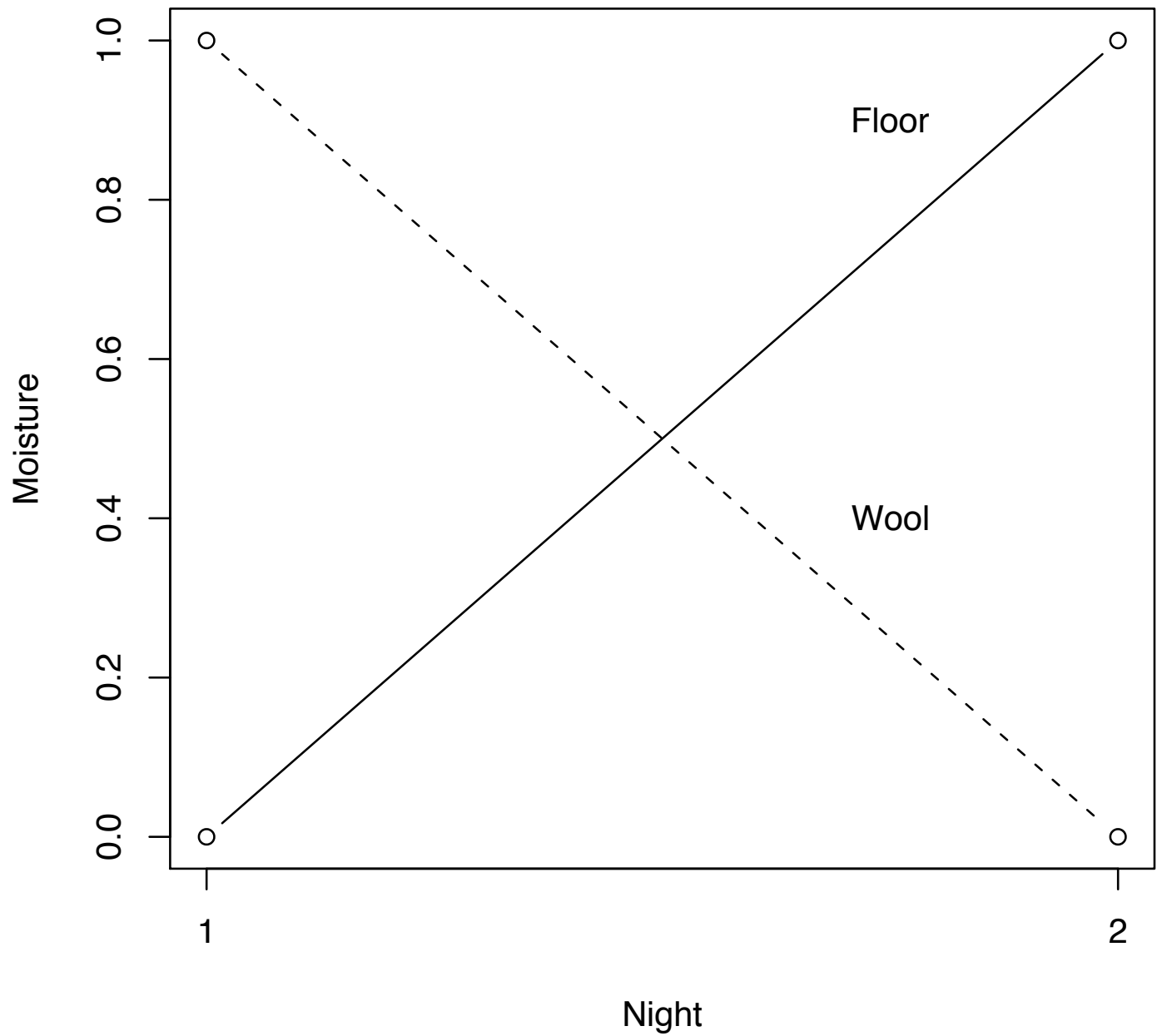
V. Galton/Wundt/Heymans

Gideon, master methodologist

I. introduced the within subjects design

II. recognized the power of cross over interactions

III. was not afraid of asking hard questions



Gideon's tests for God are an early example of a double dissociation and probably the first published example of a cross over interaction. On the first night, the wool was wet but the floor was dry. On the second night, the floor was wet but the wool was dry (Judges 6:36-40)

Gideon and assessment

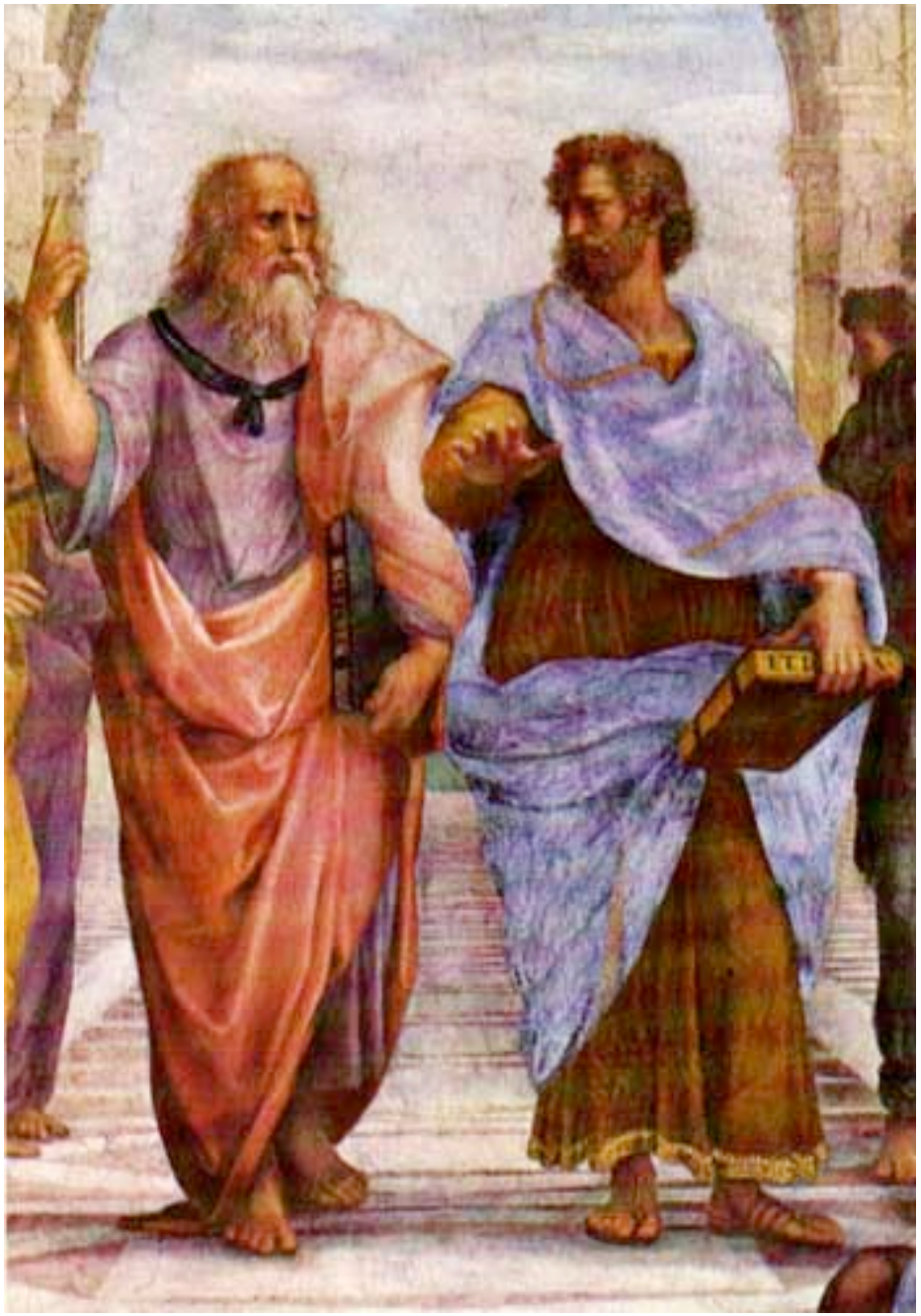
I. The problem: 32,000 volunteers were too many for purpose

II. Solution: Sequential Affective and Cognitive Assessment

A) 10,000 passed the affective test (step back if you are afraid)

B) 300 passed the cognitive assessment (lapping water like a dog showing battlefield skill)

Gideon’s assessment technique



Plato's contribution to psychometrics and personality assessment

Plato's contribution to psychometrics and assessment

I. True Score theory

II. The Allegory of the Cave and latent variable analysis

III. The Republic: leadership effectiveness and the Giant 3: the role of intelligence, anxiety and impulsivity

Plato and latent variables: The allegory of the cave

Suppose that there is a group of human beings who have lived their entire lives trapped in a subterranean chamber lit by a large fire behind them. Chained in place, these cave-dwellers can see nothing but shadows (of their own bodies and of other things) projected on a flat wall in front of them. Some of these people will be content to do no more than notice the play of light and shadow, while the more clever among them will become highly skilled observers of the patterns that most regularly occur. In both cases, however, they cannot truly comprehend what they see, since they are prevented from grasping its true source and nature. (Republic 514a)

Plato and leadership

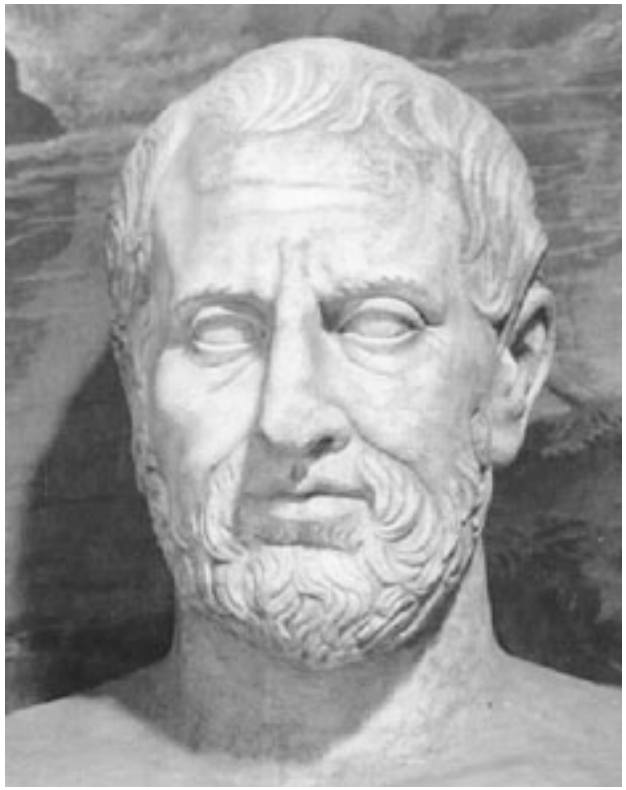
"... quick **intelligence**, **memory**, sagacity, **cleverness**, and similar qualities, do not often grow together, and that persons who possess them and are at the same time high-spirited and magnanimous are not so constituted by nature as to live orderly and in a peaceful and settled manner; they are driven any way by their **impulses**, and all solid principle goes out of them.

On the other hand, those steadfast natures which can better be depended upon, which in a battle are **impregnable to fear** and immovable, are equally immovable when there is anything to be learned; they are always in a torpid state, and are apt to yawn and go to sleep over any intellectual toil.

And yet we were saying that both qualities were necessary in those to whom the higher education is to be imparted, and who are to share in any office or command.

And will they be a class which is rarely found?

Then the aspirant must not only be tested in those labours and dangers and pleasures which we mentioned before, but there is another kind of probation which we did not mention--he must be exercised also in many kinds of **knowledge**, to see whether the soul will be able to endure the highest of all, or will faint under them, as in any other studies and exercises."



Tyrtamus of Lesbos (Theophrastus) biological taxonomist and taxonomist of character

Theophrastus: behavior genetics and taxonomic theory

"Often before now have I applied my thoughts to the puzzling question -- one, probably, which will puzzle me for ever -- why it is that, while all Greece lies under the same sky and all the Greeks are educated alike, it has befallen us to have characters so variously constituted."

Theophrastus, Chaucer and personality taxonomy

I. Theophrastus and the characters

II. Chaucer and the Cantebury Tales

Theophrastus meets Goldberg

Extraversion	Agreeableness	Conscientious	Neuroticism	Openness
Talkative	Sympathetic	Organized	Tense	Wide Interests
Assertive	Kind	Thorough	Anxious	Imaginative
Active	Appreciative	Planful	Nervous	Intelligent
Energetic	Affectionate	Efficient	Moody	Original
-Quiet	-Cold	-Careless	-Stable	-Commonplace
-Reserved	-Unfriendly	-Disorderly	-Calm	-Simple
Talker	Anxious to please	-Hostile	Coward	-Stupid
Chatty	Flatterer	-Shameless	Grumbler	-Superstitious
Boastful	-Unpleasant	-Distrustful	Mean	-Boor
Arrogant	-Outcast	-Avaricious	Unseasonable	-Gross

Goldberg, L. (1990); John, O. (1990); Theophrastus (372-287 BCE)

The biological basis of individual differences

I. Plato and the 3 domains of psychological research

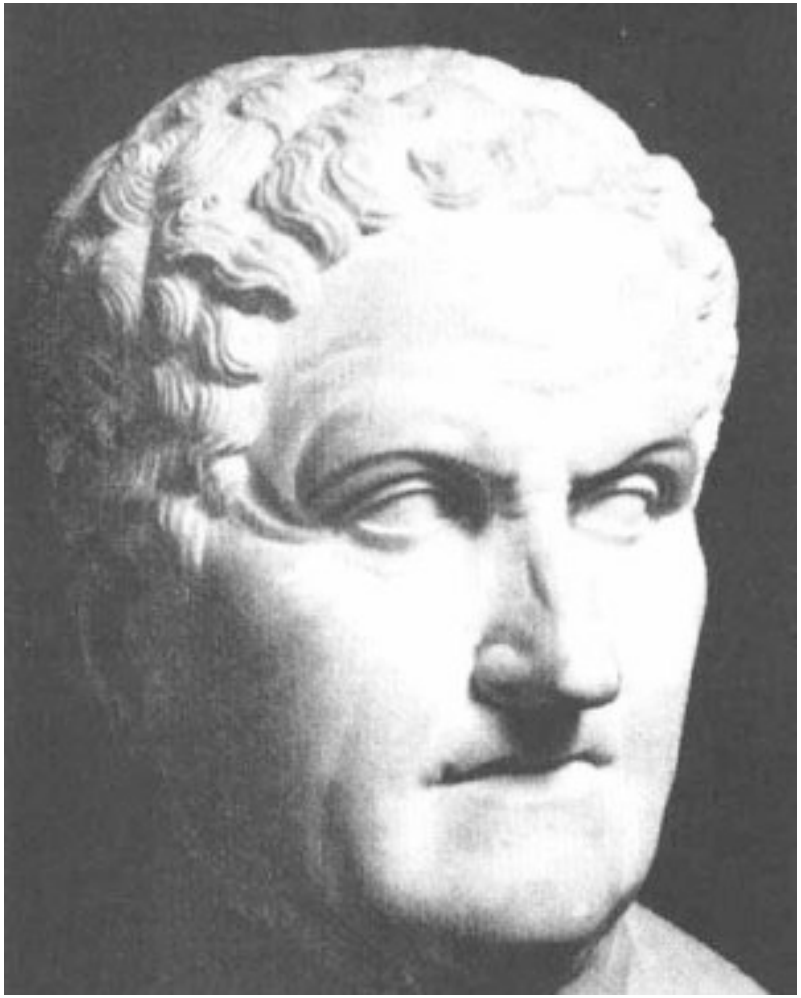
A) Reason and the brain

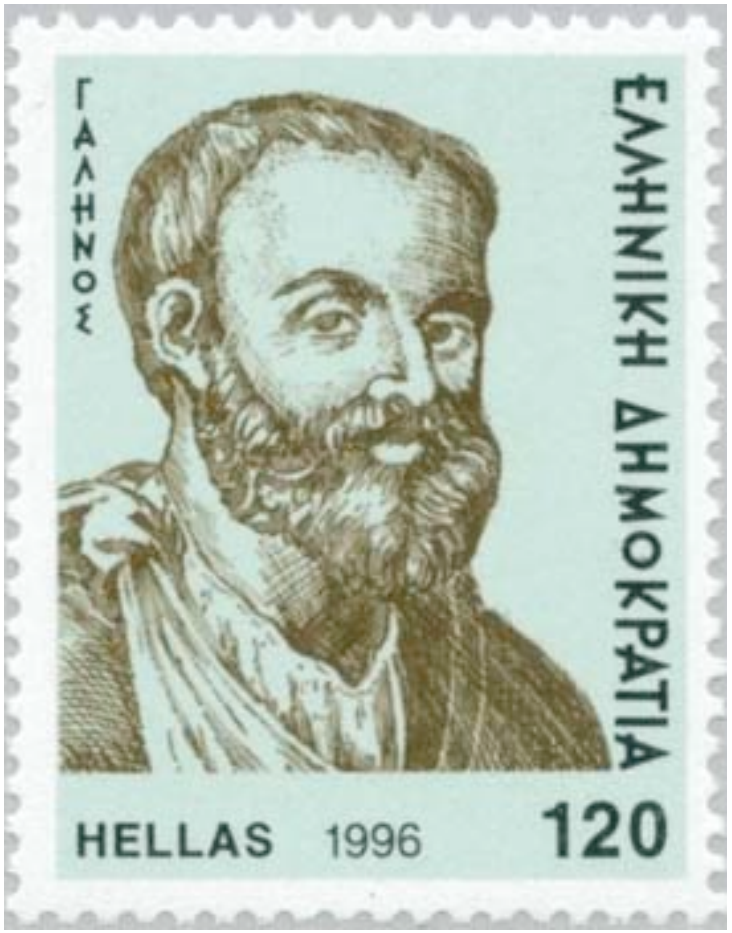
B) Emotion and the heart

C) Desire and the liver

II. Hippocrates/Galen and theories of temperament

Galen of Pergamum

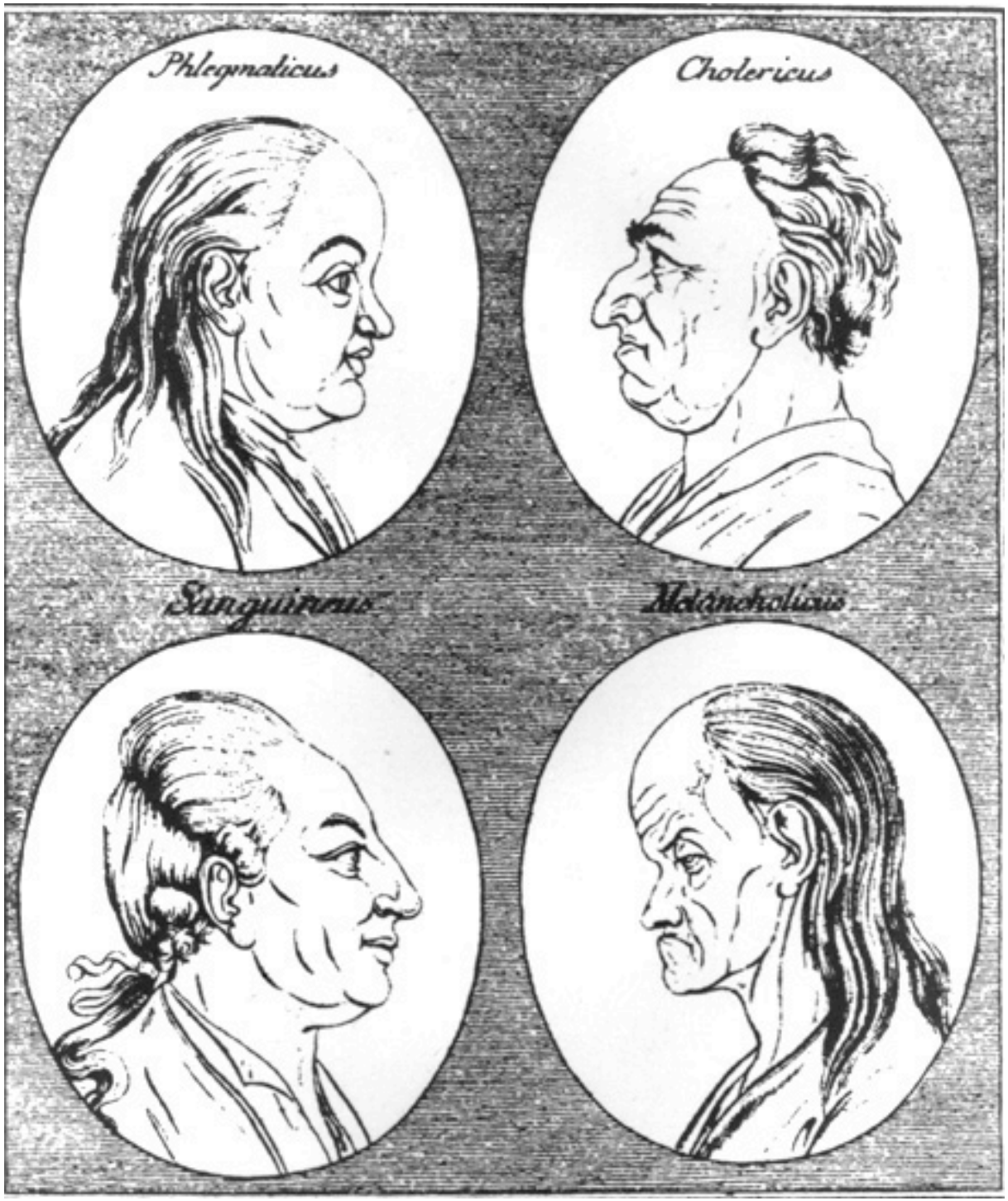


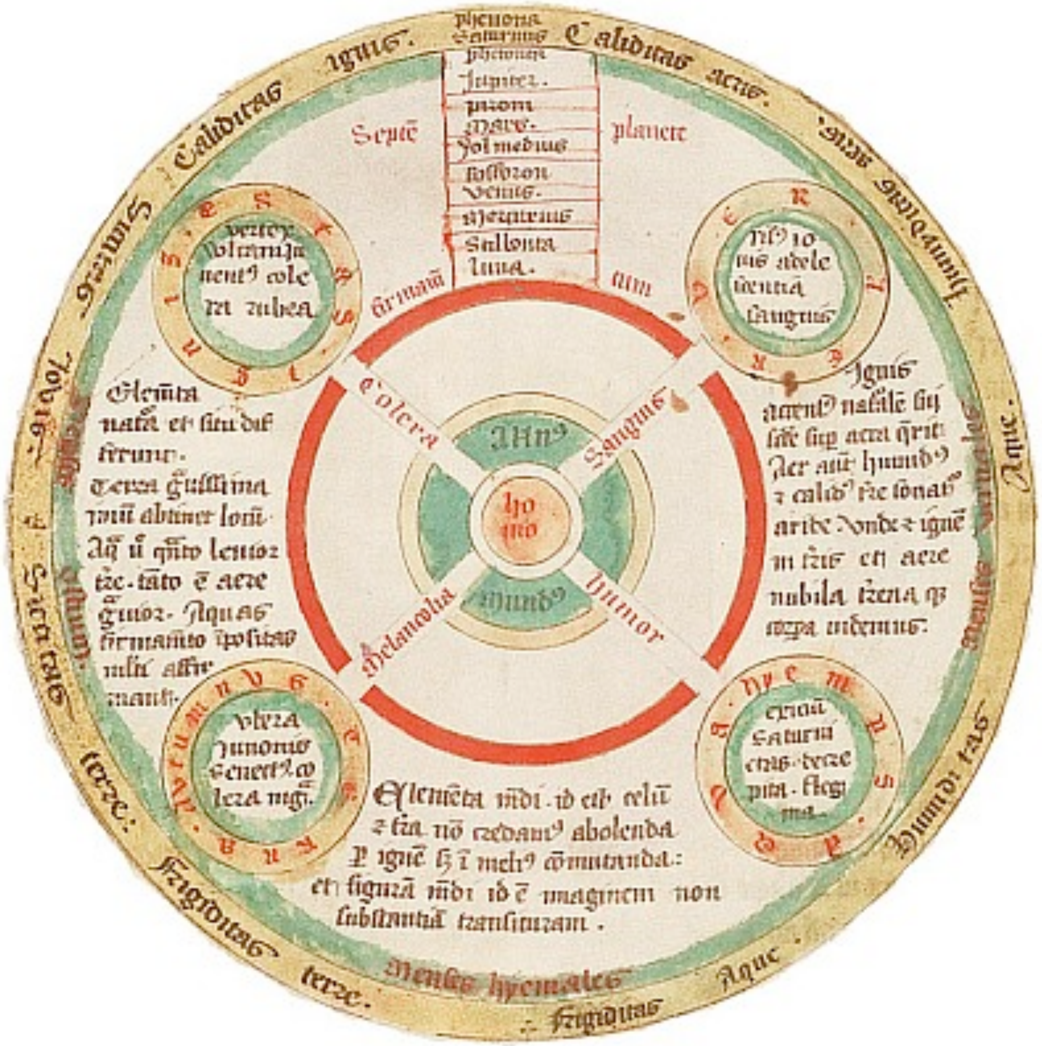


4 temperaments of Galen/Kant a recurring taxonomy

"element"	Physiological basis	Temperament
Fire	Yellow Bile	Choleric
Water	Phlegm	Phlegmatic
Air	Blood	Sanguine
Earth	Black Bile	Melancholic

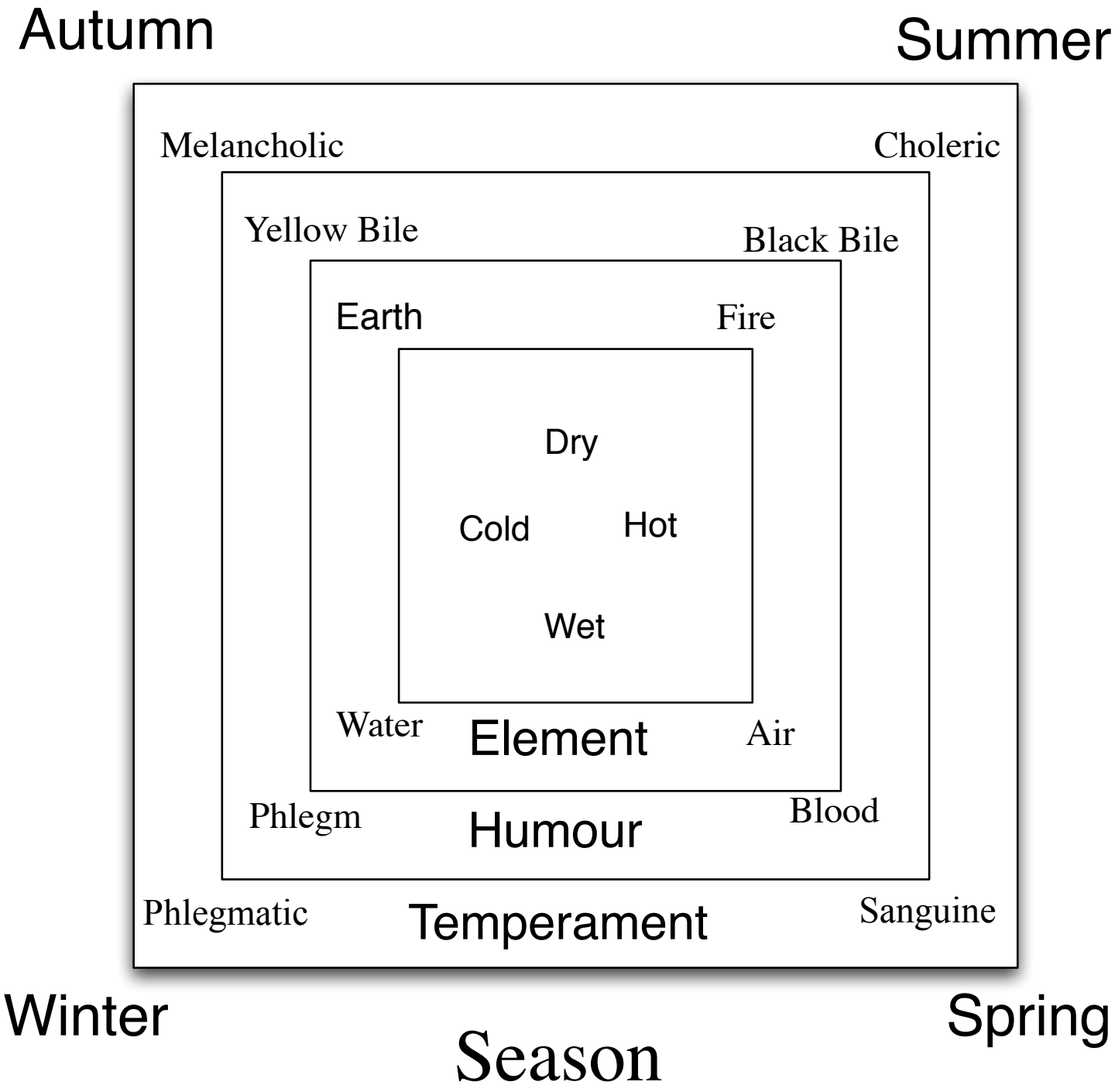
Multiple representations of the 4 temperaments


Phlegmaticus
Cholericus
Sanguineus
Melancholicus

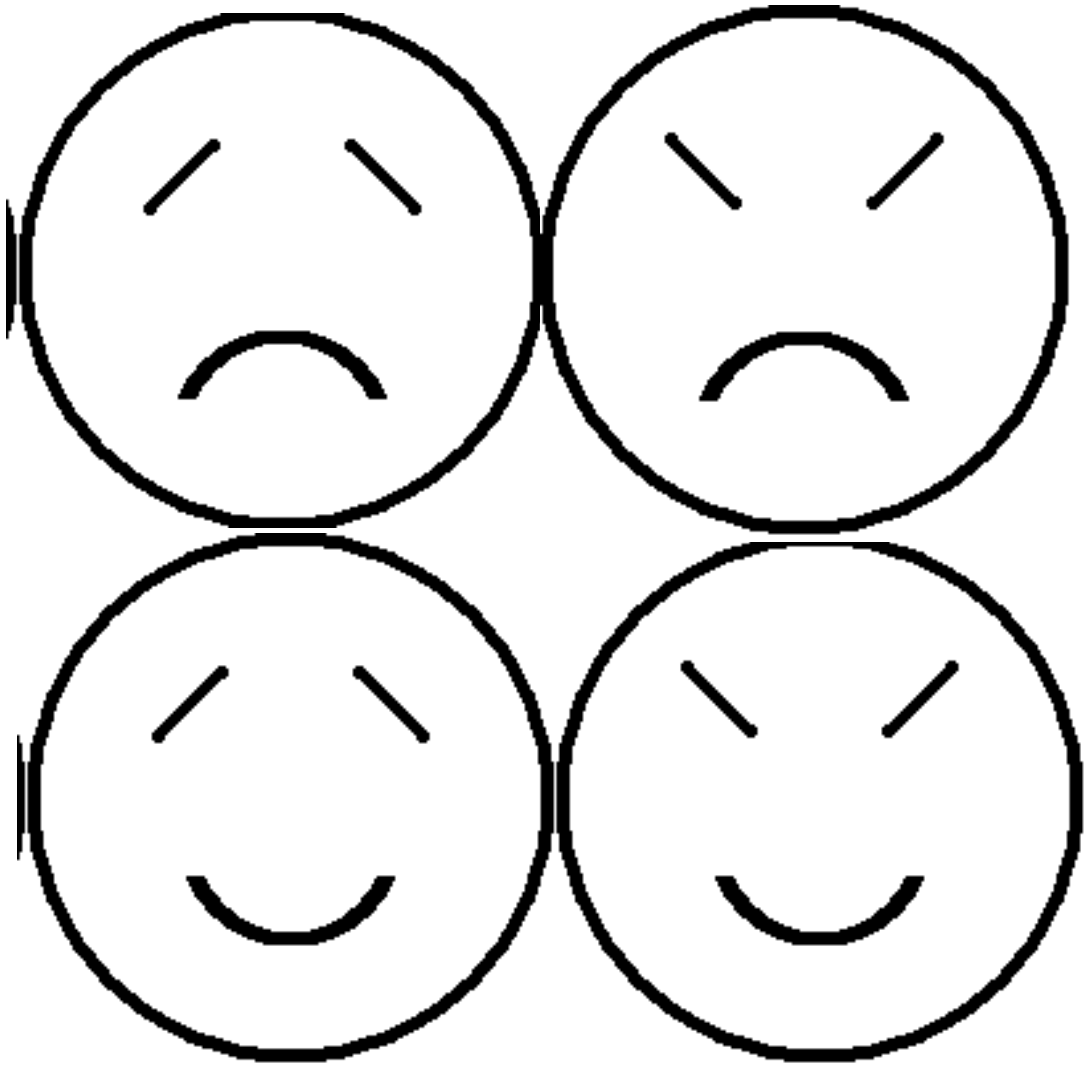


Caliditas ignis.
Caliditas aeris.
Septe
planete
Saturnus
Jupiter.
Mars.
Sol medius
Venus.
Mercurius
Luna.
Colera
Sanguis
Homo
Mundus
Melancolia
Humor
Menses hyemales
Frigiditas terre.
Frigiditas
Aque.

Astrology and the four temperaments



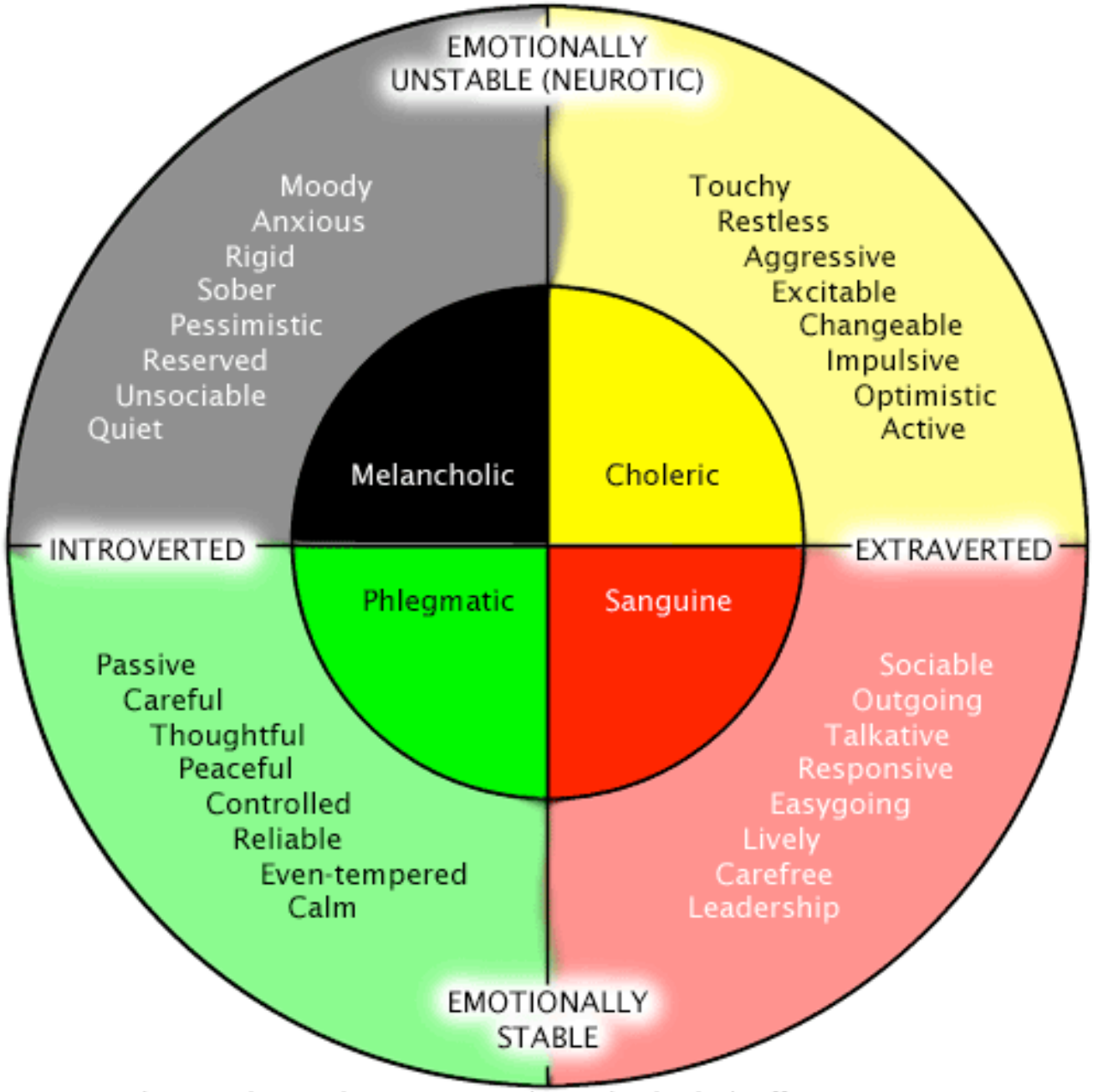
Interest in the 4 temperaments continues today (c.f. wiki)



Wundt's dimensionsal analysis

	Changeability	
Exciteability	Melancholic	Choleric
	Phlegmatic	Sanguine

Eysenck's dimensional organization



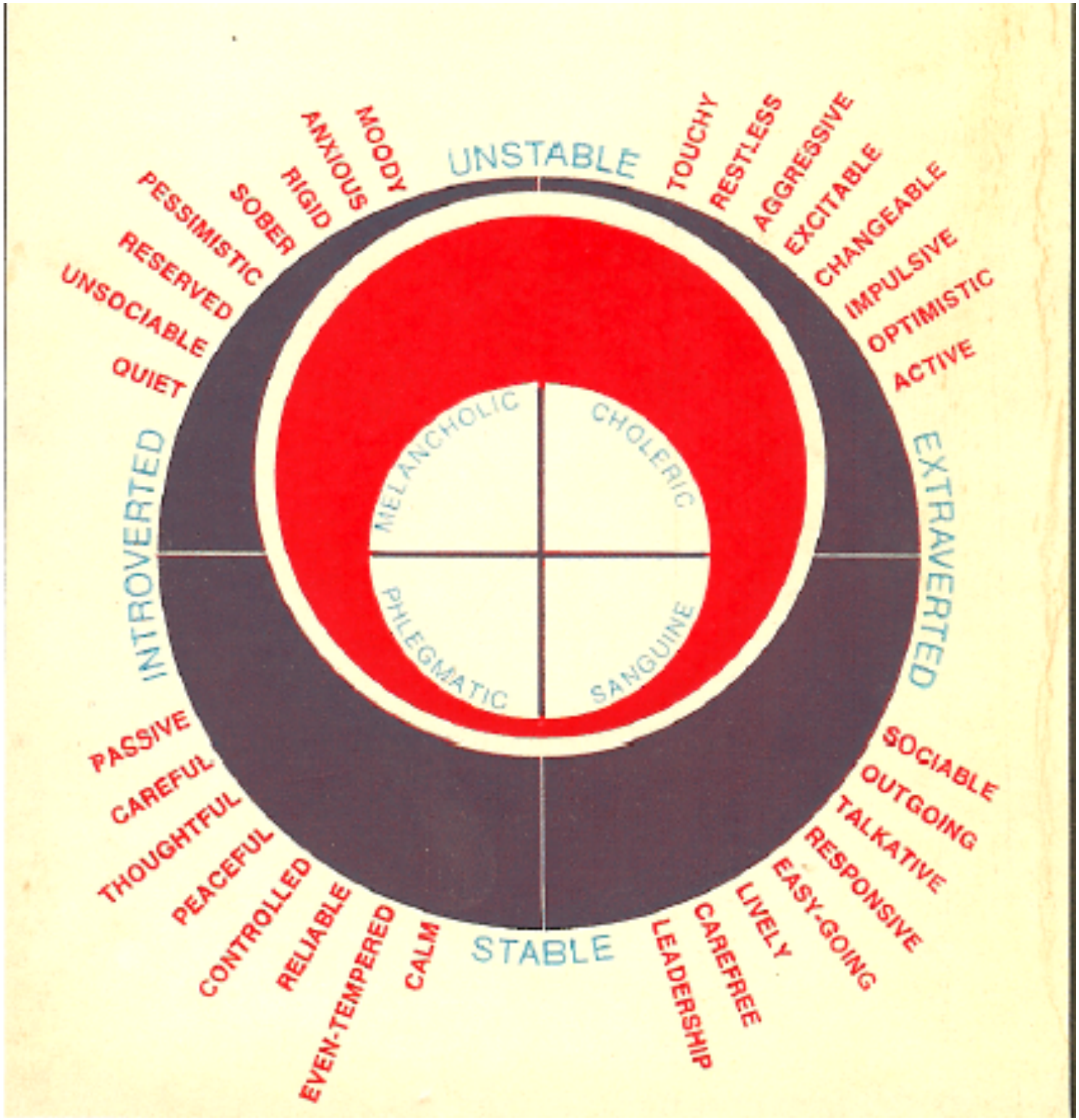
Eysenck, H.J and Eysenck, M.W. *Personality and Individual Differences.*

Melancholic

Choleric

Phlegmatic

Sanguine


UNSTABLE
MOODY
ANXIOUS
RIGID
SOBER
PESSIMISTIC
RESERVED
UNSOCIABLE
QUIET
INTROVERTED
PASSIVE
CAREFUL
THOUGHTFUL
PEACEFUL
CONTROLLED
RELIABLE
EVEN-TEMPERED
CALM
STABLE
LEADERSHIP
CAREFREE
LIVELY
EASY-GOING
RESPONSIVE
TALKATIVE
OUTGOING
SOCIABLE
EXTRAVERTED
ACTIVE
OPTIMISTIC
IMPULSIVE
CHANGEABLE
EXCITABLE
AGGRESSIVE
RESTLESS
TOUCHY
MELANCHOLIC
CHOLERIC
PHLEGMATIC
SANGUINE

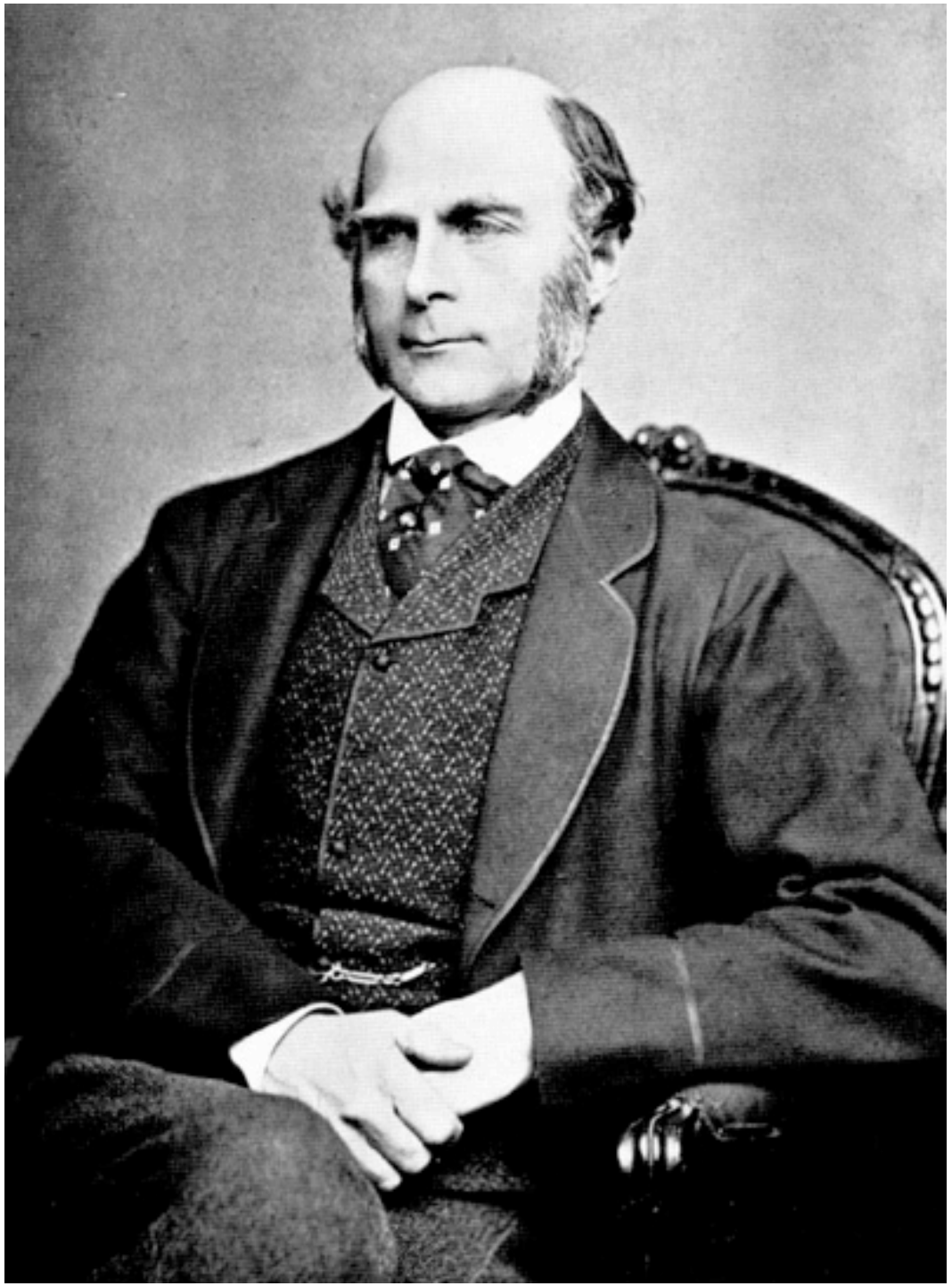
Individual differences come of age:
Measurement and experiments

I. Francis Galton and regression

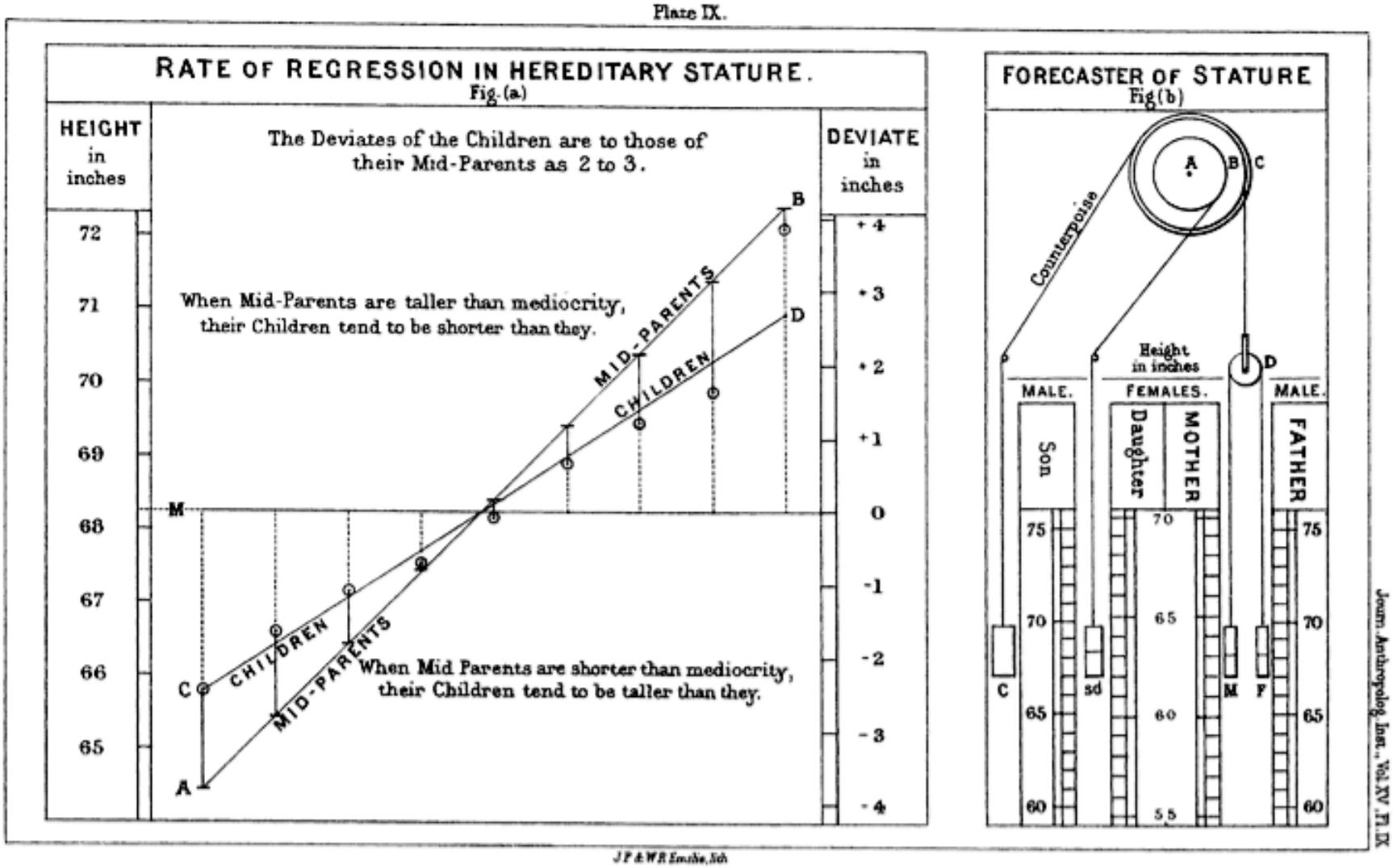
II. Wilhelm Wundt and experimental methods

Francis Galton 1822-1911

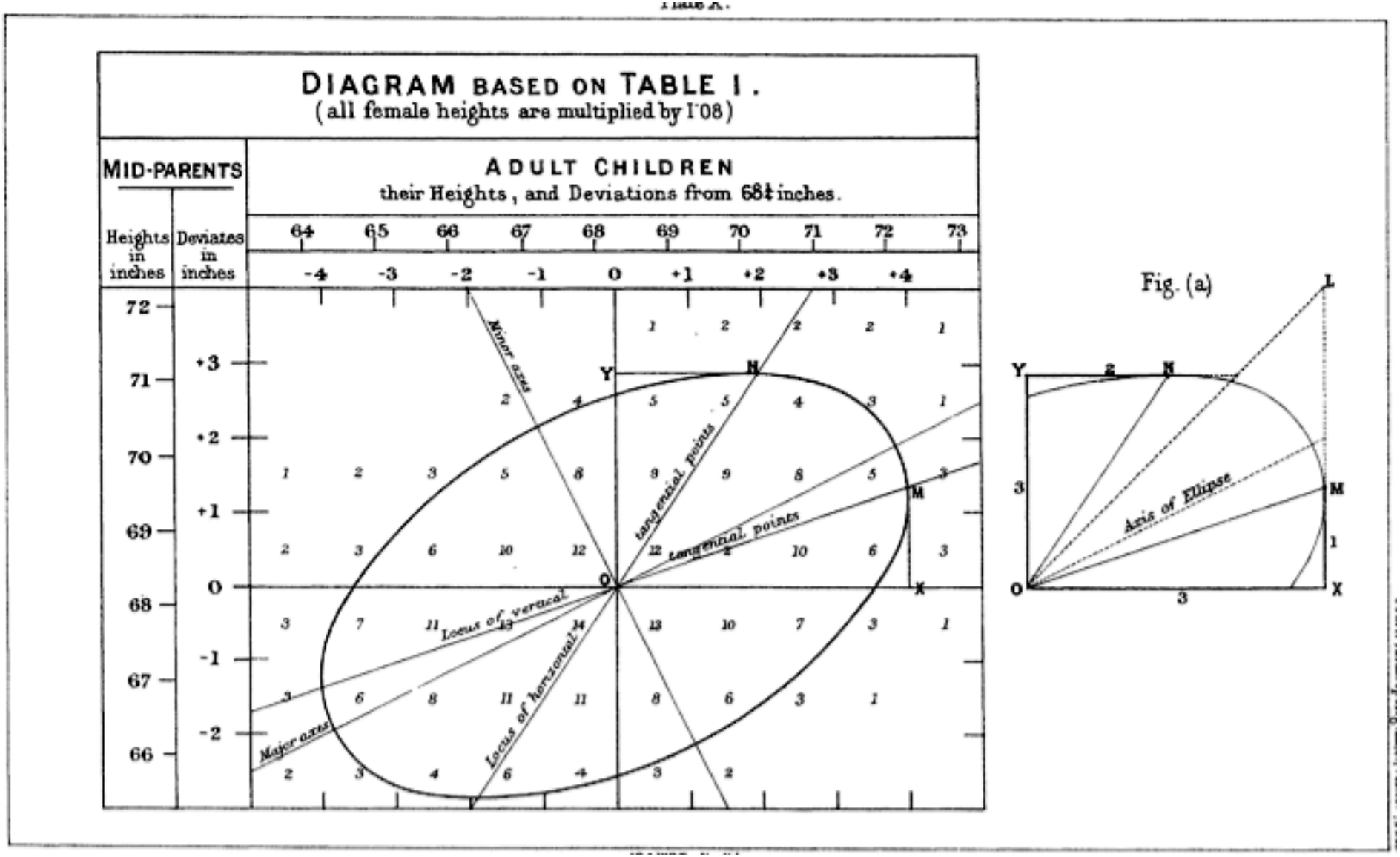
- Study of Hereditary Genius
- Regression
- Individual Differences



Galton and Regression



Galton and Regression

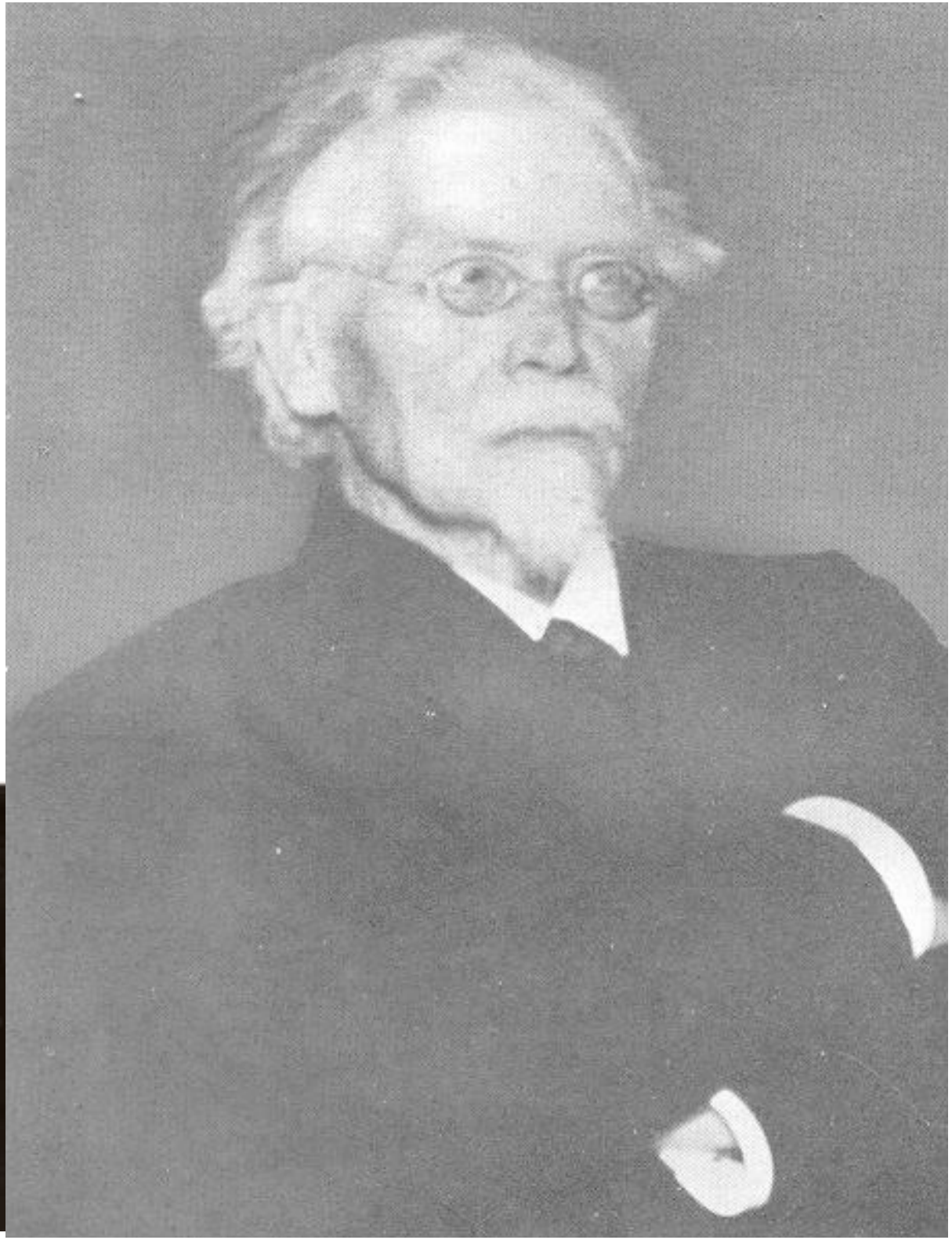


Wilhelm Wundt 1832-1920

- Basic Experimental Paradigm
- 3 factor theory of emotion
- Hedonic theory

Gerard Heymans (1857-1930)

- Empirically based research
- 3 dimensions of personality



Gerard Heymans (1857-1930)

- Empirically based research
  - 3000 (Dutch) doctors were asked to rate all members of a family on a large number of traits
  - ≈ 400 responded with ratings on 2,523 subjects
- Three dimensions
  - Emotionality or Emotional Instability
  - Activity or general drive
  - Dominance of primary or secondary functioning

Heymans' taxonomy

(from Eysenck, 1992)

	Emotionality	Activity	P/S	Jung
Apathetic	-	-	S	Sensitive I
Amorphous	-	-	P	Intuitive I
Phlegmatic	-	+	S	Intuitive E
Sanguine	-	+	P	Sensitive E
Passionate	+	+	S	Thinking E
Choleric	+	+	P	Feeling E
Sentimental	+	-	S	Feeling I
Nervous	+	-	P	Thinking I

Mid - late 20th Century Measurement and theory testing

I. John Atkinson

II. Donald Broadbent

III. Raymond Cattell

IV. Hans Eysenck

V. Jeffrey Gray

John Atkinson
1924-2003

I. Theory of Achievement Motivation

A) Individual differences and general laws

B) Theory testing through experimentation

II. Theory of the Dynamics of Action

C) Inertial properties of motivations and desires

D) Introduced the concept of personality traits as rates of change in psychological states

Donald E. Broadbent
1926-1993

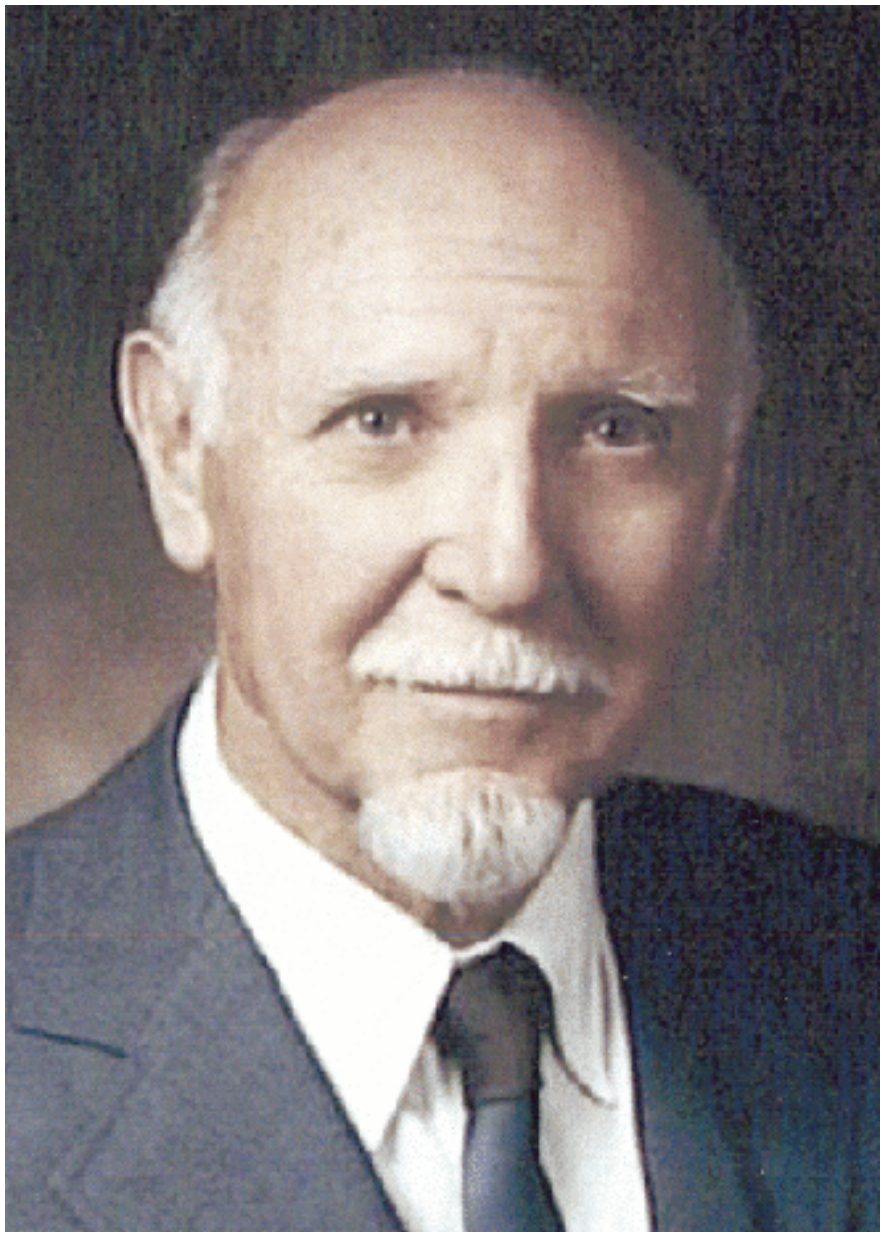
I. Cognitive experiments showed individual differences interacting with situational determinants of attention and performance

II. Experimental work on arousal theory inspired work by Eysenck and others

Raymond Cattell

1905- 1998

Founding President: Society for Multivariate Experimental Psychology

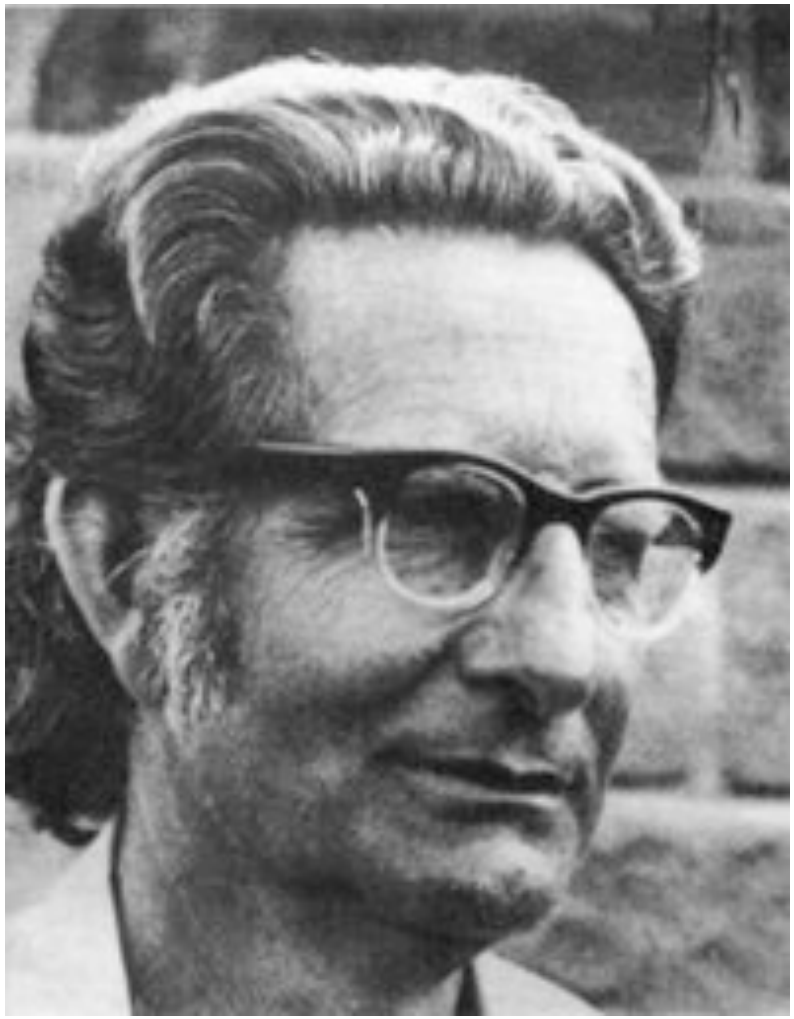


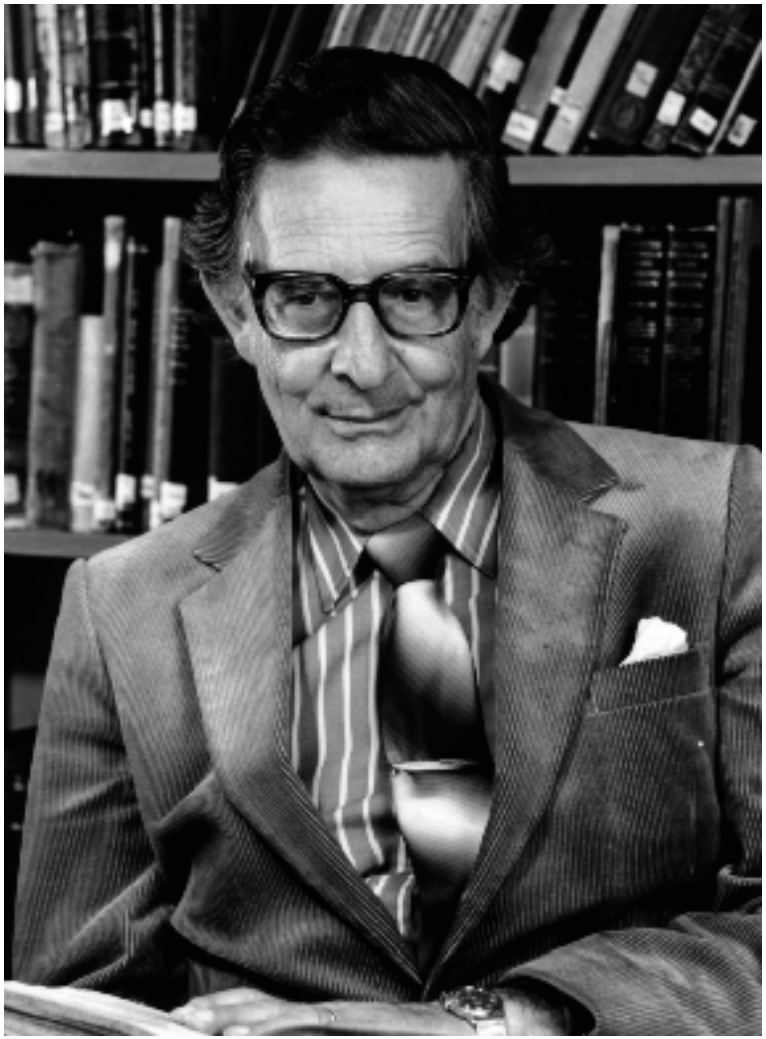
- Primarily multivariate, little "experimental"

Hans J. Eysenck

1916-1997

Founding President: International Society for the Study of Individual Differences





Cronbach, Eysenck and the two disciplines of scientific psychology

I. Cronbach (1957, 1975) and Eysenck (1966, 1983, 1997) argued for the unification of the two disciplines of experimental and correlational approaches

II. Is it possible?

III. Are we doing it?

Is it possible to do Experimental Personality?

I. Individuals can not be assigned to personality conditions

II. Experimental designs test person x condition interactions

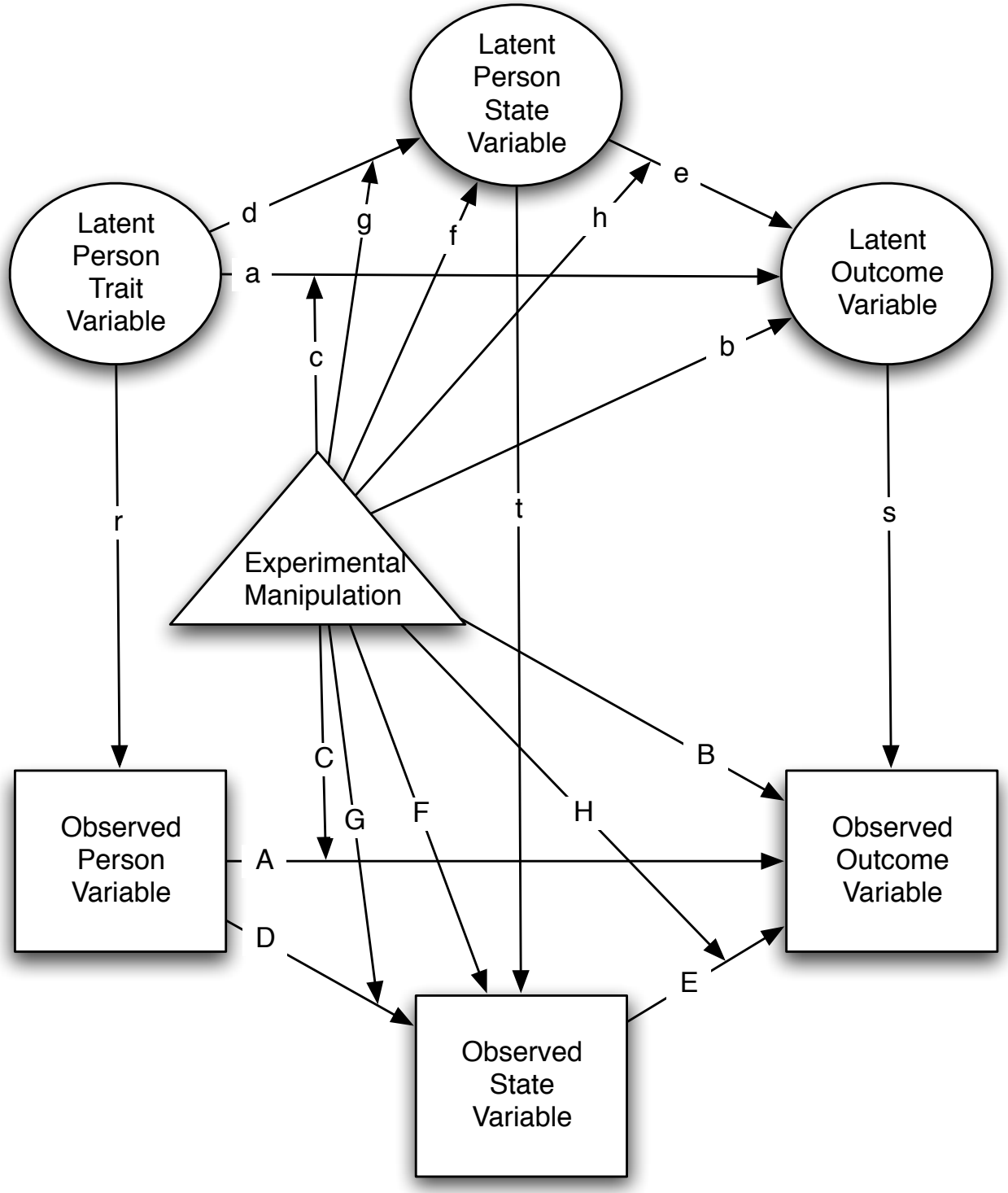
III. Can combine general laws with theories of individual differences

Few studies with experimental techniques or that study IQ are reported in our journals

Journal	Total	Exper.	IQ	Exp%	IQ%
EJP	68	0	2	0	3
JoP	125	7	1	6	1
JPSP	280	26	3	9	1
PaID	586	73	47	12	8
JRP	102	16	1	16	1
JPSP-PID	92	26	3	28	3

Revelle, W. and Oehlberg, K. (in press) Integrating experimental and observational personality research: the contribution of Hans Eysenck , Journal of Personality.

The basic logic of a personality experiment



Observed paths (A-H) are estimates of latent paths (a-h) and are affected by reliability (r, s, t)

Testing Personality Theory with experimental methods

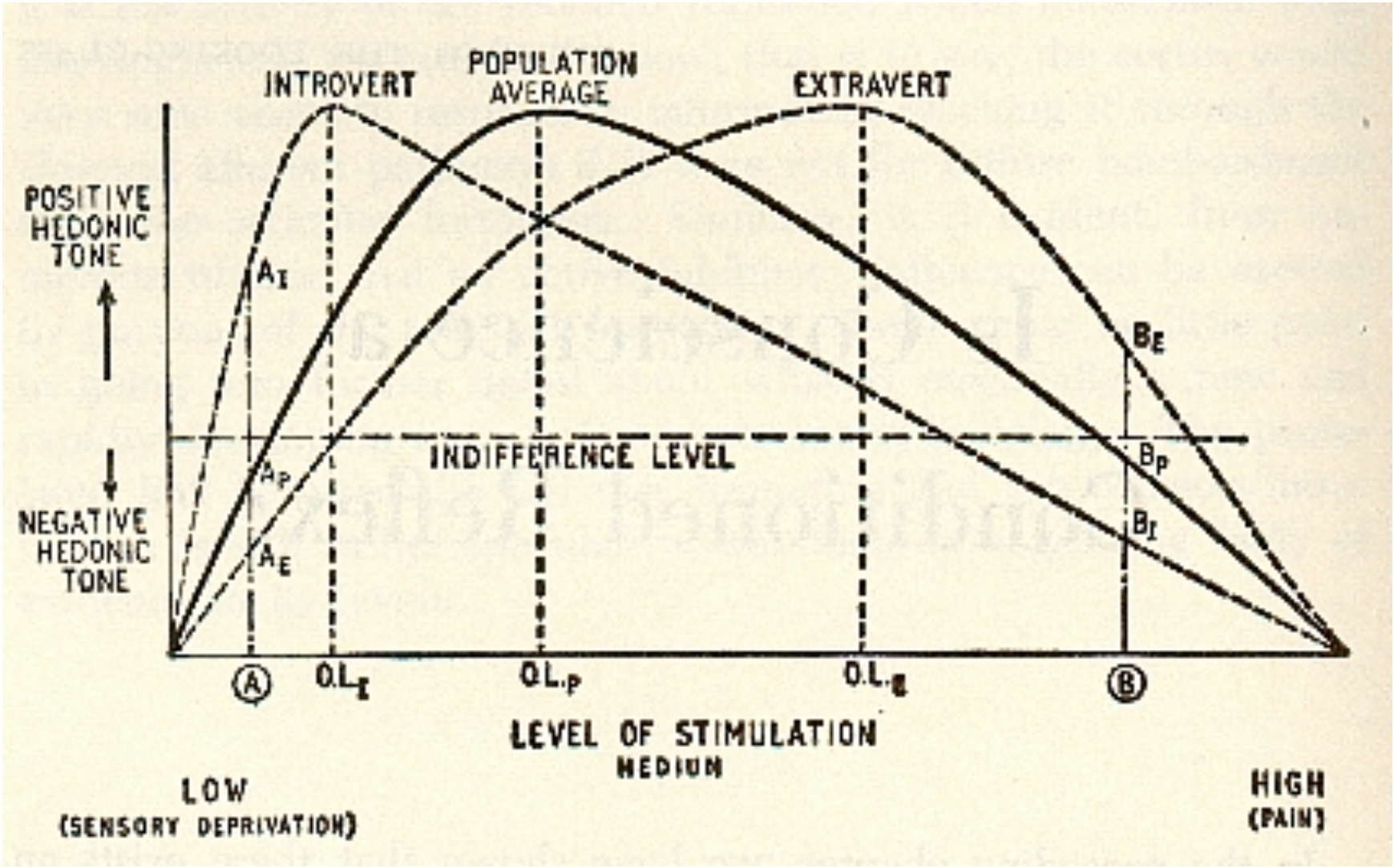
I. Eysenck's theory of extraversion and arousal

A) Preferences

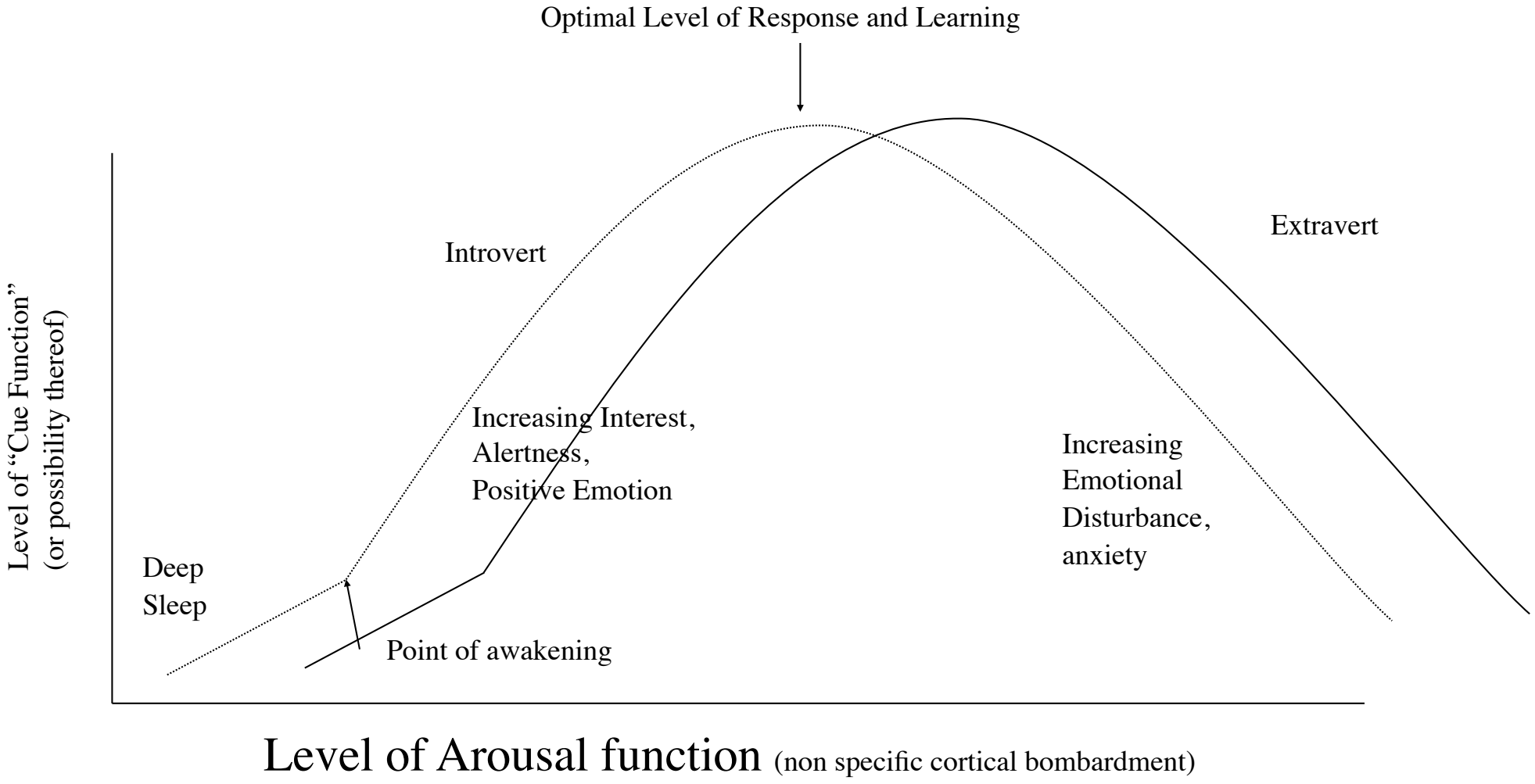
B) Performance

II. Gray's theory of sensitivity to reward and punishment cues

Eysenck and Wundt curve



Eysenck (1967) + Hebb (1954) + Yerkes/Dodson (1908)



Experiments test limits of generality

I. If a personality dimension interacts with a manipulation, then we are able to define the limits of the individual difference

II. Interactions allow us to exclude alternative hypotheses

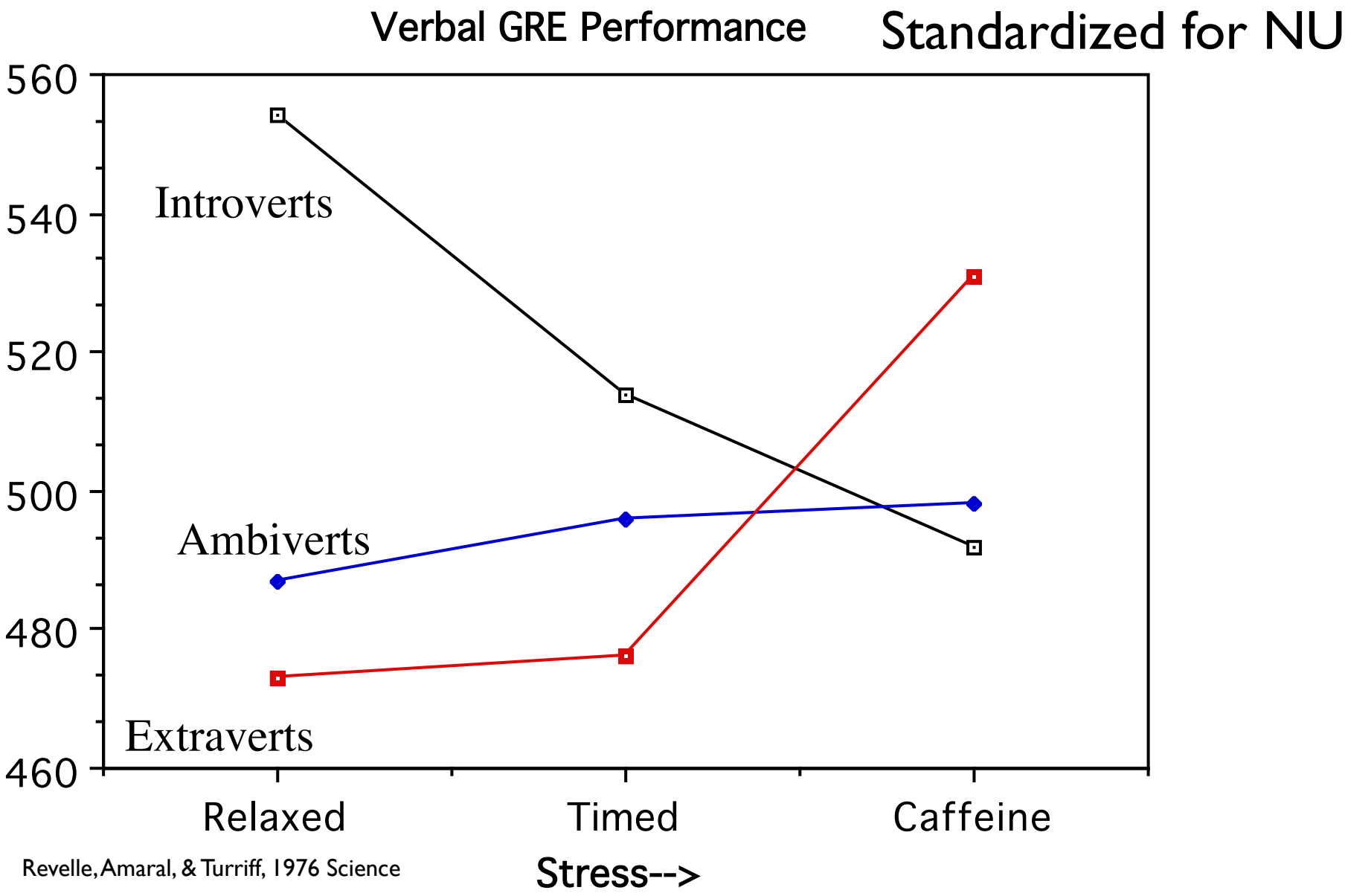
Introversion and cognitive performance

I. Introverts do better on exams in relaxed conditions than extraverts.

II. Is this because they are smarter?

III. No, because experimentally we can show this effect reverses under time stress and caffeine

Introversion, time pressure, and caffeine: effect on verbal performance



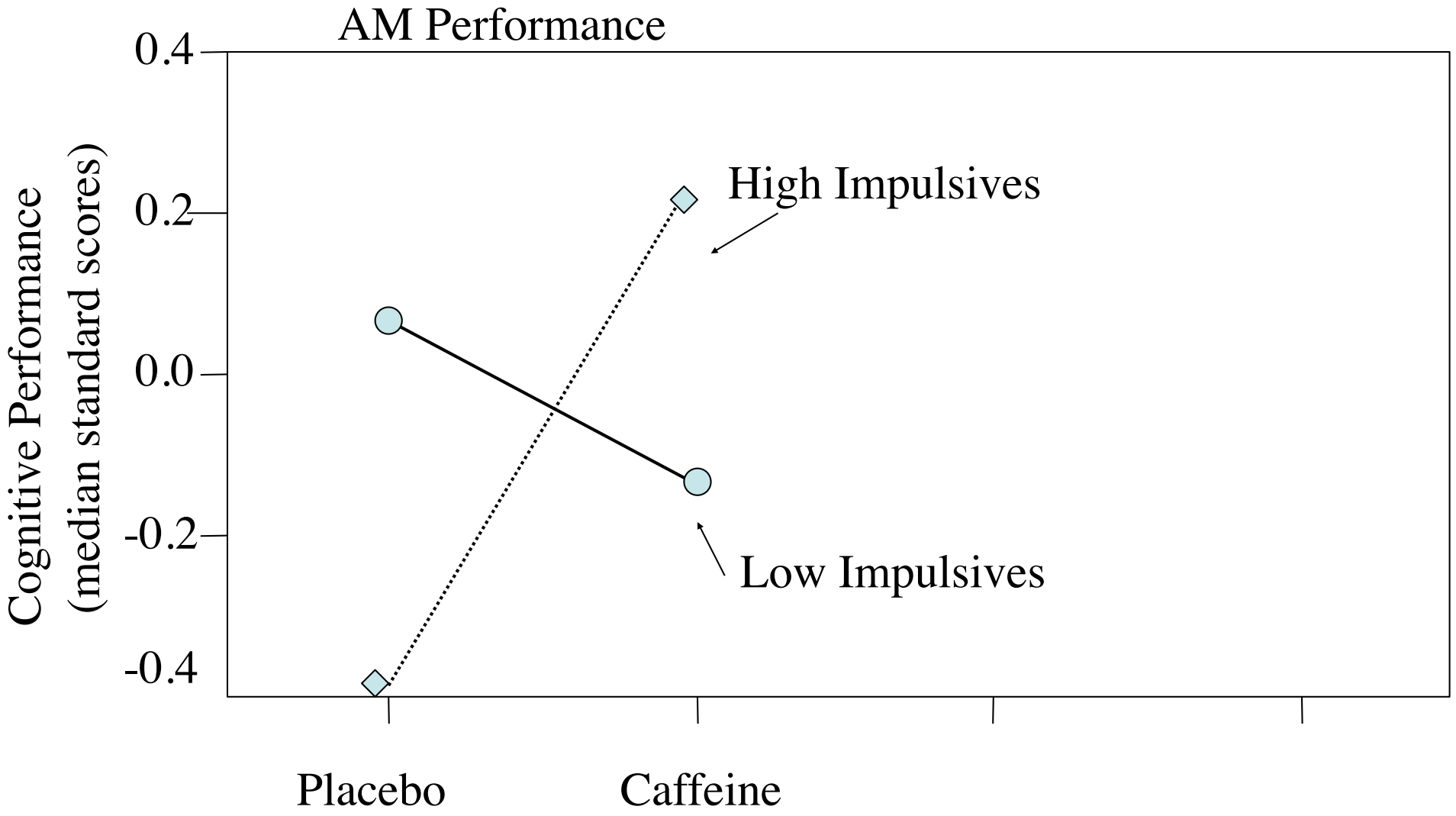
Revelle, Amaral, & Turriff, 1976 Science

Does this support Eysenck's hypothesis?

I. Yes, but further studies limit this effect and show an interaction with time of day

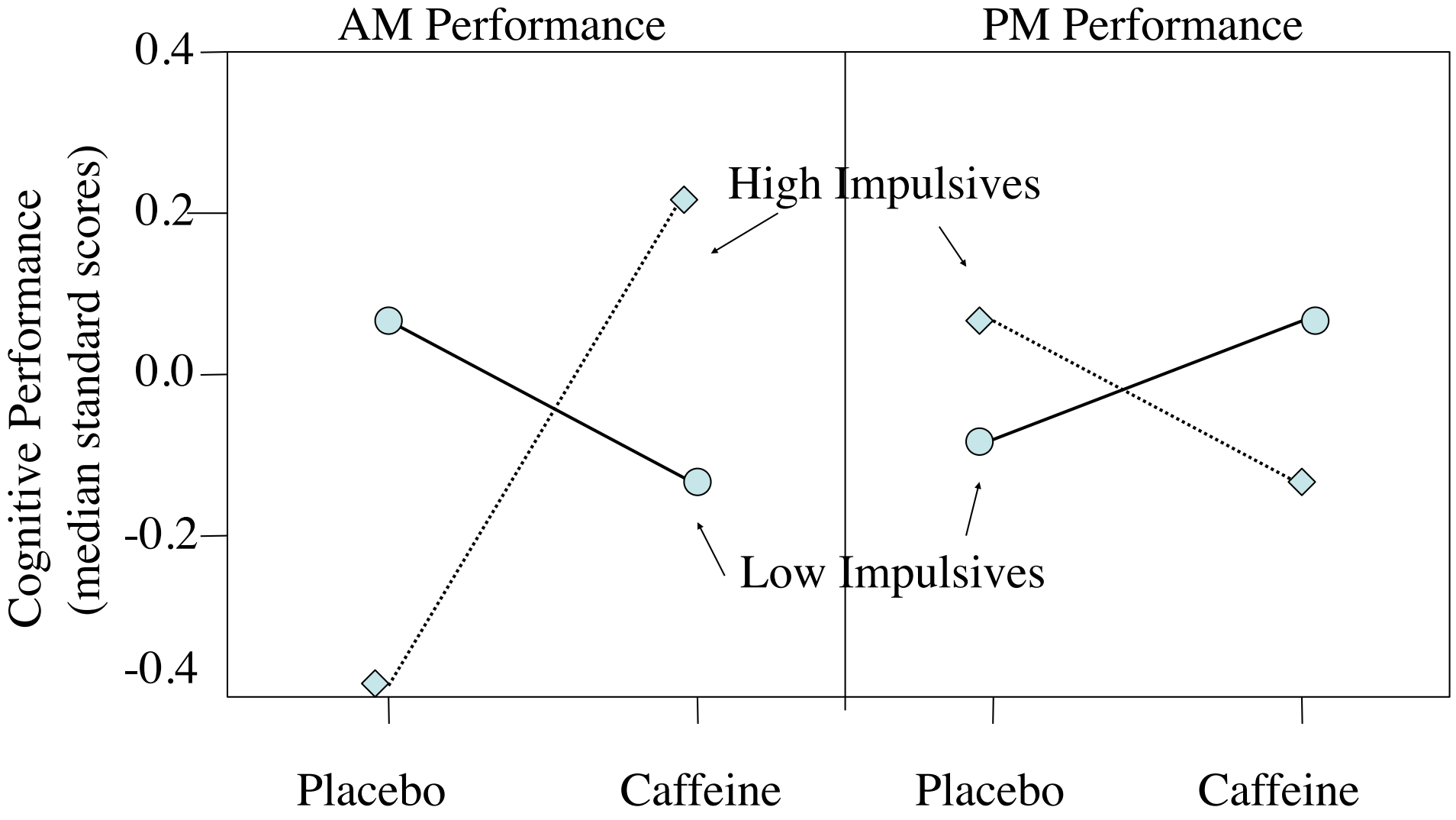
II. This interaction tests and finds the limit of the overall trait effect

Impulsivity, Caffeine, and Time of Day: the effect on complex cognitive performance



Revelle, Humphreys, Simon and Gilliland, JEP:G, 1980

Impulsivity, Caffeine, and Time of Day: the effect on complex cognitive performance



Revelle, Humphreys, Simon and Gilliland, JEP:G, 1980

Extraversion vs. Impulsivity

- Caffeine effects are systematic, but not for extraversion, but rather for impulsivity
- Systematic interaction with time of day
- Implications
  - Performance does vary as function of personality and arousal, but depends upon time of day
  - Personality dimension of relevance was impulsivity
- Experimental studies allowed us to limit the generalization of the personality trait

Multiple approaches to personality

1. Psychology of the individual
   1. Consistency and change in the life of a person
   2. Coherence over situations and time
2. Individual differences
   1. How many dimensions are needed?
   2. What are they?
3. Stability of individual differences over time
   - Does knowing about individuals in one situation predict anything about other situations

Identifying personality structure

Is it possible to reduce the broad range of individual variation in personality to a limited number of personality traits?

Trait: A particular feature of mind or character; a distinguishing quality; a characteristic; spec. of a culture or social group (OED)

The pronunciation tr *e*i, after mod. French , in the 19th c. considered in England the correct one, is becoming less general; in U.S. tr *e*it is the established one (OED)

Definition of the relevant domain

- Individual differences in personality
  - Personality traits vs. abilities?
  - Traditional personality traits are central tendencies and preferences rather than limits
  - What do you do vs. what can you do
- What do we want to know about ourselves or others?
  - what we do
  - what we can do

Descriptive Approaches to Personality

- Derived from three approaches to taxonomy construction
  - **Folk Theories**: How ordinary people think about personality – constrained to types and typologies; categorical, not dimensional
  - **Constructive** approach: How verbal **descriptions** of feelings and actions covary; leading to trait dimensions – constrained by interests and ingenuity of investigators
  - **Analytic** approaches : How endorsements of **words** covary, leading to trait dimensions – constrained by the language
- All seek to provide a characterization of kinds of people (a flatterer, extravert, etc.); all are only a first approximation for what a person will do (next)

Theophrastus' Folk Theory

The talker	The anxious to please	The hostile man
The chatterer	The toady or the flatterer	The shameless man
The boaster	The coward	The distrustful man
The inventor of news	The superstitious man	The slanderer
The ironical man	The feckless	The skinflint or stingy man
The boor	The tiresome man	The mean man
The arrogant man	The outcast	The avaricious man

Early theoretical taxonomies

- Plato and the requirement for leadership

" ... quick **intelligence**, memory, sagacity, cleverness, and similar qualities, do not often grow together, and ... persons who possess them and are at the same time **high-spirited** and **magnanimous** are not so constituted by nature as to live in an orderly and peaceful and settled manner; they are driven any way by their **impulses**, and all solid principle goes out of them. ... On the other hand, those **stable** and **steadfast** and, it seems, more **trustworthy** natures, which in a battle are **impregnable to fear** and immovable, are equally immovable when there is anything to be learned; they are always in a torpid state, and are apt to yawn and go to sleep over any intellectual toil."

Early taxonomies

- Hippocrates (publicized by Galen): “Blood,phlegm, yellow bile and black bile are the particular elements of the nature of man”.
- the sanguine, bouyant type; the phlegmatic, sluggish type; the choleric, quick-tempered type; and the melancholic, dejected type
- The 4 temperaments were later discussed by Kant (1798)

19th Century Taxonomy: Wundt's dimensional structure of the 4 temperaments

<table>
<tr><td colspan="2">Excitable</td><td></td></tr>
<tr><td>Melancholic</td><td>Choleric</td><td rowspan="2">Changeable</td></tr>
<tr><td>Phlegmatic</td><td>Sanguine</td></tr>
</table>

Melancholic

Choleric

Phlegmatic

Sanguine

Early 20th century taxonomies

- Heymans - 3 dimensional model
  - data driven!
- Freud:
  - Interaction of character and childrearing
- Jung:
  - Orientations and functioning
- McDougall domains of personality

Heymans

- Empirically based research
  - 3000 (Dutch) doctors were asked to rate all members of a family on a large number of traits
  - ≈ 400 responded with ratings on 2,523 subjects
- Three dimensions
  - Emotionality or Emotional Instability
  - Activity or general drive
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(from Eysenck, 1992)

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Passionate	+	+	S	Thinking E
Choleric	+	+	P	Feeling E
Sentimental	+	-	S	Feeling I
Nervous	+	-	P	Thinking I

Freud's taxonomy

- Oral
  - Indulgent: oral erotic -- oral passive optimistic, gullible, dependent, manipulative
  - Restrictive: oral sadistic, oral aggressive pessimistic, suspicious, quarrelsome
- Anal
  - Indulgent: anal retentive, anal compulsive stingy, stubborn, punctual, precise, orderly
  - Restrictive: anal aggressive, anal expulsive cruel, destructive, hostile, disorderly
- Phallic
  - Indulgent: phallic-dominant vain, proud, domineering, ambitious, virile
  - Restrictive: phallic-submissive meek, submissive, modest, timid, feminine

Jung

- Orientations:
  - Introverted Extraverted
- Psychological Functioning
  - Thinking/Feeling
  - Judging/Perceiving
  - Sensing/ Intuiting
- (current application, loosely based upon Jung's typology is the MBTI)

McDougall

- Intellect
- Character
- Temperament
- Disposition
- Temper

Popular culture extensions

- Many simple taxonomies loosely based upon Jung/Galen to describe individual differences
- Popular among group facilitators to show that people differ, with an emphasis that everyone has unique talents
- Practically cult like following of MBTI with people referring to themselves in terms of 4 term abbreviations

Taxonomic problems

- Except for Heymans, based more upon clinical judgment and description rather than systematic analysis of variation.
- It is easy to create 2 x 2 x 2 descriptions of others.
  - (Traits my friends and I have vs those of people I don't like X traits I have versus my friend X traits of some friends versus other friends)

Constructive Approach (Rational scale construction)

- Propensities to particular behaviors are captured by verbal descriptions
- Researchers construct items with a view to capturing/predicting phenomena of interest
- Empirical application of item responses to solve specific prediction problems

Representative Items
(constructive approach)

Do you like to go to lively parties?

Do you do and say things without stopping to think?

Would you call yourself a nervous person?

Do you like to go to the opera?

Analytic Approach (1950 – 1960s)

- Based on factor analysis of endorsement patterns of **words** (e.g., Allport, Cattell, Norman, Goldberg)

- Earliest systematic analyses were Cattell's
  - 18,000 English words intuitively grouped into ≈ 45 pairs of categories or "trait complexes" eventually reduced to 12-14 primary dimensions

- Most ambitious attempt: Warren Norman (1967)
  - selected a subset of about 2,800 from 40,000 English words representing variations between persons or within individuals over time and varying situations . . . encoded in the language

The lexical hypothesis

- based on the following rationale: Because they are so socially meaningful, personality attributes tend to acquire lexical representation, and degree of lexical representation is one guide to the importance of a personality dimension. Presumably, those dimensions that are most fundamental will be ubiquitous, and therefore can be derived independently from studies of any language.
  - (Saucier)

Lexical Hypothesis: Allport

- trait terms selected from unabridged dictionary
- 18,000 Allport-Odbert word lists
  - stable traits
  - fluctuating states

Lexical Hypothesis: Cattell

selected words from Allport 4,504

grouped by semantic meaning 171

formed intuitive clusters 36-46

factored rating scales 12-14

Subjects: Univ. Illinois fraternity members

early use of factor analysis formed personality instruments 14-16 self report scales

Representative Trait Complexes

(from Cattell, 1957)

1. *Adaptable*: flexible; accepts changes of plan easily; satisfied with compromises; is not upset, surprised, baffled, or irritated if things are different from what he expected	Vs	*Rigid*: insists that things be done the way he has always done them; does not adapt his habits and ways of thinking to those of the group; nonplussed if his routine is upset
2. *Emotional*: excitable; cries a lot (children), laughs a lot, shows affection, anger, all emotions, to excess	Vs	*Calm*: stable; shows few signs of emotional excitement of any kind; remains calm, even underreacts, in dispute, danger, social hilarity
3. *Conscientious*: honest; knows what is right and generally does not tell lies or attempt to deceive others; respects others' property	Vs	*Unconscientious*: somewhat unscrupulous; not too careful about standards of right and wrong where personal desires are concerned; tells lies and is given to little deceits; does not respect others' property
4. *Conventional*: conforms to accepted standards, ways of acting, thinking, dressing, etc.; does the "proper" thing; seems distressed if he finds he is being different	Vs	*Unconventional, Eccentric*: acts differently from others; not concerned about wearing the same clothes as others; has somewhat eccentric interests, attitudes, and ways of behaving; goes his own rather peculiar way

Reanalyses and extensions of Cattell

- Fiske, 1948 - 5 factors
- Tupes and Christal (1958) 5 factors of peer ratings
- Norman (1963) 5 Factors of peer ratings: The "Big 5"
  - 1. Surgency/Extraversion
  - 2. Agreeableness
  - 3. Conscientiousness
  - 4. Emotional Stability versus Emotionality
  - 5. Culture/Openness
- Digman (1985) 5 factors of ratings (teachers + peers)

Digman's Six Data Sets

Oahu 1st & 2nd grades (N = 885): 49 traits

Oahu 5th & 6th grades (N = 834): 49 traits

Kauai 6th grades (N = 502): 43 traits

39 common traits (N = 2,221)

University of Hawaii Laboratory School:

1959 1st & 2nd grades (N = 102): 36 traits

1960 1st,2nd,& 3rd (N = 149): 50 traits

1963 5th & 6th grades (N = 100): 63 traits

(from Goldberg, 2004)

The Digman-Hawaii Teacher Assessments

The child personality traits were selected to be a comprehensive set, covering at least 10 broad factors.

Each personality trait was specified by classroom behaviors formulated with the help of focus groups of elementary-school teachers.

(from Goldberg, 2004)

Examples of Two Personality Trait Descriptions

Gregarious: Likes to be with others and seeks their company; spends as much time with others as possible; dislikes being alone.

Persevering: Keeps at his/her work until it is completed; sees a job through despite difficulties; painstaking and thorough.

(from Goldberg, 2004)

Digman's Preliminary Analyses of Some of These Data

Published in Digman & Takemoto-Chock (1981); Digman & Inouye (1986); and Digman (1989):

10 to 12 factors were hypothesized.

But only 5 factors replicated across samples.

These early findings were influential in popularizing the "Big-Five" factor structure.

(from Goldberg, 2004)

Reanalyses of Digman's Child Data Sets (Goldberg, 2001)

- Data from the 6 separate samples of elementary school children were analyzed independently.
- Across the 6 samples, the factors were compared at each hierarchical level, from one-factor to 10-factors.
- In each of the 6 samples, the classic "Big-Five" factor structure was found.

(from Goldberg, 2004)

A Middle-Childhood "Big-Five"

I. Extraversion:

Gregarious, Energetic vs. Seclusive, Lethargic

II. Agreeableness:

Humble vs. Rude, Self-centered

III. Conscientiousness:

Persevering, Planful, Careful vs. Irresponsible

IV. Emotional Stability (vs. Neuroticism):

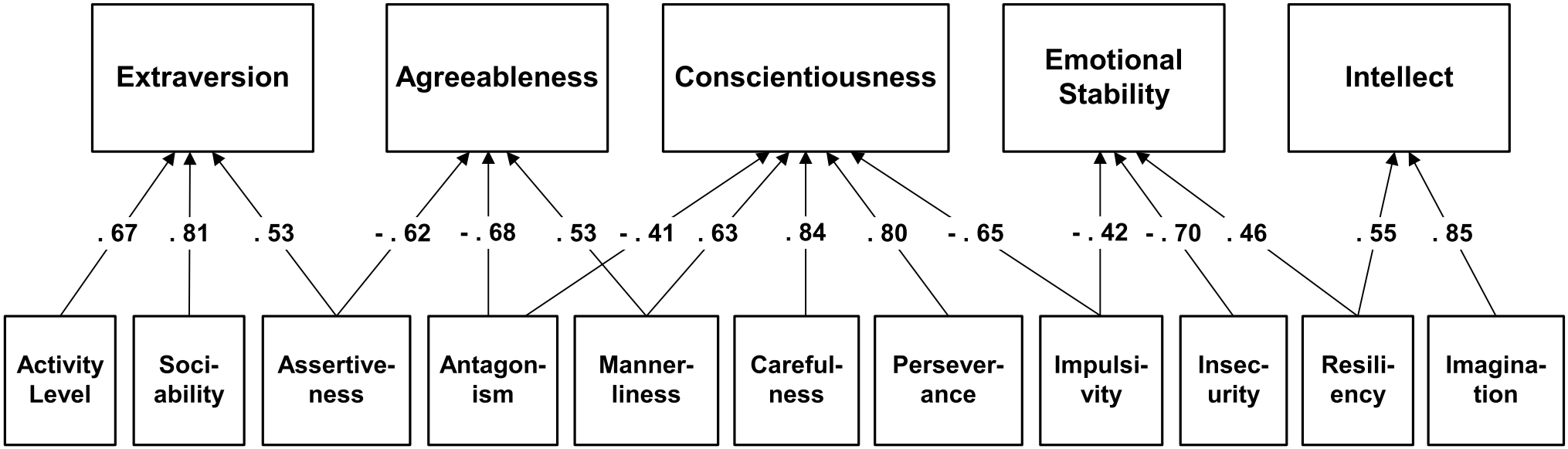
Fearful, Tense, Concerned about acceptance

V. Intellect:

Original, Imaginative, Curious, Aesthetic

(from Goldberg, 2004)

The Hierarchical Structure of Childhood Personality Traits



(from Goldberg, 2004)

Five Domains of Personality (1980s-1990s)

Analyses and meta-analyses of constructive and analytic approaches converged on five domains (Costa & McCrae, 1989; Goldberg,1981; John, 1990)

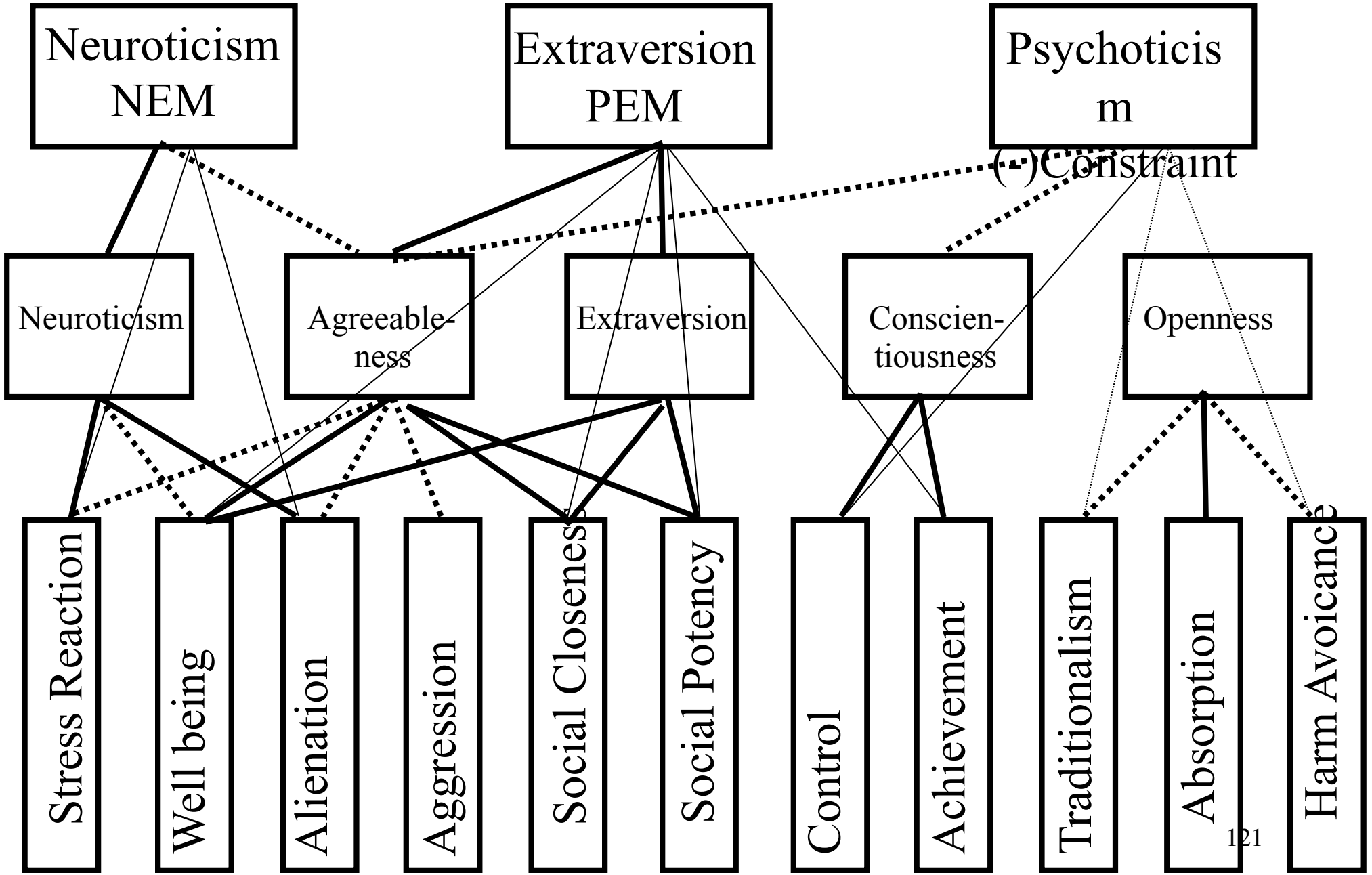
technical domain name	colloquial domain name
Extraversion (surgency)	Power
Agreeableness	Affection
Conscientiousness	Work
Neuroticism	Emotionality
Openness	Intellect

***

Representative Trait Words by Domain

extraversion	agreeableness	conscientious	neuroticism	openness
talkative	sympathetic	organized	tense	wide interests
assertive	kind	thorough	anxious	imaginative
active	appreciative	planful	nervous	intelligent
energetic	affectionate	efficient	moody	original
-quiet	-cold	-careless	-stable	-commonplace
-reserved	-unfriendly	-disorderly	-calm	-simple
-shy	-quarrelsome	-frivolous	-contented	-shallow
-silent	-hard-headed	-irresponsible	-unemotional	-unintelligent

The Giant 3, Big 5, Small 11

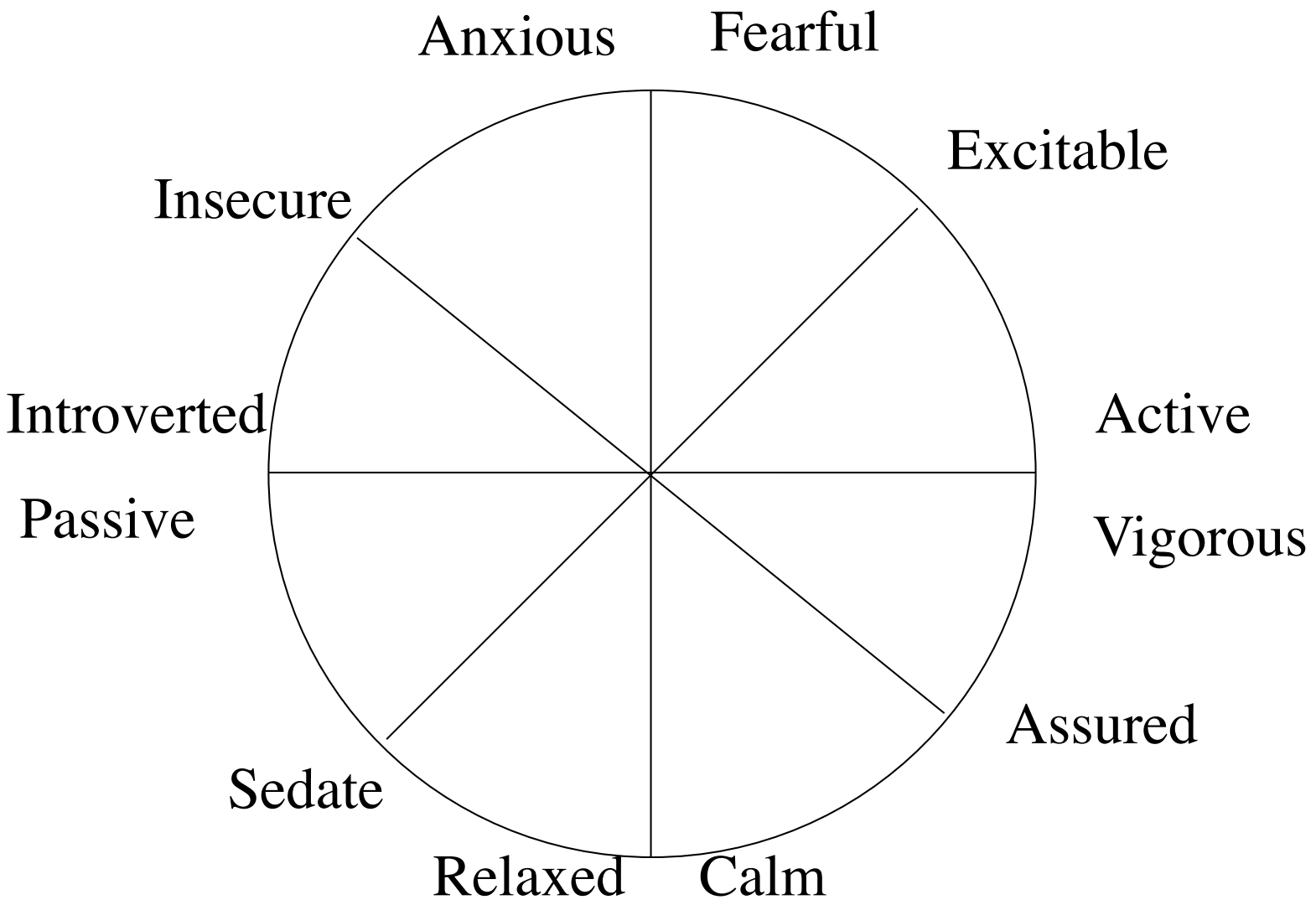


(adapted from Ackerman and Heggestad, 1997)

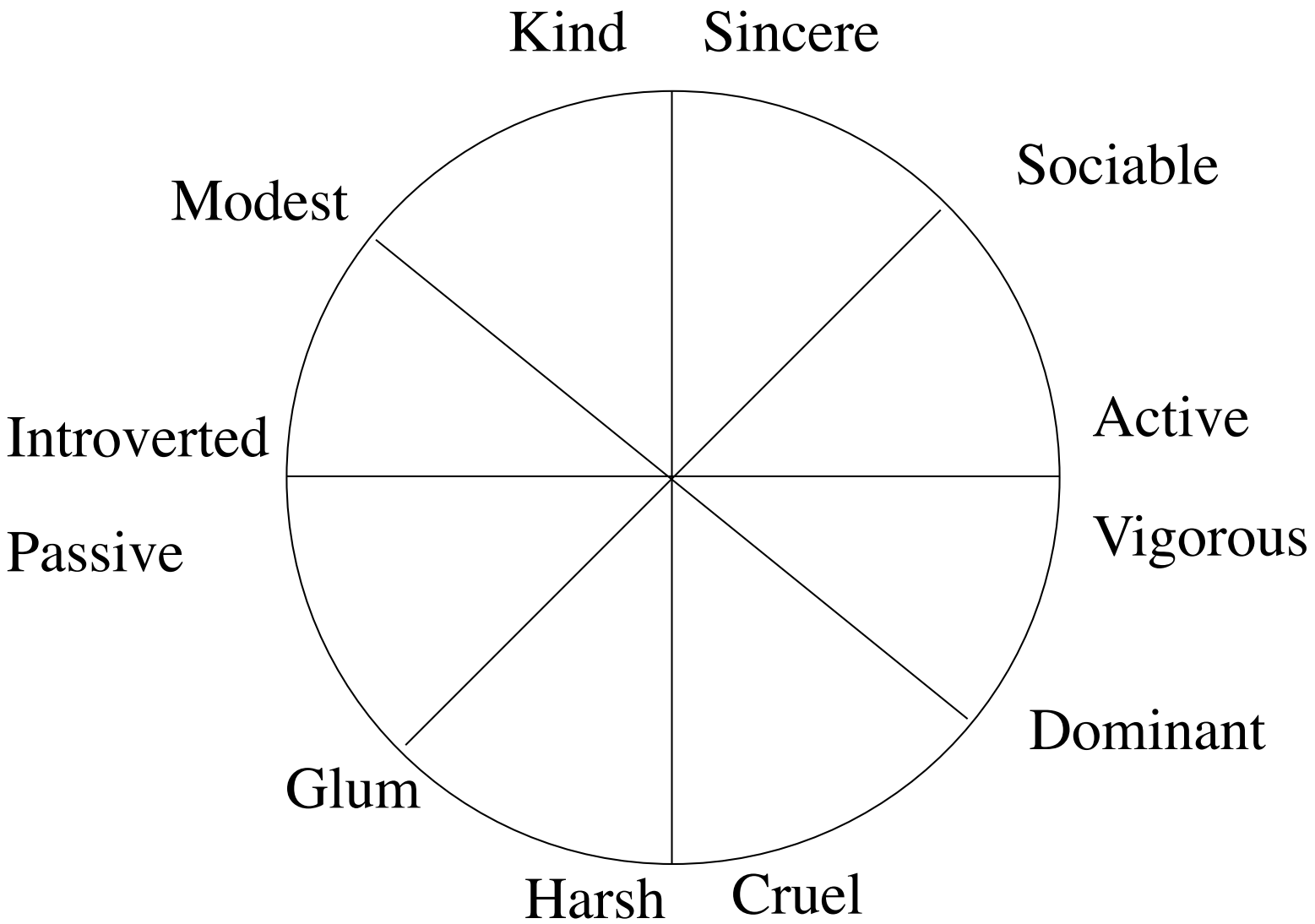
Circumplex of Big 5 dimensions (Abridged Big 5 Circumplex)

- Pair wise ordering of dimensions
  - Agreeableness x Extraversion (interpersonal circumplex of Wiggins)
  - Neuroticism x Extraversion (affective circumplex)
  - Neuroticism x Conscientiousness (the personality disorders?)
  - Agreeableness x Conscientiousness (psychoticism?)
- Comparisons of Self/Other and Positive/Negative Affect
  - a speculative organization
- An alternative would be to organize in terms of Affect, Behavior, Cognition, and Desires

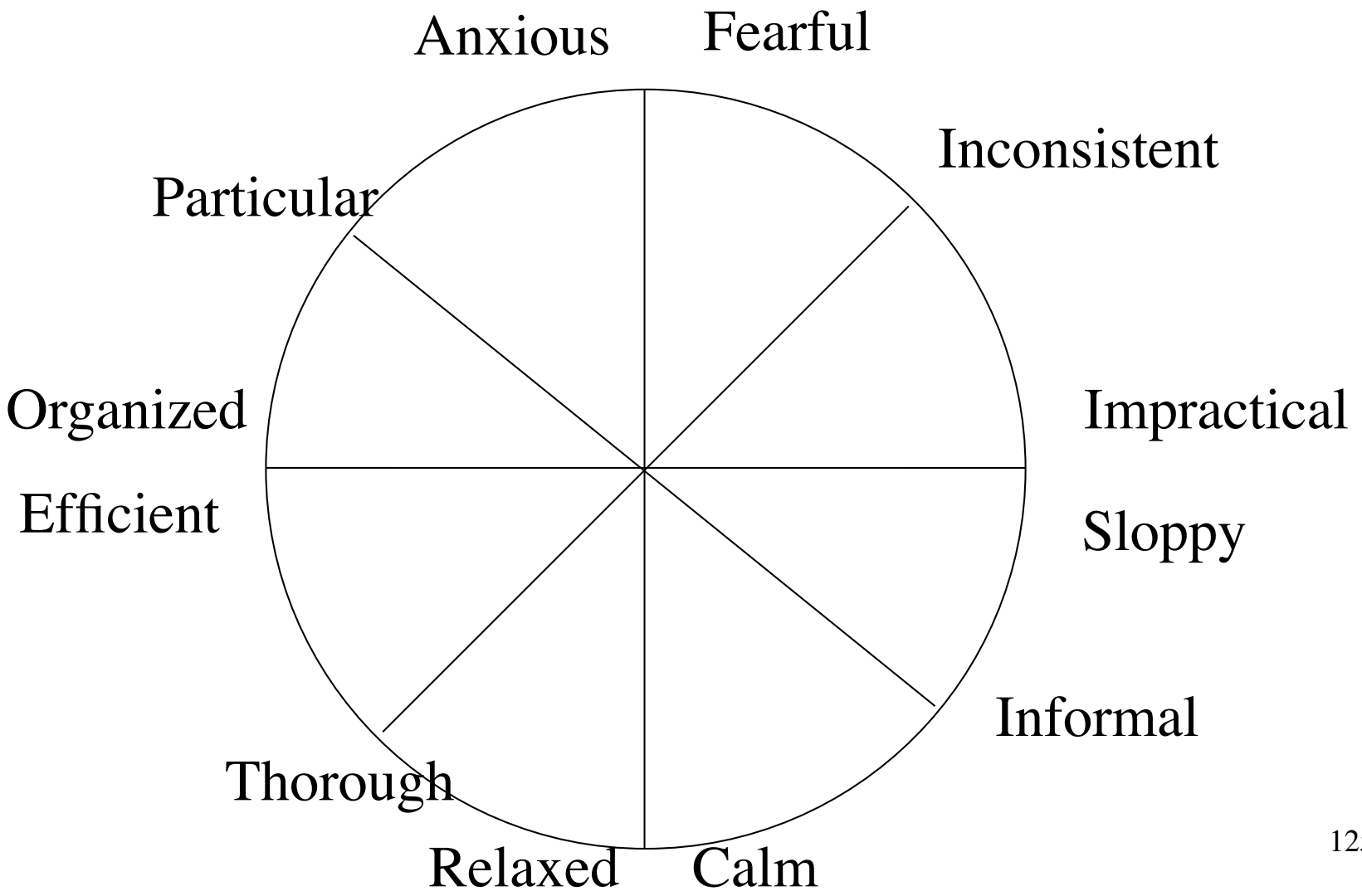
Neuroticism x Extraversion Affective Circumplex (S^+/S^-)



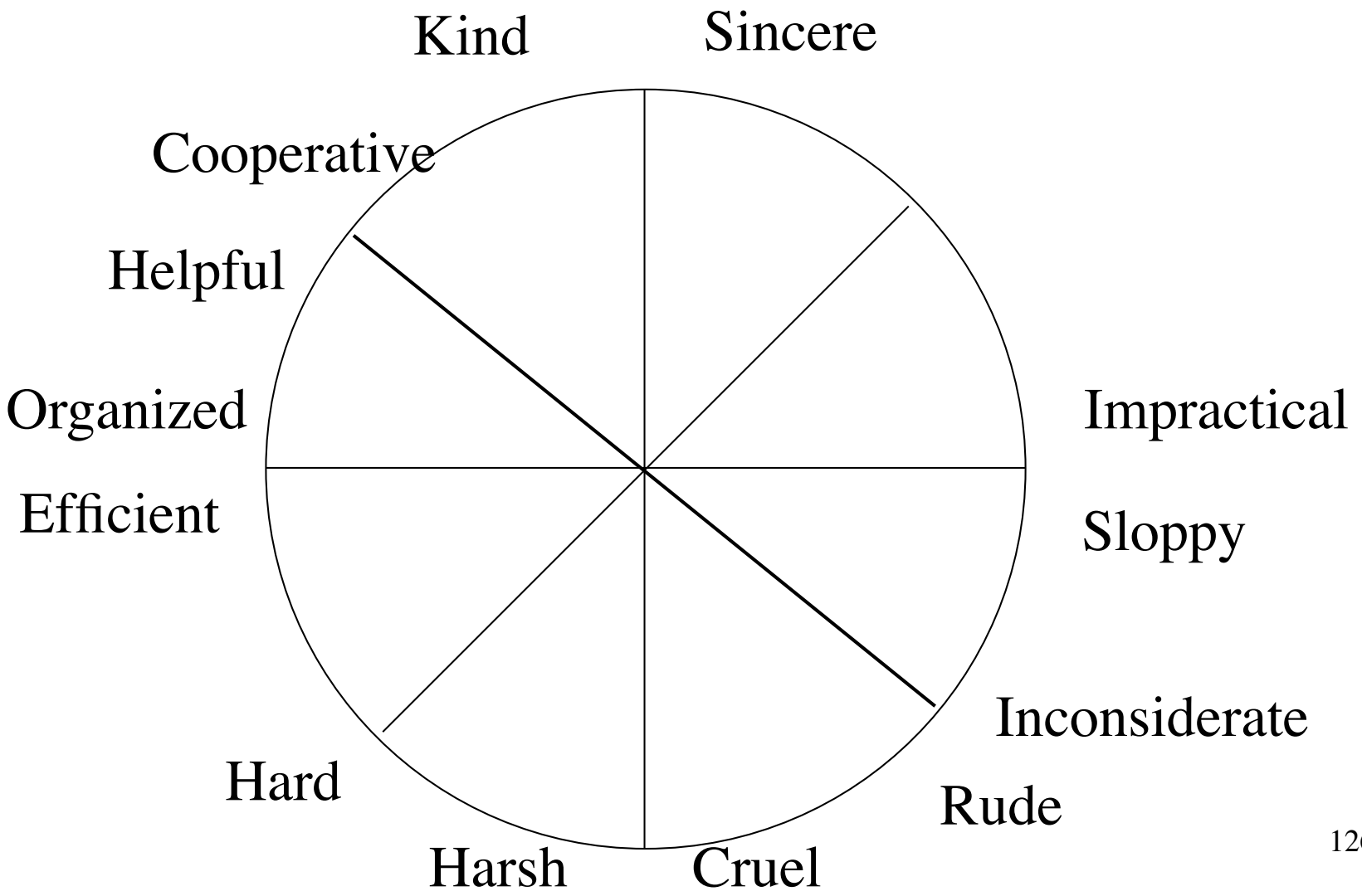
Agreeableness x Extraversion Interpersonal Circumplex (S^{+}/O^{+})



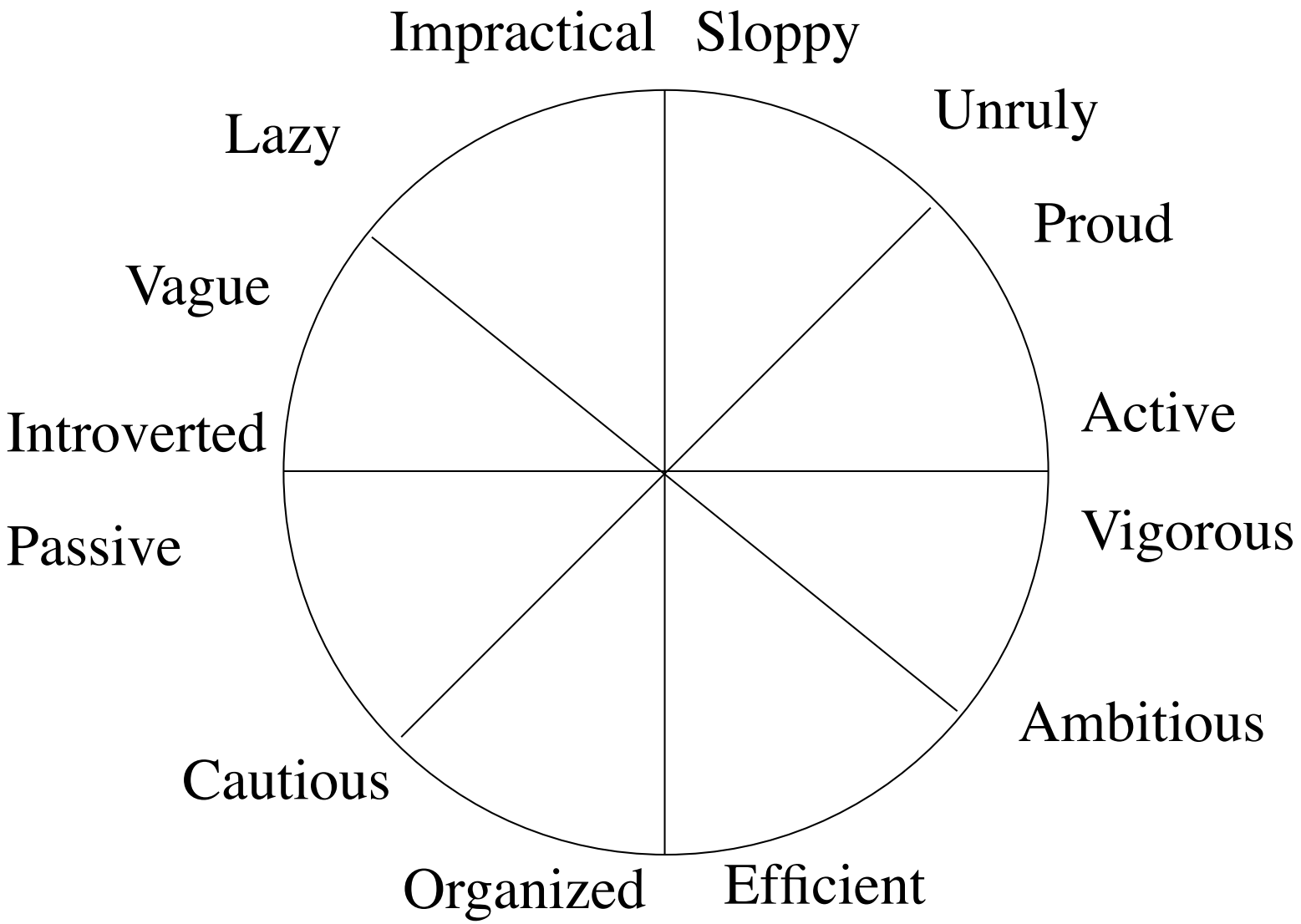
Neuroticism x Conscientiousness (S^{-}/O^{-}) : The personality Disorders?



Agreeableness x Conscientiousness (O^+/O^-): Eysenck's P scale = O^+ vs. O^-)?



Conscientiousness x Extraversion Circumplex (S^{+}/O^{-})



But is Big 5 structure of what people say, not what people do

- Is this the psychology of the stranger?
- Is it merely dimensions of semantic lexicon
- Are personality traits mere delusions?
- (The need for validity studies)

Personality traits as a delusion

- Hartshorn and May (1930)
  - Studies in character -- low correlations across situations for honesty
- Newcomb (1931)
  - Low correlations between real time ratings of behaviors
- Passini and Norman (1966) structure of strangers
- Mischel (1968) critique
- Shweder and D'Andrade (1980) personality as shared delusions
- (This thread continues until today in many classes in social psychology)

Newcomb's behavioral study

rated by camp counselors during the day and at end of day

1. Tells of his own past of the exploits he has accomplished
2. Gives loud and spontaneous expressions of delight or disapproval
3. Goes beyond only asking and answering necessary questions in conversations with counselors.
4. How is the quiet time spent?
5. Spends a lot of time talking at the table.

Newcomb's summer camp 1931

- Systematic encoding by camp counselors of immediate behaviors and subsequent ratings

Behavior	1	2	3	4	5
1	-	0.52	0.05	0.29	0.2
2	0.67	-	0.03	-0.14	0.08
3	0.61	0.68	-	-0.11	0.48
4	0.97	0.88	0.66	-	0.16
5	0.66	0.92	0.77	0.75	-

Passini and Norman

- Structure of strangers
  - Undergraduates rating other (unknown) undergraduates on 20 paragraph descriptors
  - Big 5 structure emerges
  - Is the structure of personality traits merely the structure of the lexicon, not of people?
- See also Mulaik structure of ratings of adjectives

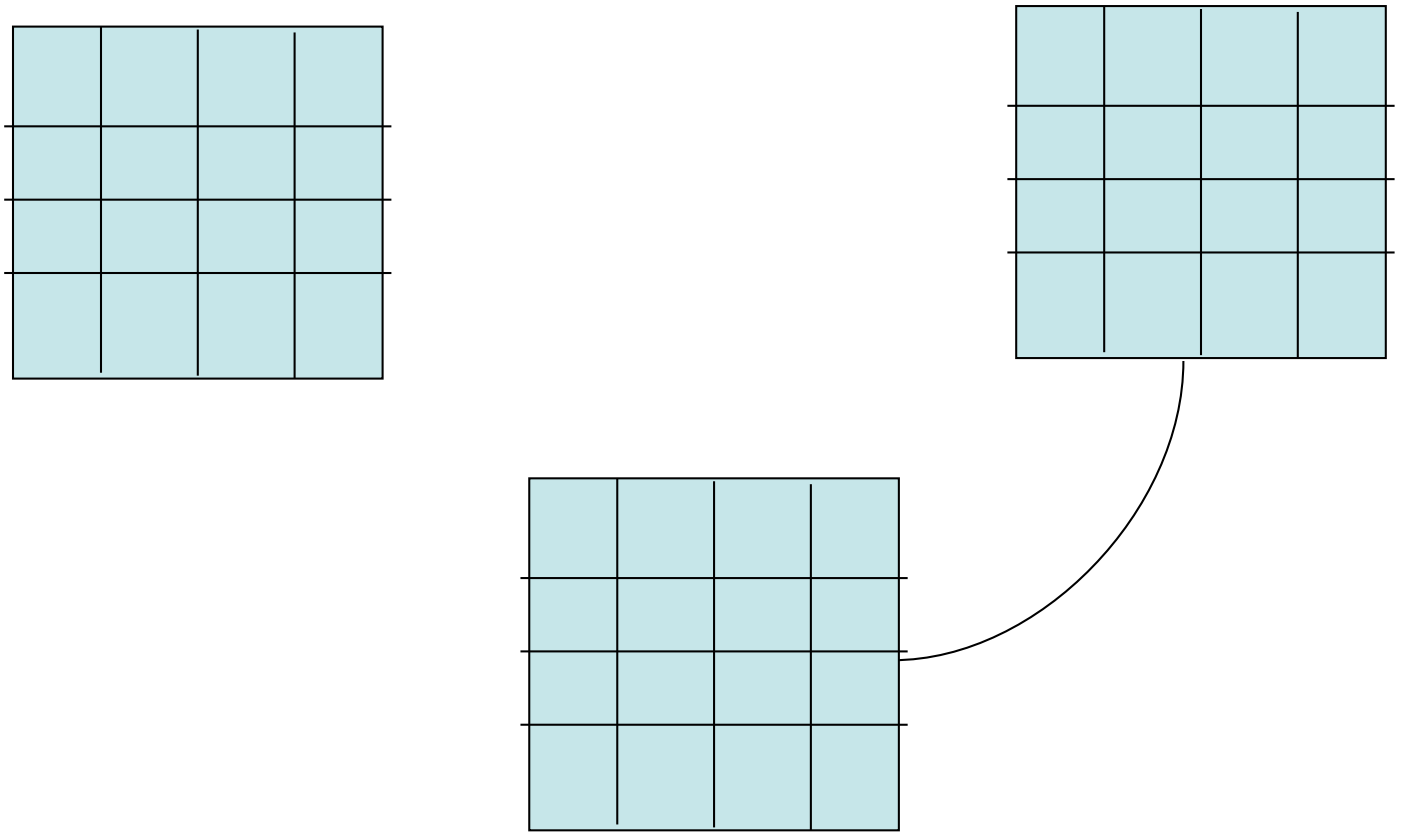
Shweder and D'Andrande (1980)

- Method:
  - ratings taken of behavior at time it occurs ("on line")
  - ratings done from memory semantic
  - judgments of similarity of trait words
- Analysis
  - Compare(correlate) the correlation matrices from the three procedures

Comparisons of Correlational Structures

On line ratings

Memory based ratings



Semantic similarity ratings

Shweder and D'Andrande

- Results
  - structure of "on line measures" not the same as memory based
  - structure of memory based equivalent to semantic structure
- Implication: structure of personality ratings is in mind of beholder, not in the behavior of target
- But: "on line" measures were forced choice!

Romer and Revelle (1984)

- Conceptual replication of Shweder's "on line ratings”
- Varied "on line ratings"
  - Presented “behavior” e.g. “Rick was self confident at the meeting”
    - forced choice (ala Shweder)
      - which trait does this behavior represent (dominant, arrogant, cold, introverted, submissive, unassuming, warm, extraverted)

    complete rating of all traits (same traits as before)

  Semantic structure ratings: how X is this behavior Y?

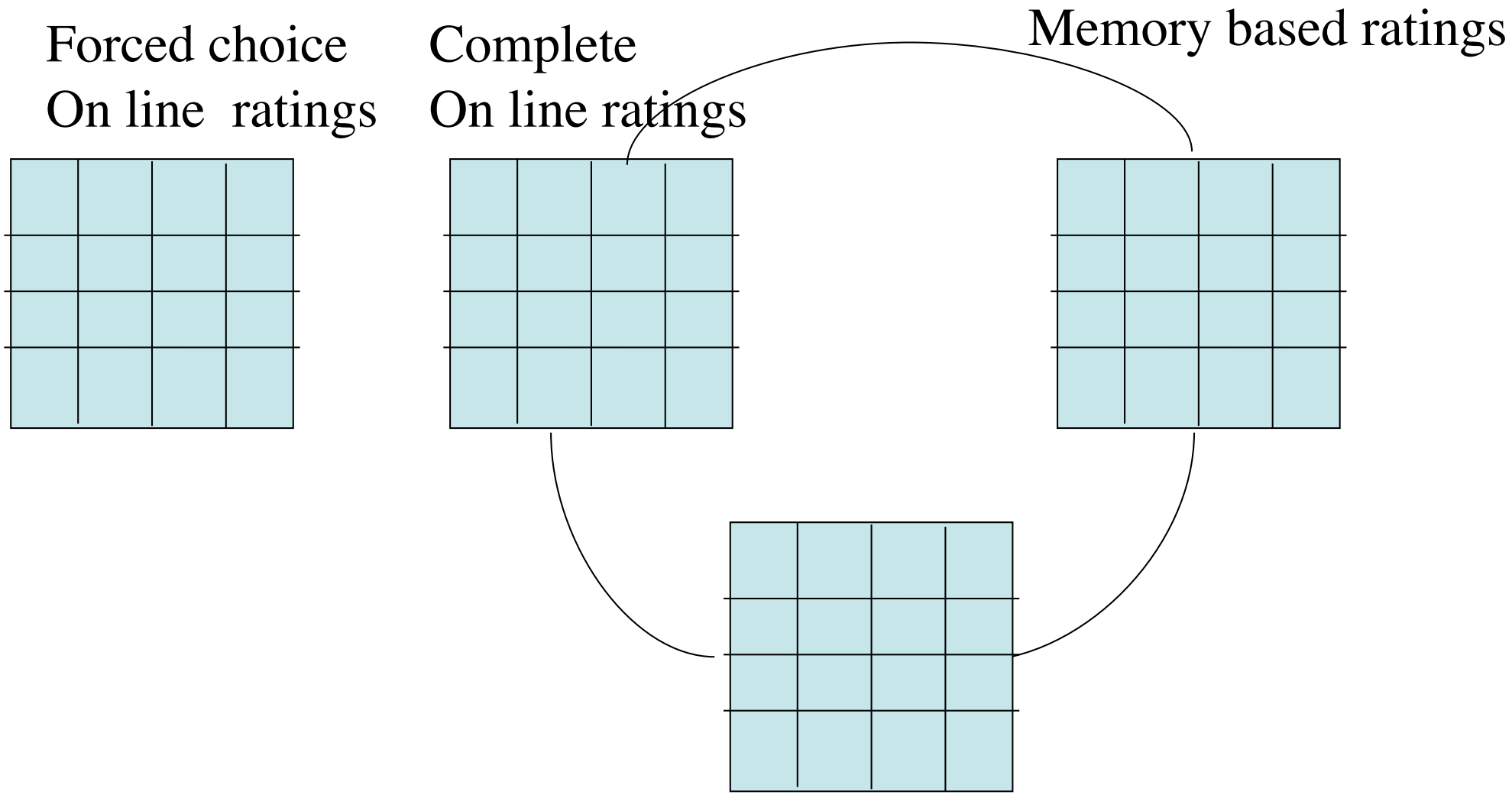
structure of "on line ratings" depends upon method

forced choice categories do not correlate

on line ratings of traits match memory based

See also Borkenau et al.

Comparisons of Correlational Structures

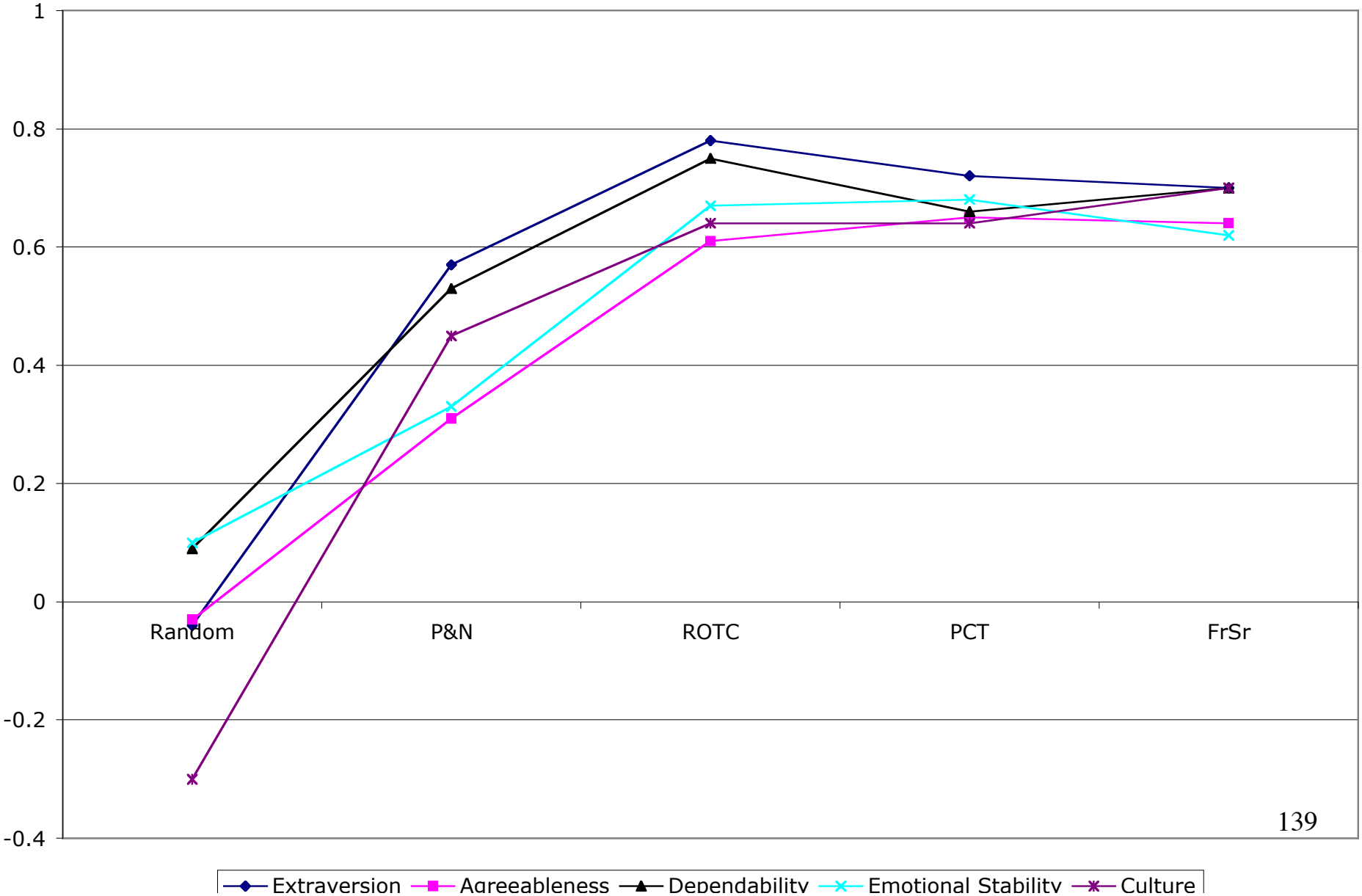


Norman and Goldberg (1966) Construct validity of structure

- Comparison of interrater agreement as rater-ratee interaction increases
- Levels of interaction
  - Unknown (empty chair- Monte Carlo simulation)
  - Minimal acquaintance (Passini and Norman)
  - ROTC members
  - Fraternity juniors and Seniors
  - Peace Corp Trainees
- Structures remain the same across groups, but interrater agreement increases

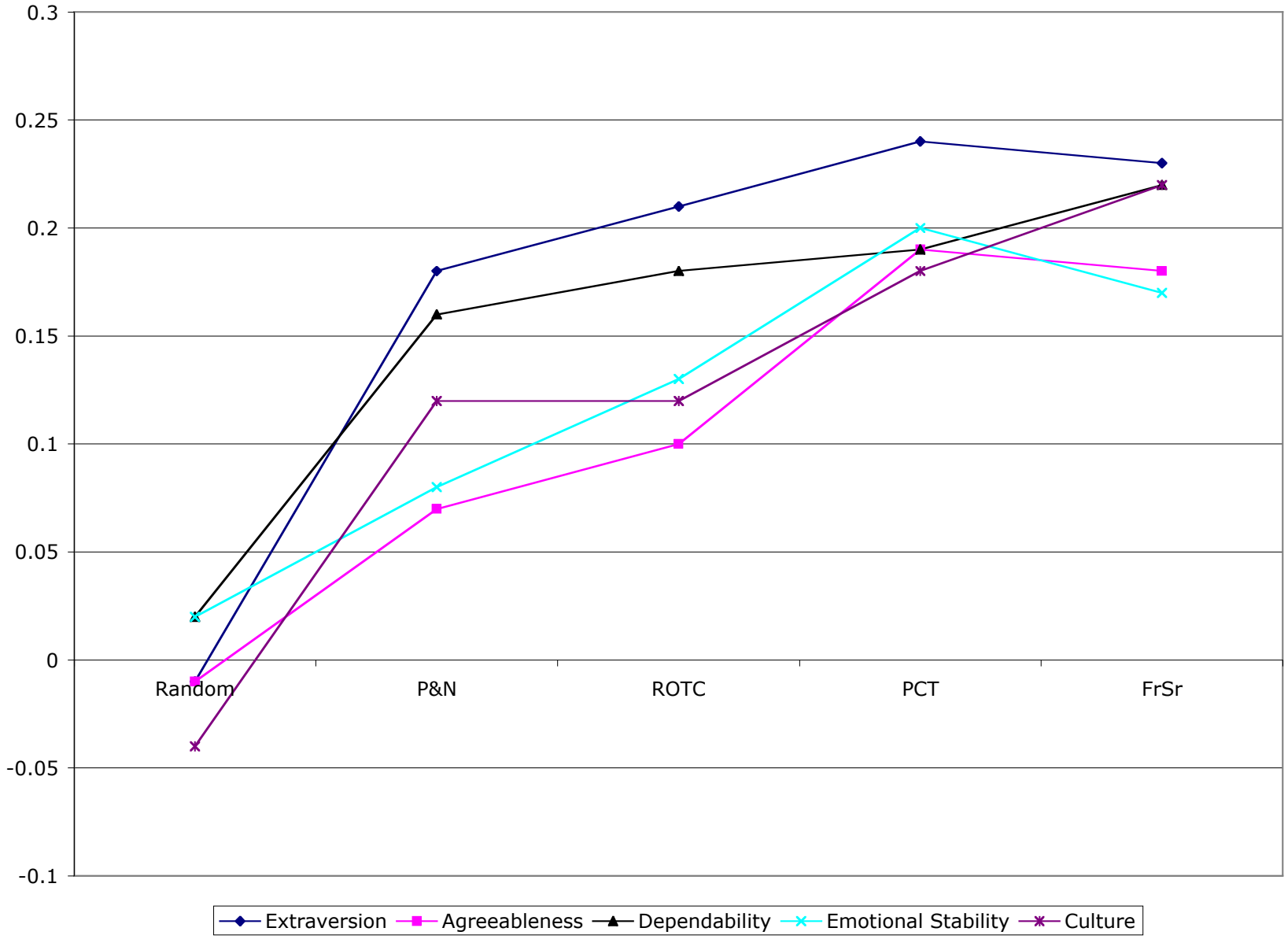
Norman and Goldberg, 1966

Trait reliabilities increase with interaction



Norman and Goldberg 1966

Interrater agreement increases with contact



Self and Peer ratings

- Observability of traits
  - Some traits more open to others
    - Extraversion
    - Agreeableness
    - Openness
  - Some less open
    - Emotional stability
    - Conscientiousness

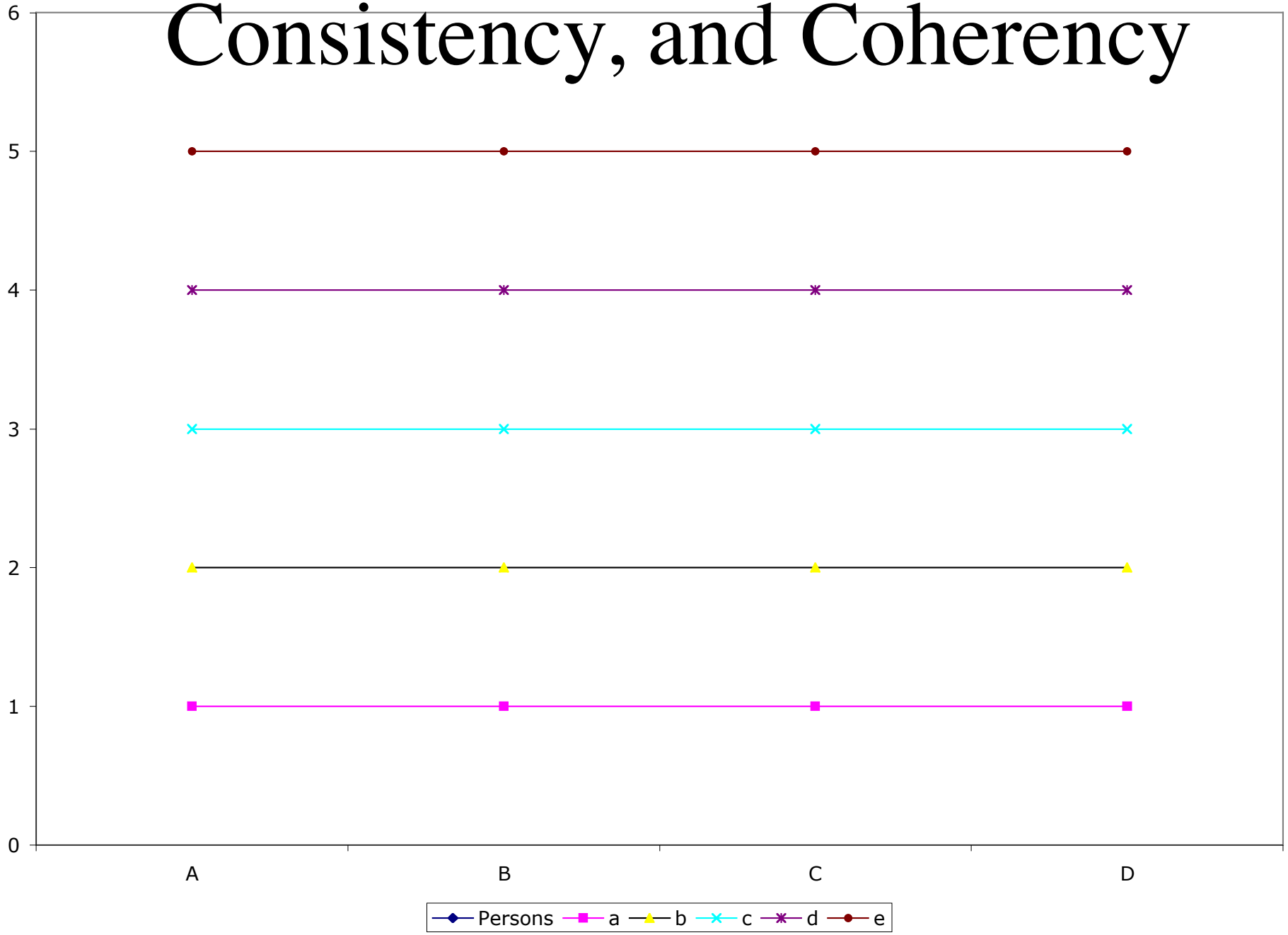
Additional construct validity studies

- If traits have basis in behavior of targets, not in the eye of the beholder, then they should show trans-situational consistency
- Consistency over long period of time
- Consistency across situations
- Consistency across degree of genetic relationship

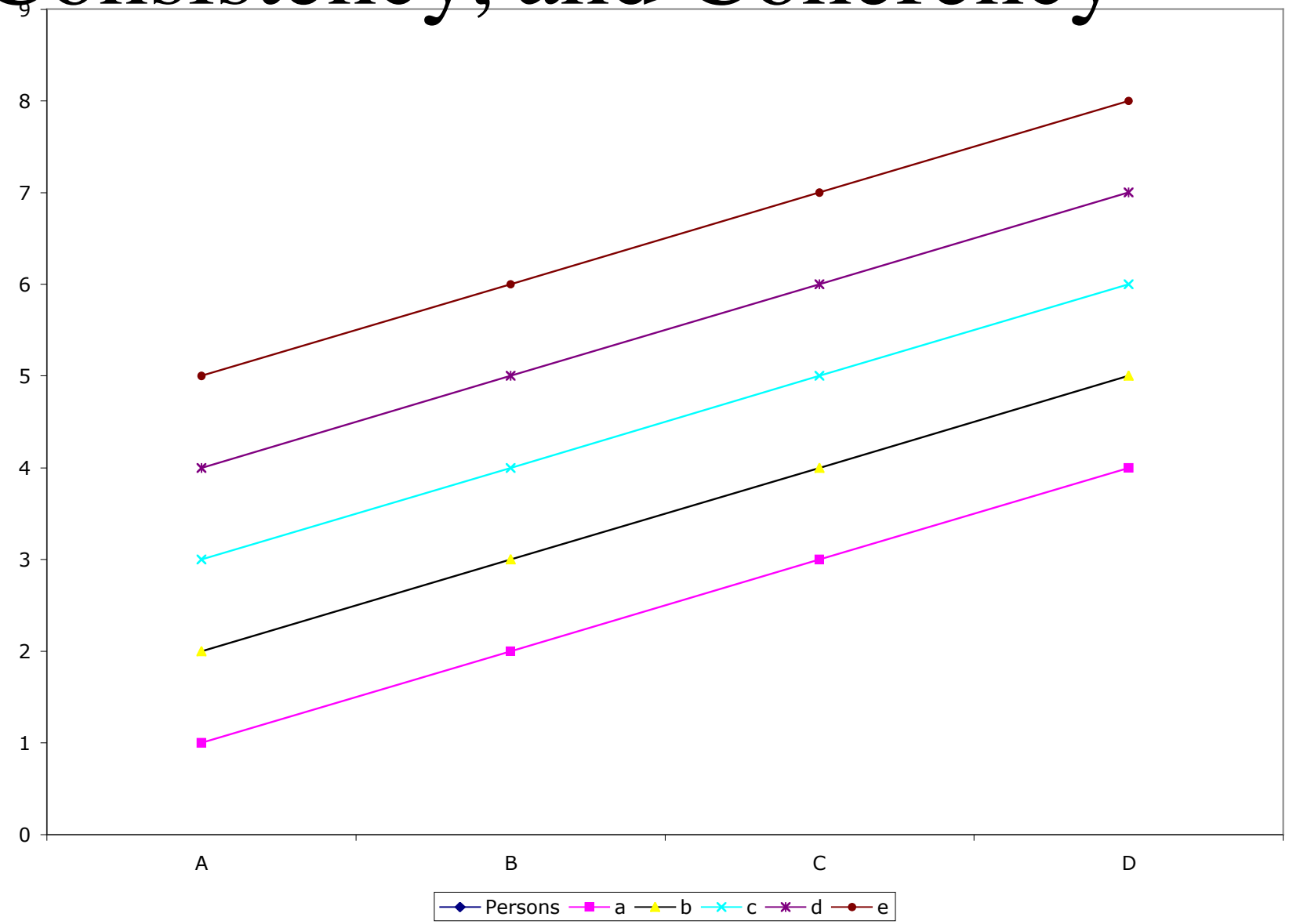
Personality constancy, consistency and coherence

- We do not expect behavior to be constant across situations
- We do expect some consistency
- More complicated is the issue of coherency

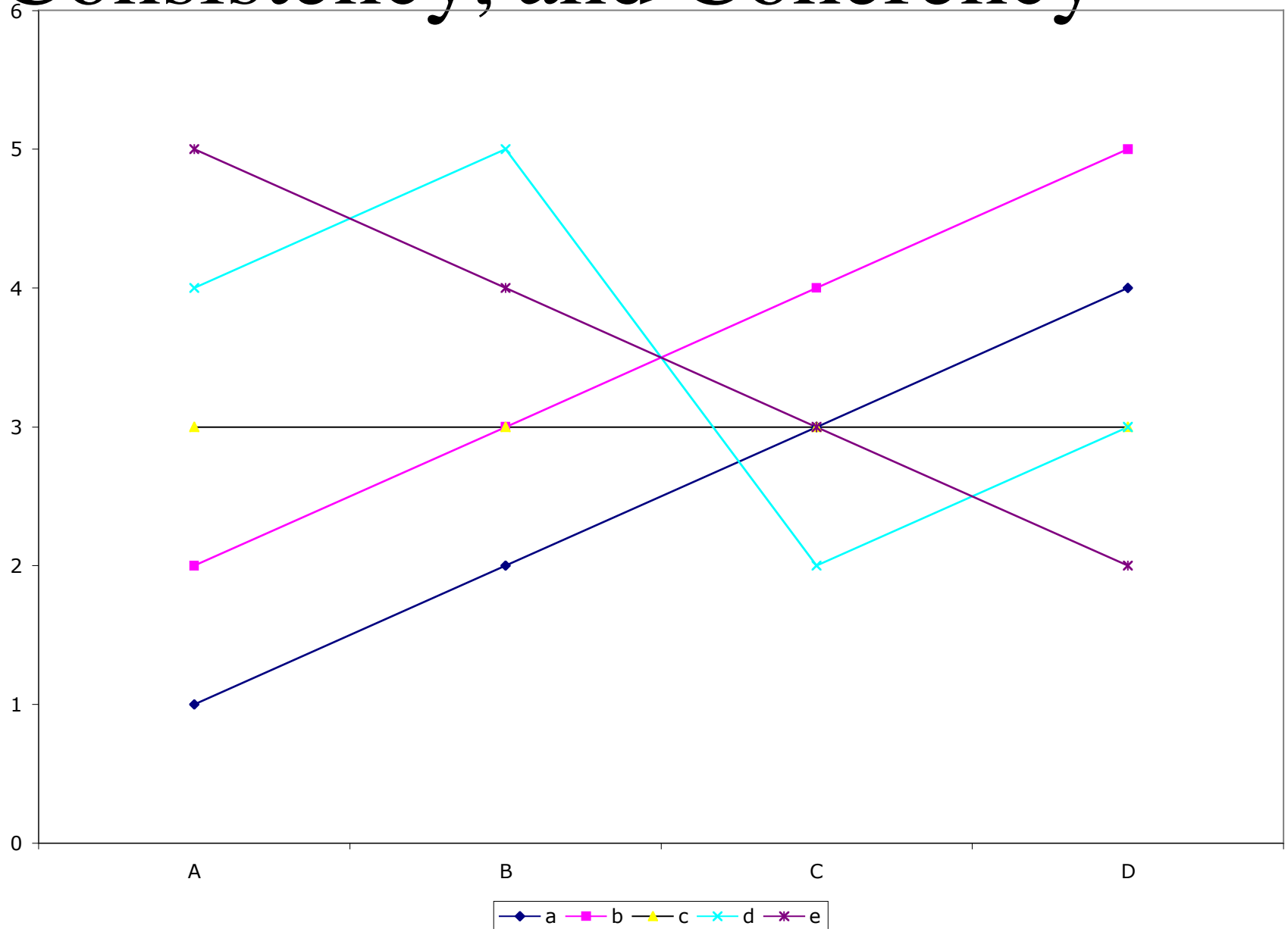
Personality Stability, Consistency, and Coherency



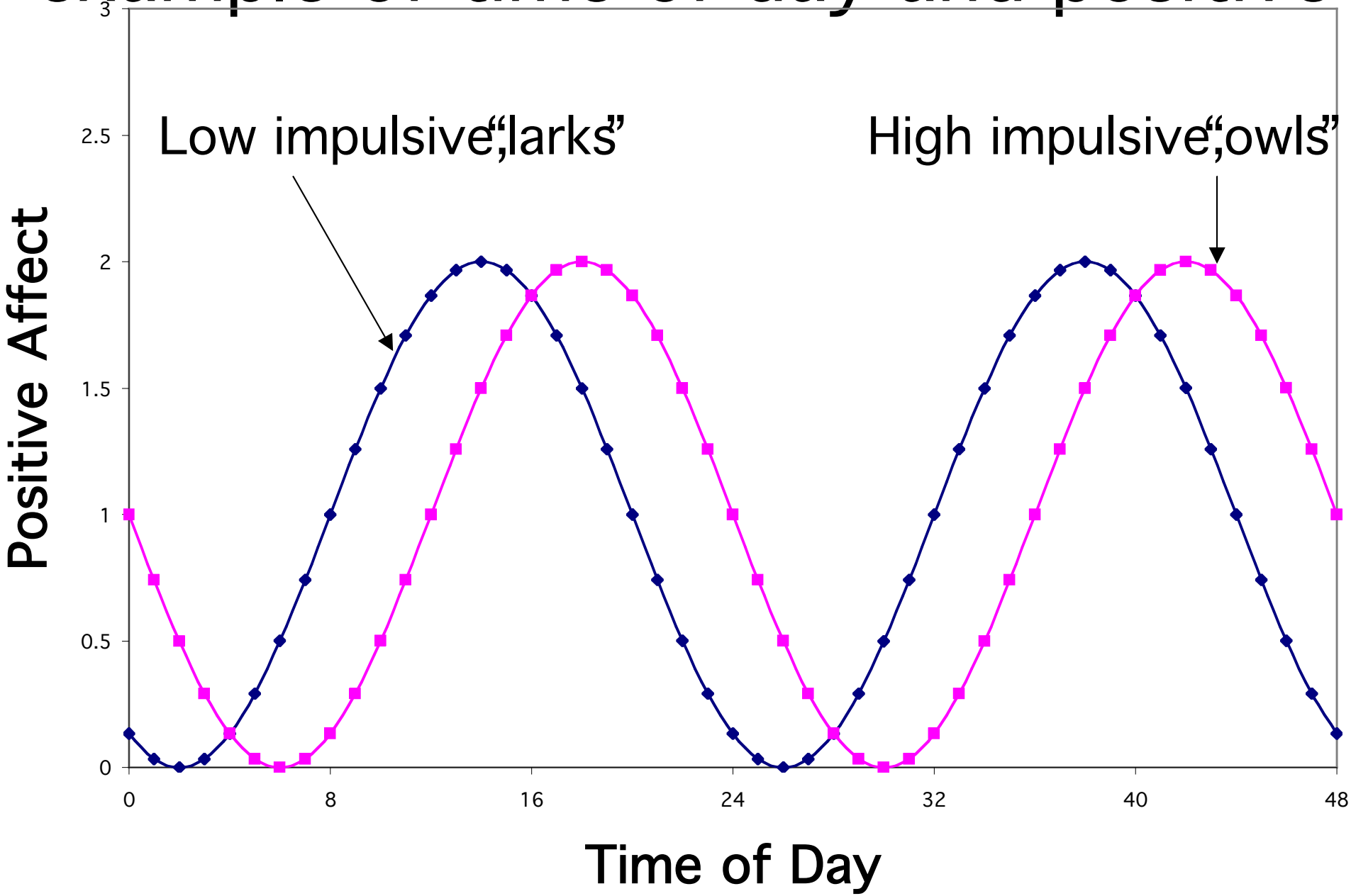
Personality Stability, Consistency, and Coherency



Personality Stability, Consistency, and Coherency



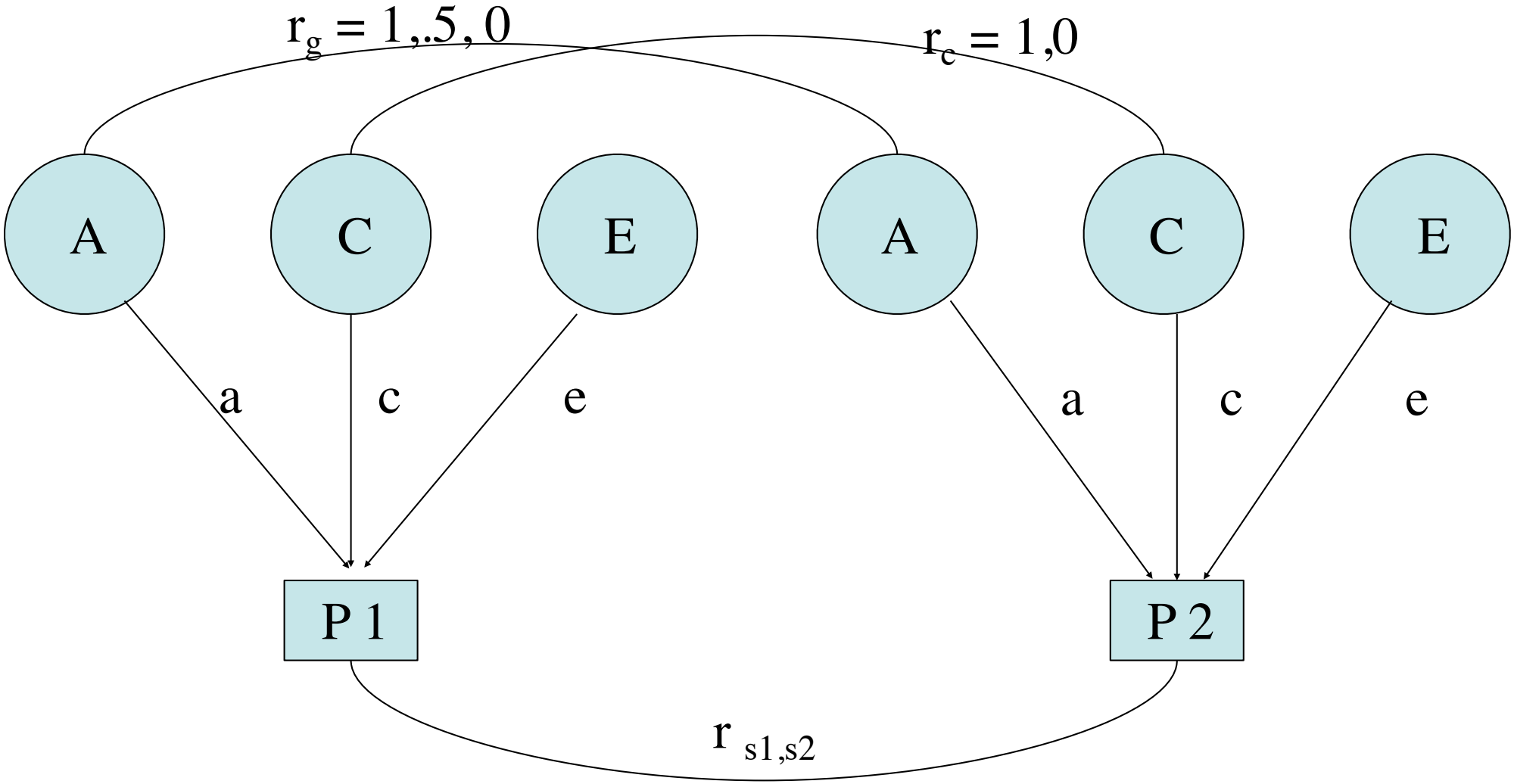
Coherency of individual differences: example of time of day and positive a



Estimating the genetics of personality

- Structural equation modeling applied to phenotypic correlations with known genetic pathways.
- Estimate both measurement model as well as strength of pathways

Estimating the Genetics of Personality



A = additive genetic variance
C = Common family environment
E = Unique environment

r_g = 1 for MZ, .5 for DZ, sibs

r_c = 1 for together, 0 apart

Personality and Genetics

Trait	Narrow heritability	Broad heritability	Shared Environn
Extraversion	0.36	0.49	
Neuroticism	0.28	0.39	
Agreeableness	0.28	0.38	
Conscientiousness	0.31	0.41	
Openness	0.46	0.45	
IQ	0.5	0.75	

McGue and Bouchard, ARN, 1998

Personality and Genetics

Occupational interest	Narrow heritability	Broad heritability[a]	Shared Environment
Realistic	0.36	0.41	0.12
Investigative	0.36	0.66	0.1
Artistic	0.39	0.5	0.12
Social	0.38	0.52	0.08
Enterprising	0.31	0.5	0.11
Conventional	0.38	0.38	0.11

[a] estimated from MZ apart correlation

McGue and Bouchard, ARN, 1998

Personality and Genetics

Psychiatric illness	Broad heritability	Shared Environment
Schizophrenia	0.8	No
Major Depression	0.37	No
Panic disorder	.30-.40	No
Generalized Anx	0.3	Small, females
Phobias	.2-.4	No
Alcoholism	.50-.60	Yes

Personality and Genetics

Social Attitudes	Broad heritability	Shared Environment
Conservatism		
Under age 20	0	
Over age 20	.45-.65	Yes, fema
Right Wing Auth	.50-.64	.0
Religiousness (adult)	30- 45	

Bouchard, CDPS, 2004

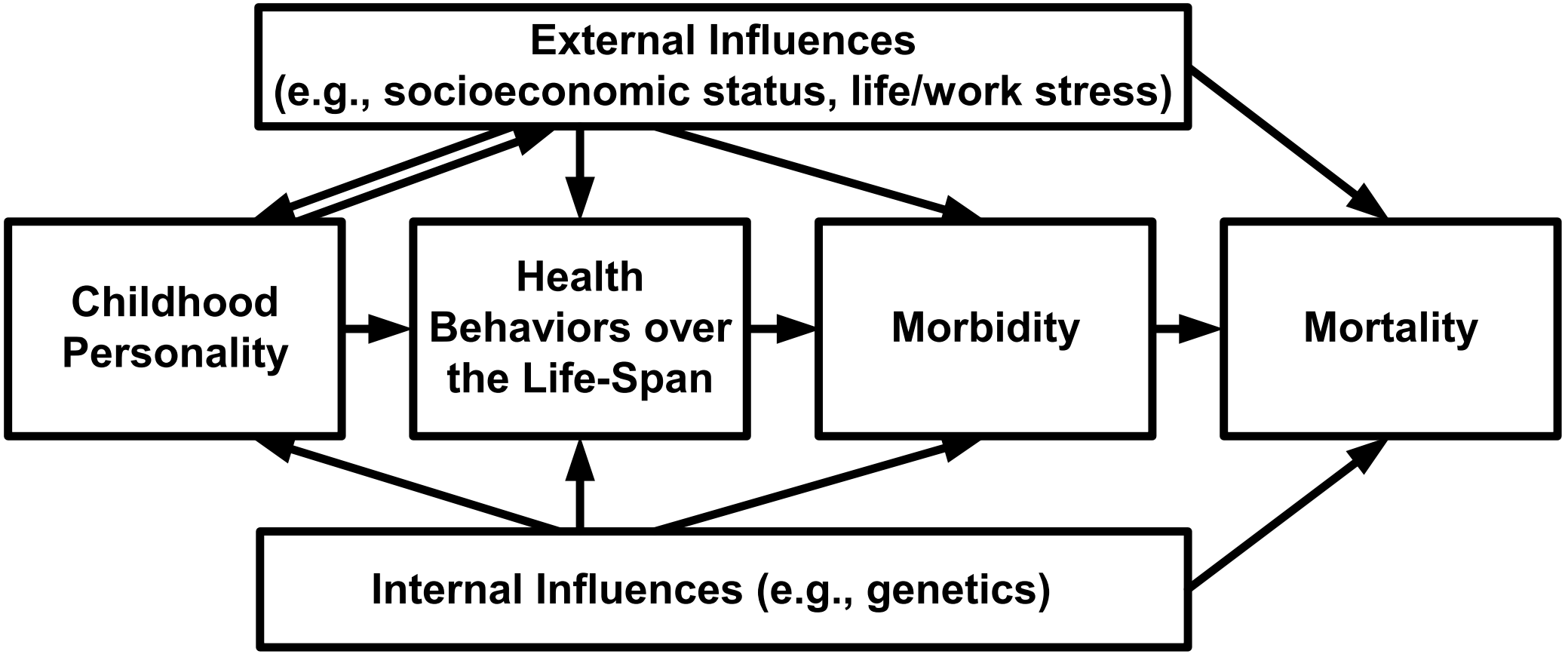
Heritability: misconceptions

- High heritability => Constancy: but
  - Heritability changes by changing the environment
  - Reducing environmental variation increases the heritability
    - Herrnstein's paradox: higher heritabilities imply more equal environments
    - Low heritability => high environmental inequality

Descriptive personality and outcomes -- does personality matter?

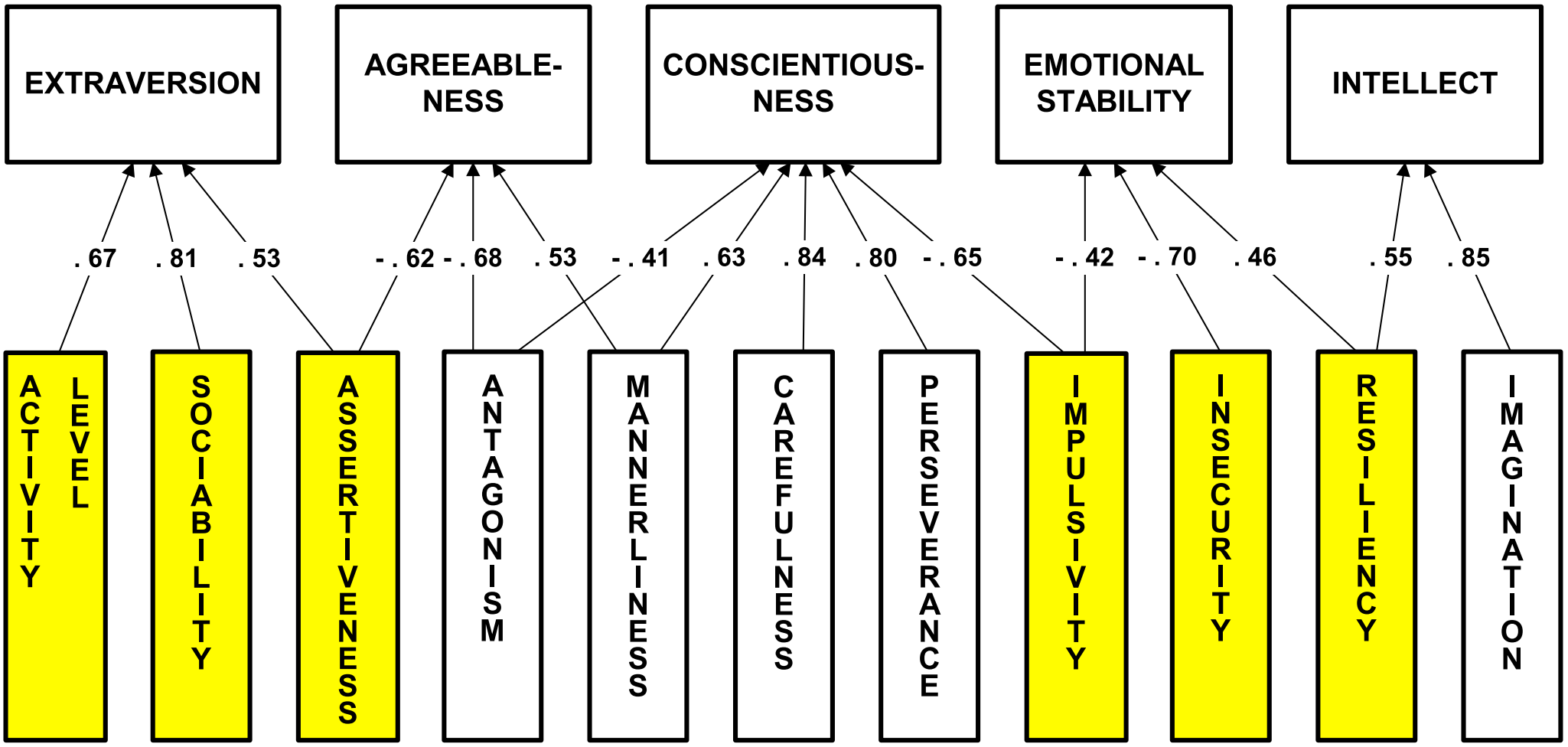
- Terman (1920 …) - Friedman (1993) studies
  - Childhood Conscientiousness and longer life span
  - Childhood "Happiness" related to shorter life span
- Ongoing Goldberg analysis of lifespan health consequences of mid childhood personality traits (the Digman school children study 40 years later)
- Deary analysis of childhood intelligence and life span among Scottish school children (1933 …)

Life-Span, Health-Behavior Model



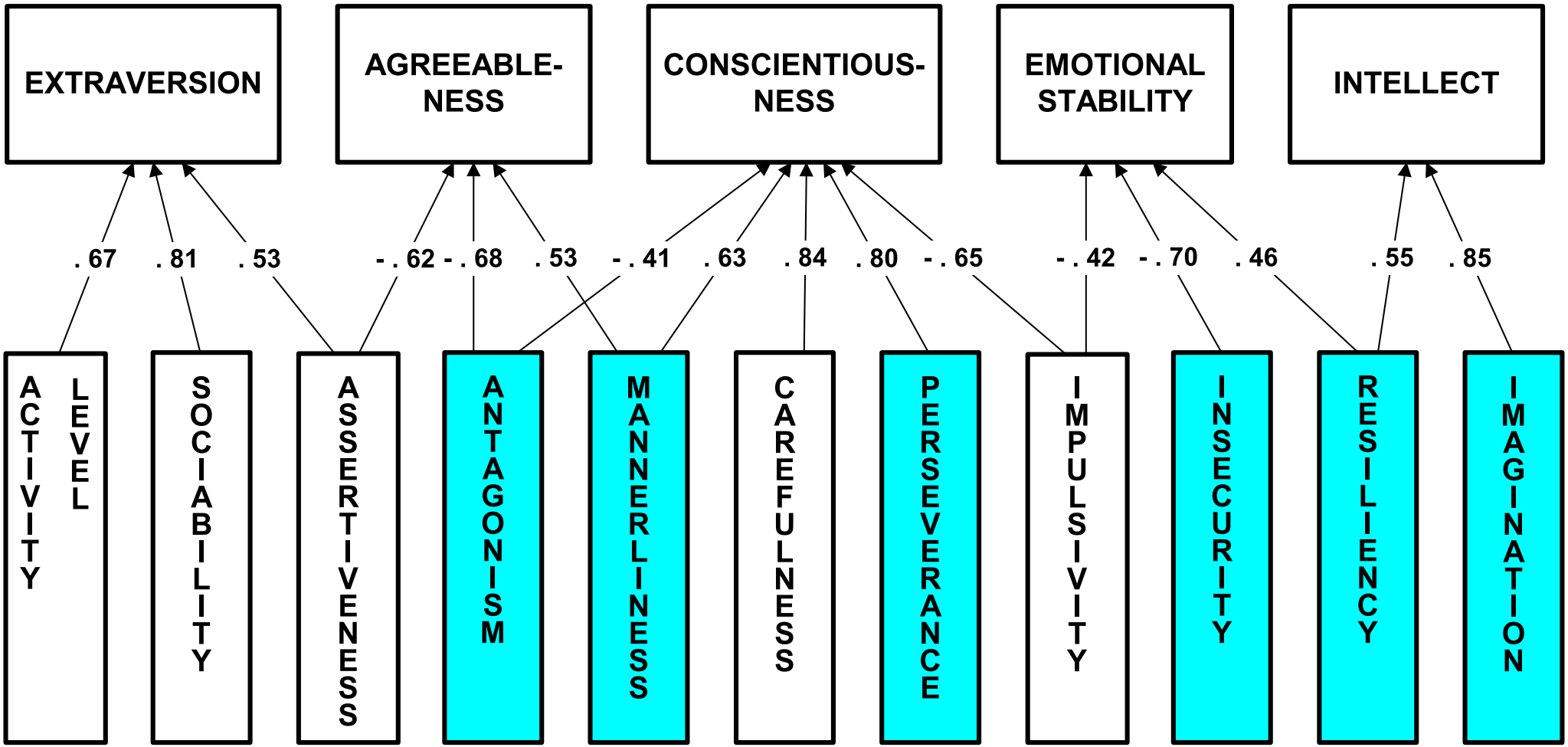
(from Goldberg, 2004)

Childhood Trait Predictors of Adult Health-Damaging Behaviors



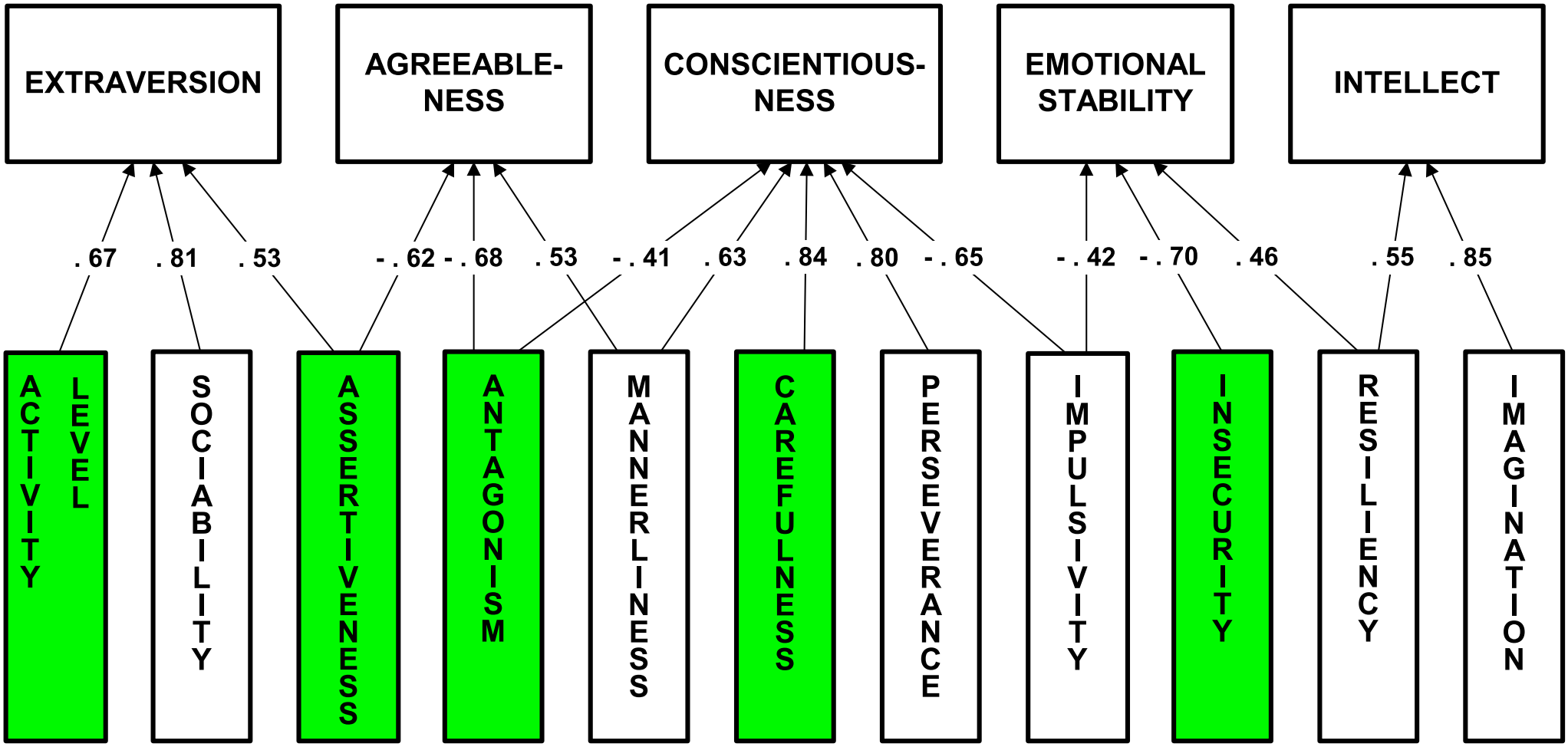
(from Goldberg, 2004)

Childhood Trait Predictors of Adult Health-Protective Behaviors



(from Goldberg, 2004)

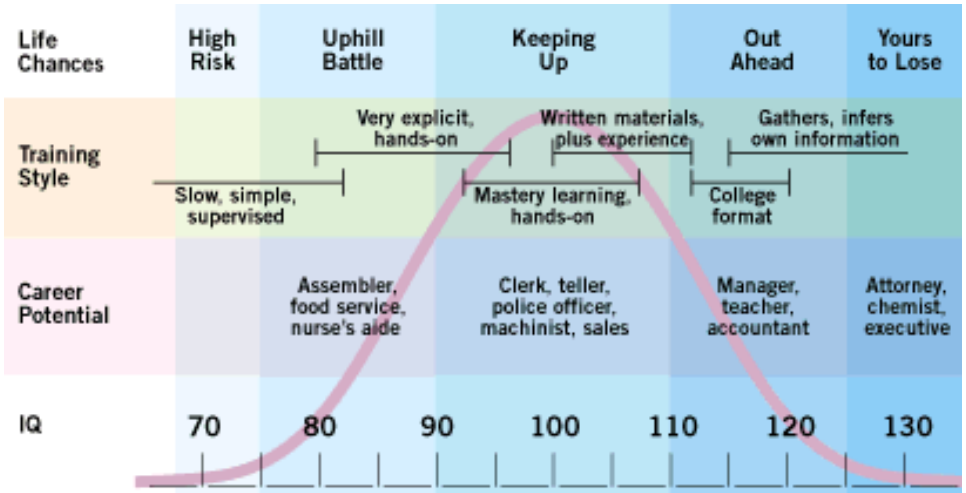
Childhood Trait Predictors of Adult Health Outcomes



(from Goldberg, 2004)

Life as an intelligence test

- Conventional tests are short (30 minutes to 2-3 hours) and use representative content
- Continued performance across many situations is a continuing test of ability
- (see L. Gottfredson)



	Population Percentages				
Total population distribution	5	20	50	20	5
Out of labor force more than 1 month out of year (men)	22	19	15	14	10
Unemployed more than 1 month out of year (men)	12	10	7	7	2
Divorced in 5 years	21	22	23	15	9
Had illegitimate children (women)	32	17	8	4	2
Lives in poverty	30	16	6	3	2
Ever incarcerated (men)	7	7	3	1	0
Chronic welfare recipient (mothers)	31	17	8	2	0
High school dropout	55	35	6	0.4	0

Gottfredson, Scientific American

Life as a intelligence test (adapted from Gottfredson, 2002)

Relative risk (odds ratio) of this outcome for "dull" (IQ 75-90) vs. "bright" (IQ 110-125) persons: Young white adults	
High school dropout	
Chronic welfare recipient (female)	
Ever incarcerated (male)	
Lives in poverty	
Had illegitimate child (women)	
Unemployed 1+ mo/yr (male)	
Out of labor force 1+mo/yr (male)	

Life as an intelligence test (adapted from Gottfredson, 2002)

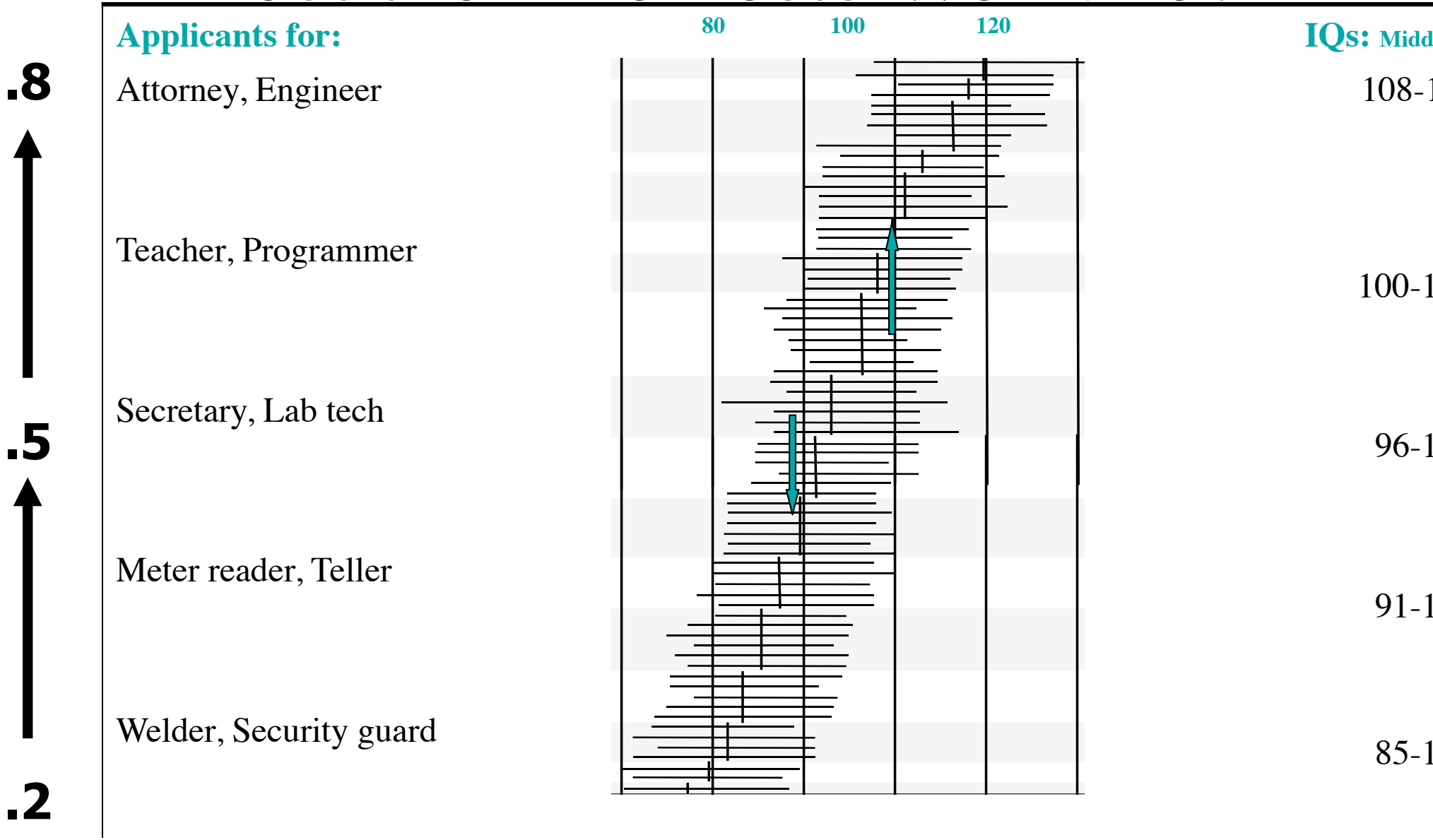
Common subtests, e.g.

- Elementary, secondary school
- Law-abiding, employed, married
- Rung on occupational & income ladders
- Daily self-maintenance (functional literacy)
- Personal health & safety

Different subtests, e.g.

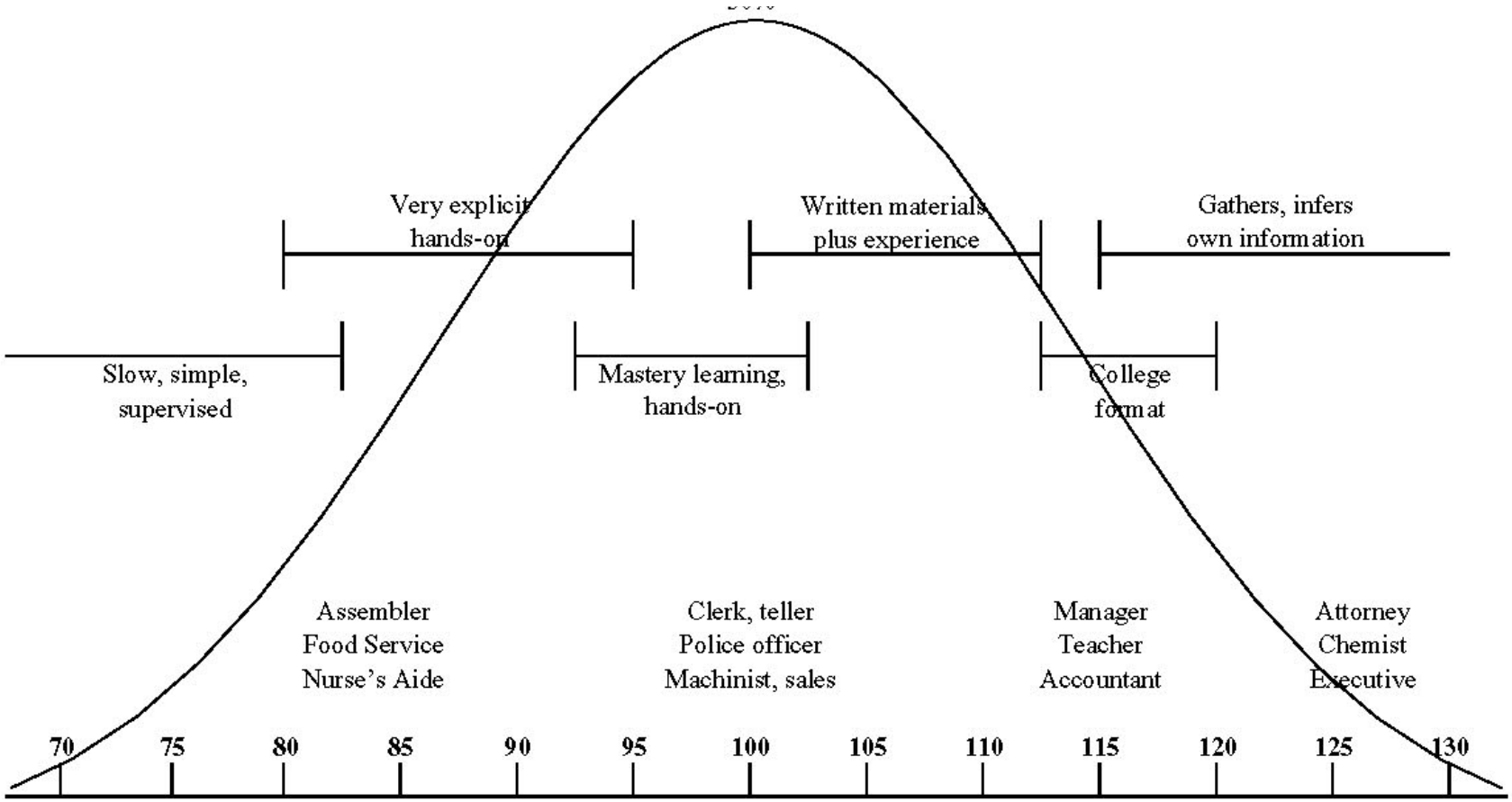
- Tertiary education & training
- Job performed
- Hobbies
- Type of civic participation

3. How Does Our Own *g* Level Affect the Life Tests We Take?



g-Related Relative Risk Varies by Kind of Outcome

Complex
Cumulative



Simple
Episodic

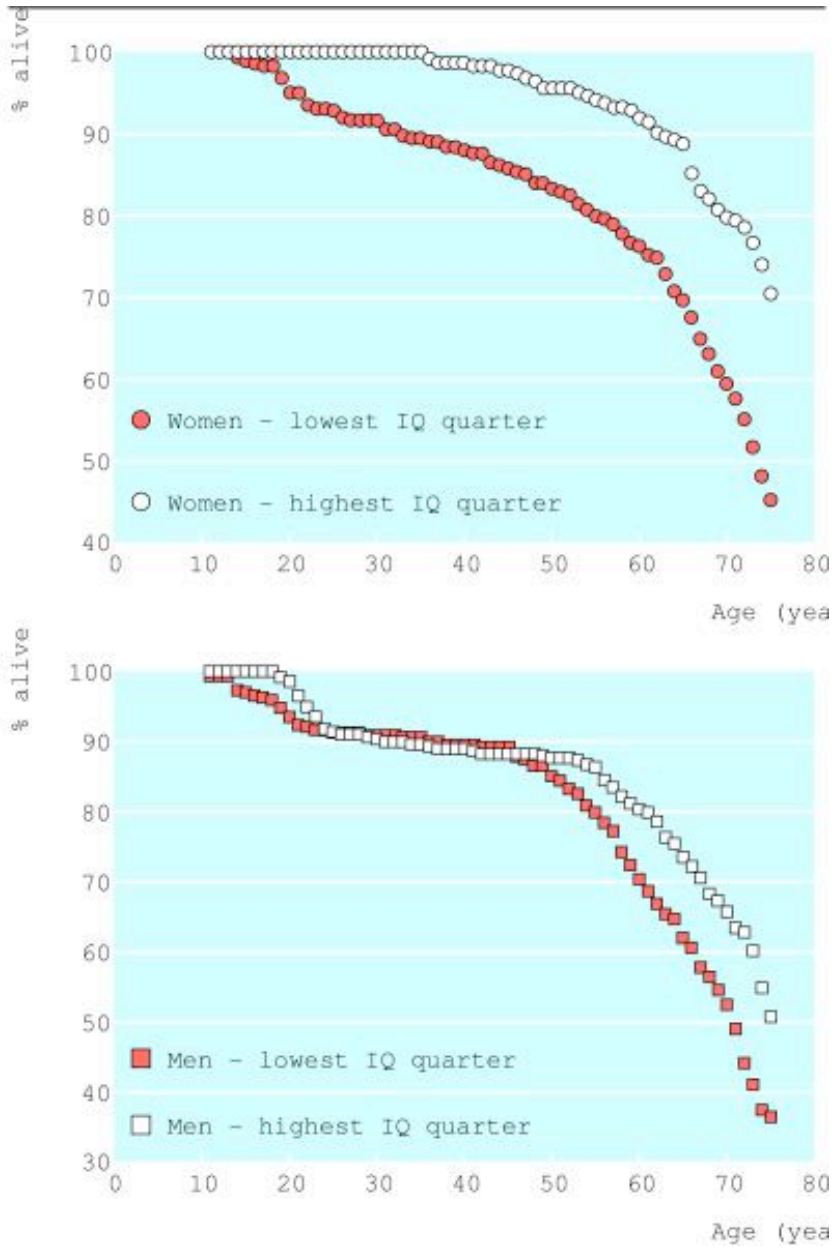
The Scottish Longitudinal Study

- June 1, 1932, all children age 11 attending school in Scotland (N=87,498) took a 45 minute IQ test (Moray House Test)
- Followup studies from Ian Deary and his colleagues (N>600) have examined mortality risk, test retest correlations, MRI scans, Alzheimer onset, etc.

Scotland Longitudinal Study

- Test retest (age 11 to age 77) r = .63, corrected for range restriction = .73
- Mean scores on Moray House Test increased from age 11 to age 77 (43 to 54, sd = 11).
- IQ at age 11 predicted relative risk of dying before 80

Intelligence and Mortality



Descriptive vs. Causal Structure

- Descriptive: the Big 5
- Integration of causal theories of
  - Affect
  - Cognition
  - Desires/Goals
  - Behavior

Causal Models

- Biological models of approach/avoidance
  - Eysenck
    - Description and explanation
    - Arousal Theory
  - Gray
    - Reinforcement sensitivity theory
- Cognitive models of approach/avoidance
  - Atkinson, Raynor, Kuhl, etc.
  - Elliot, etc.

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