PERSONALITY

John Gabrieli
9.00
Personality

1. Definition - What is it?
2. Personality Factors
3. Traits, States, Contexts
4. Brain Correlates of Personality
INDIVIDUALITY

Every person is in certain respects:

• Like all other persons,
• Like some other persons,
• Like no other person.

adapted from Kluckhohn & Murray, 1948
Personality

A set of behavioral, emotional, and cognitive tendencies that people display over time and across situations and that distinguish individuals from one another.
Personality

A set of behavioral, emotional, and cognitive tendencies that people display over time and across situations and that distinguish individuals from one another.

- TRAITS (constant, continuum)
- STATES (temporary)
- SITUATIONS (contexts)
Personality

• 18,000 terms for personality
  affable, agreeable, amiable, amicable, congenial, convivial, cordial, friendly, genial, sociable, welcoming

• trait theory - manageable set of personality dimensions
Personality

How can we measure?

• Interview
• Observation
• Inventory/Questionnaire
  Factor Analysis
  Big Five Personality Dimensions
Factor Analysis

• analyze patterns of correlation to extract factors that underlie the correlations

• carefree, compliant, dependable, hard-working, kind, rude, trusting on a 1-5 scale (social desirability concern)
### Hypothetical matrix of correlations among adjectives used as personality self-descriptions

<table>
<thead>
<tr>
<th>Self-Description</th>
<th>Compliant</th>
<th>Dependable</th>
<th>Hard-Working</th>
<th>Kind</th>
<th>Rude</th>
<th>Trusting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carefree</td>
<td>-.11</td>
<td>-.60</td>
<td>-.43</td>
<td>+.01</td>
<td>+.21</td>
<td>+.17</td>
</tr>
<tr>
<td>Compliant</td>
<td>–</td>
<td>+.29</td>
<td>+.13</td>
<td>+.39</td>
<td>- .70</td>
<td>+.53</td>
</tr>
<tr>
<td>Dependable</td>
<td>–</td>
<td>–</td>
<td>+.49</td>
<td>+.19</td>
<td>-.13</td>
<td>+.17</td>
</tr>
<tr>
<td>Hard-Working</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>+.08</td>
<td>-.11</td>
<td>+.09</td>
</tr>
<tr>
<td>Kind</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>-.65</td>
<td>+.55</td>
</tr>
<tr>
<td>Rude</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–.48</td>
</tr>
<tr>
<td>Trusting</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Chart showing possible correlations among adjectives used to describe personality in oneself.

Image by MIT OpenCourseWare.
Factor Analysis

• analyze patterns of correlation to extract factors that underlie the correlations - independent factors

• label the factor (dimension)
  “conscientiousness”
  carefree, dependable, hard-working
  “agreeableness”
  compliant, kind, rude
## Costa and McCrae’s (1992) NEO PI-R Facets

<table>
<thead>
<tr>
<th>Big Five Dimensions</th>
<th>Facet (and correlated trait adjective)</th>
</tr>
</thead>
</table>
| **O** Openness versus closedness to experience | Ideas (curious)  
Fantasy (imaginative)  
Aesthetics (artistic)  
Actions (wide interests)  
Feelings (excitable)  
Values (unconventional) |
| **C** Conscientiousness versus lack of direction | Competence (efficient)  
Order (organized)  
Dutifulness (not careless)  
Achievement striving (thorough)  
Self-discipline (not lazy)  
Deliberation (not impulsive) |
| **E** Extraversion versus introversion | Gregariousness (sociable)  
Assertiveness (forceful)  
Activity (energetic)  
Excitement-seeking (adventurous)  
Warmth (outgoing) |
| **A** Agreeableness versus antagonism | Trust (forgiving)  
Straightforwardness (not demanding)  
Altruism (warm)  
Compliance (not stubborn)  
Modesty (not show-off)  
Tender-mindedness (sympathetic) |
| **N** Neuroticism versus emotional stability | Anxiety (tense)  
Angry hostility (irritable)  
Depression (not contented)  
Self-consciousness (shy)  
Impulsiveness (moody)  
Vulnerability (not self-confident) |

The Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

1. Disagree strongly
2. Disagree a little
3. Neither agree nor disagree
4. Agree a little
5. Agree strongly

I See Myself as Someone Who…

1. Is talkative
2. Tends to find fault with others
3. Does a thorough job
4. Is depressed, blue
5. Is original, comes up with new ideas
6. Is reserved
7. Is helpful and unselfish with others
8. Can be somewhat careless
9. Is relaxed, handles stress well
10. Is curious about many different things
11. Is full of energy
12. Starts quarrels with others
13. Is a reliable worker
14. Can be tense
15. Is ingenious, a deep thinker
16. Generates a lot of enthusiasm
17. Has a forgiving nature
18. Tends to be disorganized
19. Worries a lot
20. Has an active imagination
21. Tends to be quiet
22. Is generally trusting
23. Tends to be lazy
24. Is emotionally stable, not easily upset
25. Is inventive
26. Has an assertive personality
27. Can be cold and aloof
28. Perseveres until the task is finished
29. Can be moody
30. Values artistic, aesthetic experiences
31. Is sometimes shy, inhibited
32. Is considerate and kind to almost everyone
33. Does things efficiently
34. Remains calm in tense situations
35. Prefers work that is routine
36. Is outgoing, sociable
37. Is sometimes rude to others
38. Makes plans and follows through with them
39. Gets nervous easily
40. Likes to reflect, play with ideas
41. Has few artistic interests
42. Likes to cooperate with others
43. Is easily distracted
44. Is sophisticated in art, music, or literature
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Please check: Did you write a number in front of each statement?

BFI scale scoring (“R” denotes reverse scored items):


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The Big Five Inventory (BFI)

Conscientiousness

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Measures of Personality

• are they stable across life?

• do they predict behaviors and outcomes?
Measures of Personality

- correlated .50 to .70 across 30 or 40 years (height & sex correlate .40)

- increases with age (7-year periods)
  - childhood - .31
  - young adulthood - .54
  - age 30 - .64
  - age 50-70 - .74
Traits remain stable over time (and become more stable with time)

![Graph showing rank-order trait consistency over age periods](image)

Average Big Five scores vary somewhat with age and sex. This graph depicts the mean score for men and women on each of the Big Five traits as a function of age. The results are derived from a sample of 132,515 adults, aged 21-60, who completed a version of the Big Five Personality Inventory that was posted on the Internet. Other studies, using more systematically chosen samples, have shown similar results. (Adapted from Srivastava & others, 2003, p. 1047)
Measures of Personality

• high *neuroticism*
  - pay more attention to threat in environment
  - more stress when given surprise math test
  - higher divorce rate
  - more susceptible to depression and anxiety
Measures of Personality

• high *extraversion*
  - attend more parties, more popular
  - identified as leaders in college
  - live with and work with more people
  - less disturbed by sudden loud sounds or intense stimuli
Measures of Personality

• high agreeableness
  - more willing to lend money
  - higher school grades in childhood
  - fewer arrests as adults
Measures of Personality

• high *openness to experience*
  - more likely to major in humanities
  - change careers in midlife
  - perform better in job training programs
  - play a musical instrument
Measures of Personality

- high conscientiousness
  - more sexually faithful to spouses
  - higher job ratings
  - smoke less, drink less, drive more safely, live longer, less risk for Alzheimer’s disease (89% less)
  - play a musical instrument
Personality

NATURE (genetics)
NURTURE (environment)

Twin Studies
monzygotic vs. dizygotic twins
reared together vs. reared apart
Personality is (partly) rooted in genetics: Twin studies

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Personality

GENETICS

*Twin Studies-Specific Behaviors*

time spent watching television
number of childhood accidents
tendency for marriage and divorce
religious attitudes
work/leisure interest (.50)
happiness (.50)
Personality

NATURE (genetics)

NURTURE (environment)

Twin Studies

monzygotic vs. dizygotic
reared together vs. reared apart (same)

environmental factors - parents?
PERSONALITY

• identical twins reared apart - both very neat

“My mother. When I was growing up she always kept the house perfectly ordered… I learned from her. What else could I do?”

“The reason is quite simple. I’m reacting to my mother, who was a complete slob.”
Personality

- biological, non-twin siblings were far more similar to one another than adoptive siblings (*genetics?*)
- for personality, children no more similar to adoptive sibling than two randomly selected children
  - family plays little or no role?
- does personality fix the environment? sibling contrast? split-parent identification?
PERSONALITY PSYCHOLOGY vs. SOCIAL PSYCHOLOGY

Why do we do things?

Who we are (personality)

Situation we are in (social context)
Personality

• SITUATIONS

Mischel & Peake - 1982 -
conscientiousness - 19 behaviors -
making bed, attend class, complete assignments, neat class notes -
consistent with situations, not across situations - situationism
Situation-specific profiles of verbal aggression for two children. Shoda, Mischel, and Wright (1994) recorded various categories of behaviors among emotionally disturbed children in various social situations at a summer camp. Shown here are results concerning verbal aggressiveness for two children. Zero on the y axis represents the average aggressiveness for all the children observed. In overall verbal aggressiveness, these two children were similar, but they were very different with respect to the situations that elicited their aggression.

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Personality

Temperament - innate, biologically based propensity to engage in a certain style of behavior

broader than traits - observable activity level emotionality sociability
Personality

Temperament - SHYNESS

• some babies (6 weeks) more reactive to environmental stimuli - fussy - 15-20%

• “high-reactive” or “inhibited” babies (vs. “low reactive”) - more crying, distress, motor activity, faster heart rates, higher levels of cortisol

• faster heart rate in womb more likely to be reactive - sympathetic nervous system easily aroused, seek less arousing situation, inhibited
Personality

*Temperament - SHYNESS*

- Signs of inhibition at 2 months or 4 months predict shyness in later childhood and adulthood
- 25% however are inhibited as infants but not shy in later childhood
Personality

• over 1,000 children born in a year categorized as “well adjusted” or “inhibited” or “undercontrolled” at age 3
• 97% examined at age 21
Figure 2. The association between behavior styles at age 3 years and adult criminal behavior.

Figure 3. The association between behavior styles at age 3 years and adult alcohol dependence and suicide attempts.
Personality

Temperament - SENSATION SEEKING

- pursuit of novel, high-stimulation situations
- diving, fast driving, drug/alcohol use, flame e-mails, punk music, driving accidents
- lower levels of MAO-B in blood, may allow dopamine to last longer at synapse
UNSTABLE

Moody
Anxious
Rigid
Sober
Pessimistic
Reserved
Unsociable
Quiet
Passive
Careful
Thoughtful
Peaceful
Controlled
Reliable
Even-tempered
Calm
Touchy
Restless
Aggressive
Excitable
Changeable
Impulsive
Optimistic
Active

INTROVERTED

EXTROVERTED

Sanguine
Sociable
Outgoing
Talkative
Responsive
Easygoing
Lively
Carefree
Leadership

STABLE

Melancholic
Choleric
Phlegmatic
Personality

Eyesenck

_Extraversion/Introversion_

- extraverts less easily aroused, seek stimulation
- introverts already aroused, seek quiet
- optimal level of arousal
- extraverts do better in a noisy settings
- introverts more sensitive to pain, salivate more to lemon juice
Personality

• SITUATION/PERSONALITY INTERACTIONS

Introversion/extraversion
Time of day (am or pm)
Caffeine (or not)

Take a test - if introvert, drink coffee in pm
If extravert - drink coffee in am
Personality

Introversion/extraversion

Time of day

Caffeine - increases arousal

Introverts more aroused in am, less in pm
Extraverts more aroused in pm, less in am

Take a test - if introvert, drink coffee in pm
If extravert - drink coffee in am
The Yerkes-Dodson Law

The Yerkes-Dodson Law

Take a test - if introvert, drink coffee in pm
If extravert - drink coffee in am

Brain regions in which local volume was significantly associated with (a) Extraversion, (b) Conscientiousness, (c) Neuroticism, and (d) Agreeableness

Courtesy of Association for Psychological Science. Used with permission.
Emotional Experience

LR Emotional Experience

Percent Activation

Stimulus Presentation Period

1 2 3 4 5 6 7 8 9 10 11

L R
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Extraversion as a Fundamental Dimension Of Human Personality

<table>
<thead>
<tr>
<th>Introvert</th>
<th>Extravert</th>
</tr>
</thead>
<tbody>
<tr>
<td>reserved</td>
<td>sociable</td>
</tr>
<tr>
<td>quiet</td>
<td>talkative</td>
</tr>
<tr>
<td>aloof</td>
<td>affectionate</td>
</tr>
<tr>
<td>task-oriented</td>
<td>person-oriented</td>
</tr>
<tr>
<td>serious</td>
<td>fun-loving</td>
</tr>
</tbody>
</table>

- Report more Positive Experiences
- Susceptible to Positive Mood Induction
Experimental Design

1 scan = 5 cycles
1 cycle = 4 negative, 4 positive pictures
1 picture displayed for 7.5 seconds each
Amygdala Reactivity to Positive Pictures Correlates with Extraversion

Greater Activation to Positive Pictures

Greater Activation to Negative Pictures

r = .79
p < .0004

Extraversion Score

Experimental Design

| Fear | Neutral | Sad | Scrambled | Angry | Happy | ... 3 x |

... 10 x

1 Scan = 3 Cycles

1 Cycle = 6 Emotion Conditions, 10 pics

1 Picture displayed for 3 sec each
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Amygdala Reactivity to Happy Faces Correlates with Extraversion

Activation to Happy Faces

De-Activation to Happy Faces

Dispositional Positive Affect (Extraversion)

\[ r = 0.79, \quad p < .001 \]

Inhibited and uninhibited infants “grow up”: Adult amygdalar response to novelty

A

F F F F + N1 F1 N2 F2 + F3 N3 F4 N4 +
Familiarization Novel vs Familiar Novel vs Familiar

B

Amy

OTC

C

% BOLD signal change

uninhibited inhibited

novel familiar

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Spielberger State and Trait Anxiety

Example

The **S-Anxiety scale** consists of twenty statements that evaluate how respondents feel "right now, at this moment."

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not At All</td>
<td>Somewhat</td>
<td>Moderately So</td>
<td>Very Much So</td>
</tr>
</tbody>
</table>

A. I feel at ease
   1 2 3 4

B. I feel upset
   1 2 3 4

The **T-Anxiety scale** consists of twenty statements that assess how respondents feel "generally."

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

A. I am a steady person
   1 2 3 4

B. I lack self-confidence
   1 2 3 4
Individual differences in trait anxiety predict the response of the basolateral amygdala to unconsciously processed fearful faces.
Human amygdala: Impaired recognition of fear

- Intact face recognition
- Impairment selective for fear

Genetics & fMRI

**SNPs - single nucleotide polymorphisms**

- DNA sequence variation of a single nucleotide adenine (A), thymine (T), cytosine (C), guanine (G)

- at least 1% of the population

- make up 90% of human genetic variation

- constant from generation to generation
Genetic Variation in Amygdala Response
(Hariri et al., 2002)

- Short vs. long allele in variable repeat sequence of promoter region of serotonin transport gene
- Short allele associated with anxiety traits
- Greater response to fearful faces in short allele
GENE X EXPERIENCE INTERACTION

• Caspi, 2003
• polymorphism of 5-HTT gene
• stressful life events (ages 21-26; job, money, housing, health, relationships)
• childhood maltreatment (ages 3-11)
• short version of allele - more depression and suicidality in response to stressful events than those homozygous for long allele (not always replicated)
Alleles

s/s

s/l

l/l

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EXAM 2

• 70 points
• range 68-34
• mean = 56.5

Rough grade distribution
  A = 68 - 57
  B = 56 - 50
  C = 49 - 34