Personality

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Agenda

Main Goals:

- What is personality?
- Can we automatically detect personality?

Will also (briefly) address:

- How personality factors could potentially help predict differences in speaking behavior
- Next steps in automatic personality detection

Think about someone you know well.

Write down how you would describe this person to others. Use as many words/phrases as necessary to fully describe the person.

What is Personality?

This is about who you are – your characteristic style of behaving, thinking, and feeling.

How can we assess differences in personality?

- 4 main approaches in psychology:
  - Trait
  - Psychodynamic
  - Humanistic
  - Social-Cognitive

Trait Approach

Personality = a combination of traits

Assumes:

- People differ from each other in (relatively) stable ways.
- Traits are consistent ways of behaving and therefore can predict future actions.

Attempts to find a taxonomy (classification scheme) for core traits that define personality.

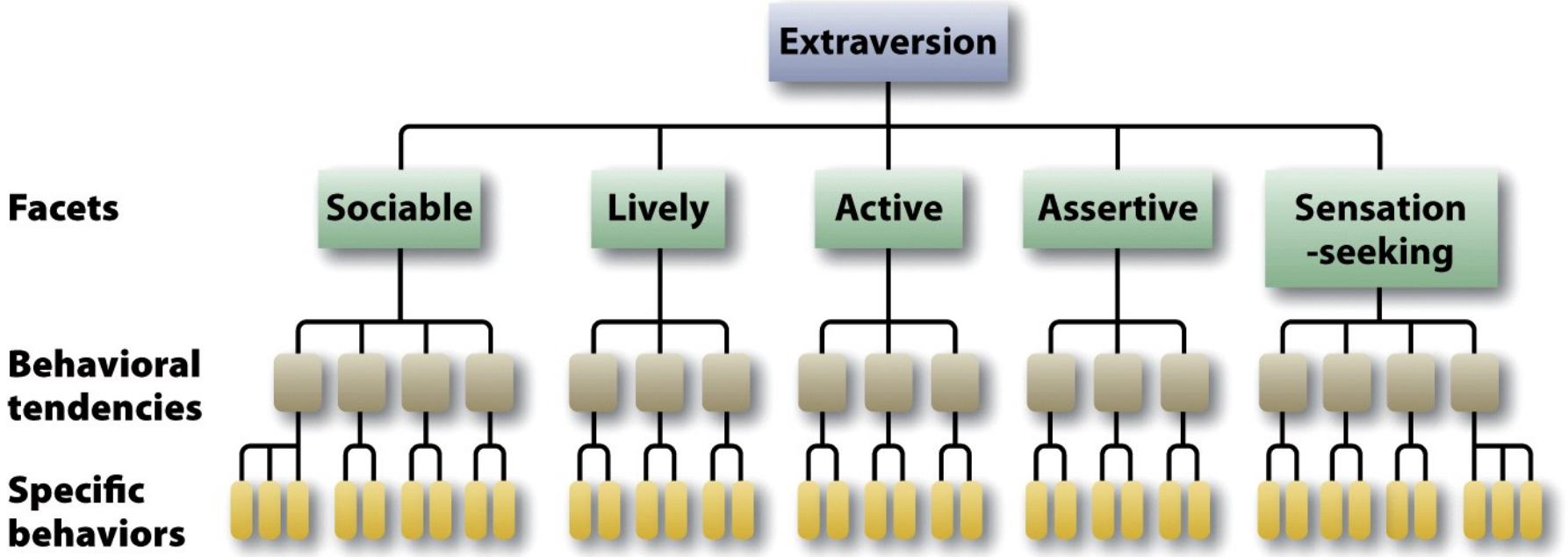
Dimensions of Personality

Why dimensions (versus types)?

How are the dimensions determined?

- 18,000 words for potential traits (Allport & Odbert, 1936)
- Goal: sort words into underlying dimensions
- Uses both self-report and informant data to measure personality.

Determining Core Traits



Psychology, 8/e Figure 15.2

The Big Five

Openness to experience

Conscientiousness

Extraversion

Agreeableness

Neuroticism

Table 12.2 The Big Five Factor Model

Conscientiousness	organized · · · · · · · · · disorganized careful · · · · · · · · · · · · · · careless self-disciplined · · · · · weak-willed
Agreeableness	softhearted · · · · · · · · · · · ruthless trusting · · · · · · · · · · · · suspicious helpful · · · · · · · · · · uncooperative
Neuroticism	worried · · · · · · · · · · · · · · · calm insecure · · · · · · · · · · · · · · secure self-pitying · · · · · · · · self-satisfied
Openness to experience	imaginative · · · · · · down-to-earth variety · · · · · · · · · · · · · · · routine independent · · · · · · · conforming
Extraversion	social · · · · · · · · · · · · · · · retiring fun loving · · · · · · · · · · · · · sober affectionate · · · · · · · · · · reserved

Source: McCrae & Costa, 1999, 1990.

Questions About The Big Five

How stable are the traits?

- Change over development
- Stable in adulthood

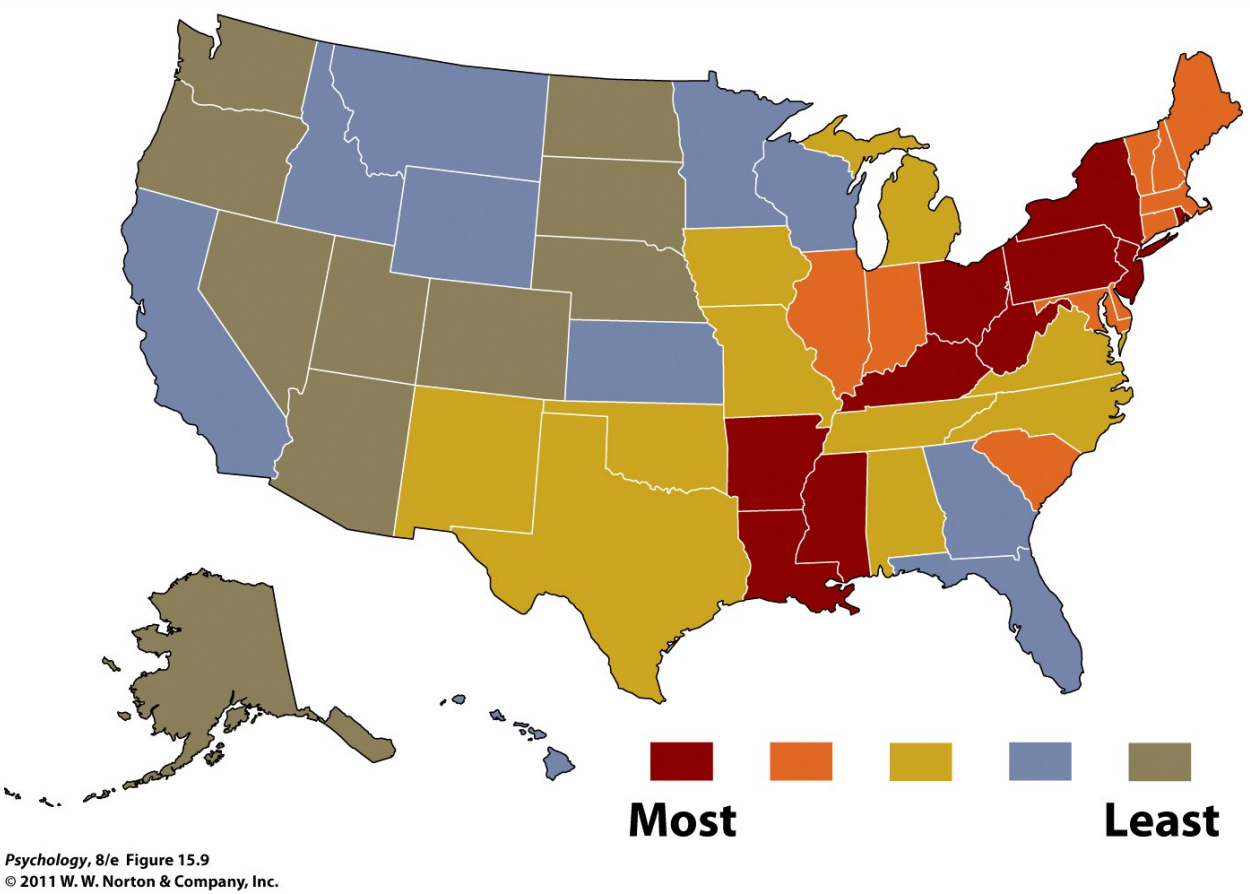
How heritable are they?

- ~50% for each trait (.40 to .55 heritability)

How about other cultures?

- Traditionally traits are thought to be common across cultures
- But research has shown cultural differences in personality

Where are the more “neurotic” places to live?



Psychology, 8/e Figure 15.9

Are Traits Truly Constant?

Personality paradox: people often behave less consistently than expected

- Part of the explanation for this paradox is the power of the situation
- Person-Situation Controversy
  - E.g., Walter Mischel (1968, 1984, 2004)

Counter-argument:

- Trait theorists argue that behaviors from a situation may be different, but average behavior remains the same
- Therefore, traits matter

Is Consistency of Behavior a Trait?

Interaction between personality and situations

- Situations interact with individual differences

Some people are more consistent in their behaviors—the Self-Monitoring Scale

Assessing Traits

Personality inventories: questionnaires (often with true-false or agree-disagree items) designed to gauge a wide range of feelings and behaviors assessing several traits at once

The Minnesota Multiphasic Personality Inventory (MMPI) is the most widely researched and clinically used of all personality tests.

NEO-FFI

Short questionnaire to assess the big 5 traits

Widely used in research

60 items (12/trait)

Likert scale
- SD (strongly disagree) — SA (strongly agree)
- 0 - 4

Example questions:
- When I'm under a great deal of stress, sometimes I feel like I'm going into pieces.
- I usually prefer to do things alone.

Personality and Emotions

Emotions = transient

Personality = consistent

Automatic Personality Detection

Automatic Personality Detection (APD)

What type of cues are more/less useful? Let's look at research on:

- Written language
- Nonverbal vocal behaviors
- Spoken/conversational language

Detection with Written Language

Written language use → personality

Pennebaker and King (1999), Linguistic styles: Language use as an individual difference

- Stream-of-conscious essays
- Big 5 personality assessment
- Lexical features (LIWC)
- Findings, ie.,
  - Agreeableness
    - more positive emotion words
    - fewer negative emotion words
    - fewer articles
    - more first-person

Table 6
LIWC Factors and Simple Correlations With Five-Factor Scores

LIWC factor	Five-factor dimension				
	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Immediacy	**.10***	**.04**	**−.16****	**.07***	**−.02**
First-person singular	.13**	.04	−.13**	.07*	.01
Articles	−.09*	−.09*	.13**	−.15**	−.04
Words of more than 6 letters	−.03	−.04	.16**	−.03	.06
Present tense	.06	.01	−.15**	.04	.00
Discrepancies	.05	−.03	−.01	−.02	−.07*
Making Distinctions	**.05**	**−.14****	**.06**	**−.05**	**−.13****
Exclusive	.00	−.08*	.10*	−.06	−.08*
Tentativity	.06	−.14**	.11**	−.02	−.06
Negations	.05	−.12**	.00	−.04	−.15**
Inclusive	−.01	.07*	.01	.03	.06
The Social Past	**.04**	**.00**	**.08***	**−.02**	**−.04**
Past tense	.03	.04	−.03	.06	−.06
Social	−.01	.12**	.02	.00	.02
Positive emotion	−.13**	.15**	−.06	.07*	.07*
Rationalization	**−.06**	**.02**	**−.03**	**.07**	**.04**
Insight	.03	−.02	.07*	.05	−.01
Causation	.03	−.08*	−.08*	.00	−.07*
Negative emotion	.16**	−.08*	.05	−.07*	−.15**

Detection with Prosodic Cues

Nonverbal vocal (prosodic) behaviors → personality

Are there cues in *how* something is said?

E.g., Mohammadi, Vinciarelli & Mortillaro (2010)

- Data:
  - Short audio clips from a French Speaking Swiss national broadcasting service
  - Personality ratings from 3 judges
- Features:
  - Praat (pitch, formants, energy, speaking rate)

Results

Traits	Recognition Rate			Inter-rater Index
	total	"High"	"Low"	
Extraversion	76.3	82.5	69.5	0.30
Agreeableness	63.0	75.9	47.7	0.30
Conscientiousness	72.0	77.0	65.8	0.32
Neuroticism	63.0	53.6	71.3	-0.11
Openness	57.9*	71.6	40.6*	-0.52

Detection with Lexical Cues

E.g., Mairesse & Walker (2006)

- Can personality be recognized automatically in conversation?
- Data (reviously collected by Mehl & Pennebaker):
  - Daily life conversations, collected and transcribed
  - Personality ratings from 5-7 independent observers
- Features/analyses:
  - 5-7 judges of personality
  - LIWC (linguistic features)
  - MRC psycholinguistic database
  - Utterance type (ie, commands, back-channels)
  - Praat (pitch, intensity, speech rate)

Results

Feature set	All	LIWC	MRC	Type	Pros
Set size	117	88	14	4	11
Extraversion	0.35•	0.36•	0.45	0.55	**0.26**•
Emot. stability	0.40	0.41	**0.39**•	0.43	0.45
Agreeableness	**0.31**•	0.32•	0.44	0.45	0.54
Conscientious.	**0.33**•	0.36•	0.41•	0.44	0.55
Intellect	0.38•	**0.37**•	0.41	0.49	0.44

• statistically significant improvement over the random ordering baseline (two-tailed paired t-test, $p < 0.05$)

Results: Specific Features

#	Extraversion with prosody	α	Emotional stability with MRC	α	Agreeableness with all	α	Conscientiousness with all	α	Intellect with LIWC	α
1	Word-per-sec $\geq$ 0.73	1.43	Nlet $\geq$ 3.28	0.53	Nphon $\geq$ 2.66	0.56	Occup $\geq$ 1.21	0.37	Colon $\geq$ 0.03	0.49
2	Pitch-mean $\geq$ 194.61	0.41	T-L-freq $\geq$ 28416	0.25	Tentat $\geq$ 2.83	0.50	Insight $\geq$ 2.15	0.36	Insight $\geq$ 1.75	0.37
3	Voiced $\geq$ 647.35	0.41	Meanc $\geq$ 384.17	0.24	Colon $\geq$ 0.03	0.41	Posfeel $\geq$ 0.30	0.30	Job $\geq$ 0.29	0.33
4	Word-per-sec $\geq$ 2.22	0.36	AOA $\geq$ 277.36	0.24	Posemo $\geq$ 2.67	0.32	Int-stddev $\geq$ 7.83	0.29	Music $\geq$ 0.18	0.32
5	Voiced $\geq$ 442.95	0.31	K-F-nsamp $\geq$ 322	0.22	Voiced $\geq$ 584	0.32	Nlet $\geq$ 3.29	0.27	Optim $\geq$ 0.19	0.24
6	Pitch-max $\geq$ 599.88	0.30	Meanp $\geq$ 654.57	0.19	Relig $\geq$ 0.43	0.27	Comm $\geq$ 1.20	0.26	Inhib $\geq$ 0.15	0.24
7	Pitch-mean $\geq$ 238.99	0.26	Conc $\geq$ 313.55	0.17	Insight $\geq$ 2.09	0.25	Nphon $\geq$ 2.66	0.25	Tentat $\geq$ 2.23	0.22
8	Int-stddev $\geq$ 6.96	0.24	K-F-ncats $\geq$ 14.08	0.15	Prompt $\geq$ 0.06	0.25	Nphon $\geq$ 2.67	0.22	Posemo $\geq$ 2.67	0.19
9	Int-max $\geq$ 85.87	0.24	Nlet $\geq$ 3.28	0.14	Comma $\geq$ 4.60	0.23	Nphon $\geq$ 2.76	0.20	Future $\geq$ 0.87	0.17
10	Voiced $\geq$ 132.35	0.23	Nphon $\geq$ 2.64	0.13	Money $\geq$ 0.38	0.20	K-F-nsamp $\geq$ 329	0.19	Certain $\geq$ 0.92	0.17
11	Pitch-max $\geq$ 636.35	-0.05	Fam $\geq$ 601.98	-0.19	Fam $\geq$ 601.61	-0.16	Swear $\geq$ 0.20	-0.18	Affect $\geq$ 5.07	-0.16
12	Pitch-slope $\geq$ 312.67	-0.06	Nphon $\geq$ 2.71	-0.19	Swear $\geq$ 0.41	-0.18	WPS $\geq$ 6.25	-0.19	Achieve $\geq$ 0.62	-0.17
13	Int-min $\geq$ 54.30	-0.06	AOA $\geq$ 308.39	-0.23	Anger $\geq$ 0.92	-0.19	Pitch-mean $\geq$ 229	-0.20	Othref $\geq$ 7.67	-0.17
14	Word-per-sec $\geq$ 1.69	-0.06	Brown-freq $\geq$ 1884	-0.25	Time $\geq$ 3.71	-0.20	Othref $\geq$ 7.64	-0.20	I $\geq$ 7.11	-0.19
15	Pitch-stddev $\geq$ 115.49	-0.06	Fam $\geq$ 601.07	-0.25	Negate $\geq$ 3.52	-0.20	Humans $\geq$ 0.83	-0.21	WPS $\geq$ 5.60	-0.20
16	Pitch-max $\geq$ 637.27	-0.06	K-F-nsamp $\geq$ 329	-0.26	Fillers $\geq$ 0.54	-0.22	Swear $\geq$ 0.93	-0.21	Social $\geq$ 10.56	-0.20
17	Pitch-slope $\geq$ 260.51	-0.12	Imag $\geq$ 333.50	-0.27	Time $\geq$ 3.69	-0.23	Swear $\geq$ 0.17	-0.24	You $\geq$ 3.57	-0.21
18	Pitch-stddev $\geq$ 118.10	-0.15	Meanp $\geq$ 642.81	-0.28	Swear $\geq$ 0.61	-0.27	Relig $\geq$ 0.32	-0.27	Incl $\geq$ 4.30	-0.33
19	Int-stddev $\geq$ 6.30	-0.18	K-F-ncats $\geq$ 14.32	-0.35	Swear $\geq$ 0.45	-0.27	Swear $\geq$ 0.65	-0.31	Physcal $\geq$ 1.79	-0.33
20	Pitch-stddev $\geq$ 119.73	-0.47	Nsyl $\geq$ 1.17	-0.63	WPS $\geq$ 6.13	-0.45	Int-max $\geq$ 86.84	-0.50	Family $\geq$ 0.08	-0.39

Columbia X-Cultural Deception (CXD) Corpus

Corpus of within-subject deceptive and non-deceptive speech

Fake resume paradigm - interview format using 24-item biographical questionnaire

Native speakers of SAE and MC, all speaking in English

170 dialogues between 340 subjects, >122 hours of speech

3-4 minutes of truthful baseline speech for each subject

Predicting Personality*

Which features are most useful?

Used baseline speech samples and quantized raw NEO-FFI scores (high, medium, low)

*From Sarah Ita Levitan's dissertation, 1/19

Feature	*CLF*	*N*	*E*	*O*	*A*	*C*
Acoustic	SVM	34.43	39.01	35.21	37.06	34.42
Lexical	SVM	35.06	34.25	43.64	38.74	34.36
Syntactic	NB	50.62	78.32	**52.14**	70.80	64.96
Lexical+Syntactic	NB	**56.84**	78.51	40.86	**73.38**	**69.45**
All	NB	32.61	**78.69**	43.60	63.95	63.95
Majority Baseline	-	22.66	18.64	23.24	19.93	20.11
Improvement	-	34.18	60.05	28.90	53.45	49.34

Personality as a Predictor

In cases where we *know people's personality*, how can we use this to predict speaking behavior?

- When would this be useful?

One area we have looked at is:

- Can knowing people's personality help to predict differences in deceptive behavior?

Personality & Deception Detection

When looking at personality factors on a continuous scale,

- No effect of personality factors in deception detection found so far

Contra earlier findings for English speakers (Enos et al ’06)

- But this is real-time detection vs. later judgments

However, some effects are found when using quantized personality factors (Levitan ‘19)

Personality and Social Media

More recent work includes personality detection from:

- Blogs
- Twitter posts
- Facebook posts

Computer vs Human Judgments

E.g., Youyou, Kosinski & Stillwell (2015)

- Assessed accuracy of personality judgments by humans vs computers using 3 different criteria:
  - Self-other agreement
  - Interjudge agreement
  - External validity
- And compared it to scores on the IPIP (International Personality Item Pool)

Next Steps

Any critiques of the prior studies discussed?

Next steps in APR research?