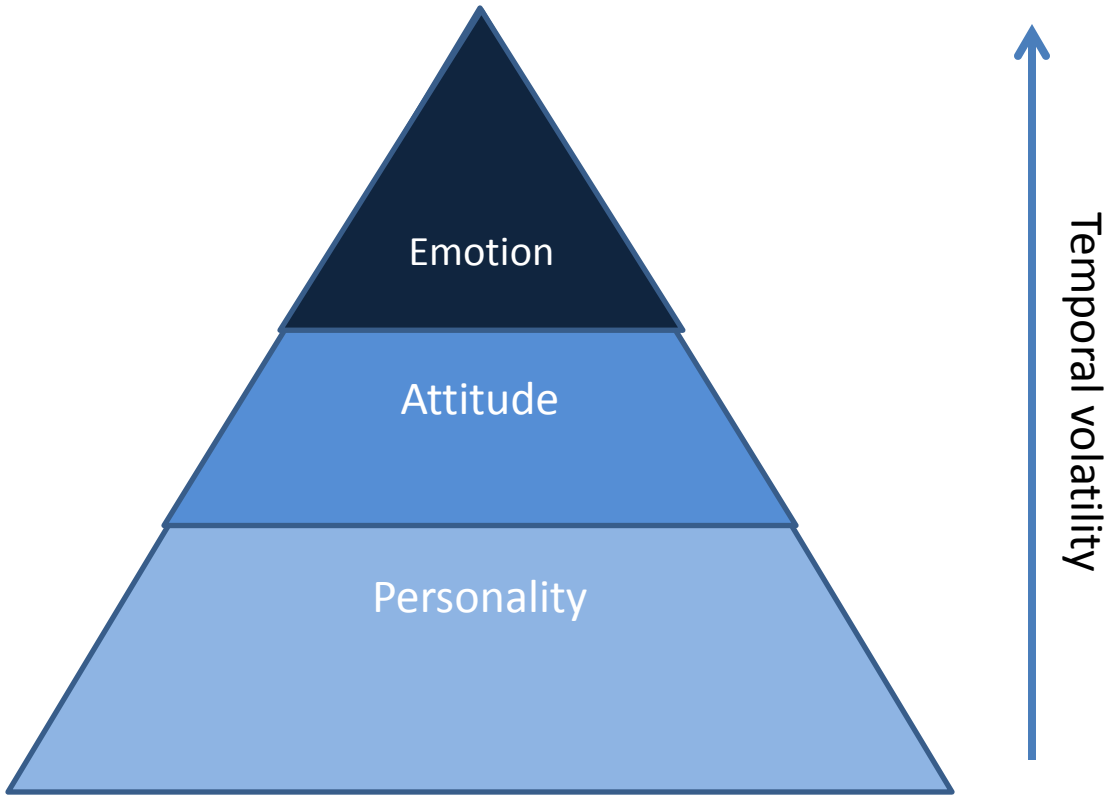
Non-sentiment affect analysis

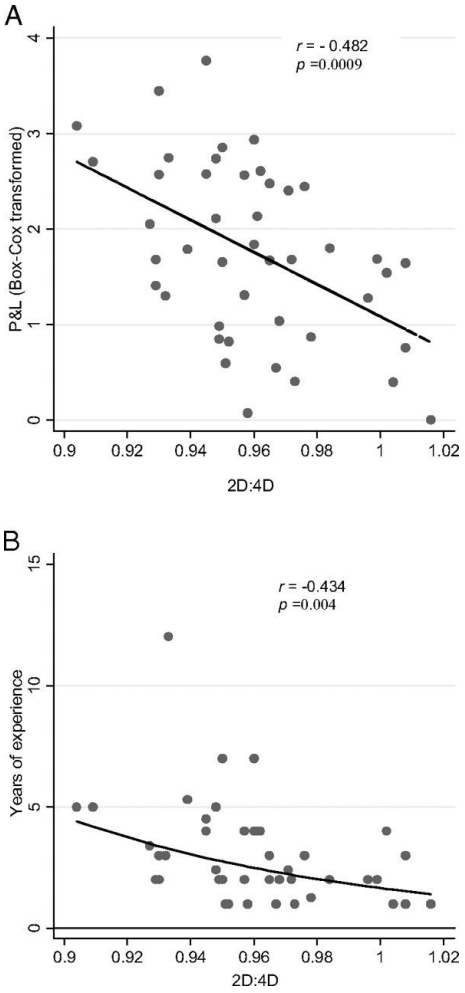
Nisheeth

Sources of affective responding



Personality

- Stable individual differences in responding
- Become consistent early (by adolescence)
- Depends strongly on biological factors



(Coates, Gurnell & Rustichini, 2009)

Models of personality

- Hippocratic model
  - 4 temperaments (happy, sad, calm, passionate)
- Ayurvedic model
  - 3 gunas
- Jungian MBTI theory
  - 4 binary factors → 16 personality types
- Big five model
  - Five traits: conscientiousness, neuroticism, agreeableness, openness to experience, extraversion
  - Most commonly used in recent research

The Big Five

- Typically assessed using a 50 question survey
- Foundation of social psychology research
- Also foundation of most modern HR interviews
  - Openness negatively affects team performance
  - Agreeableness positively affects task proactivity
  - Extraversion negatively affects task performance
  - Conscientiousness positively affects everything companies look for
  - Neuroticism negatively affects everything

Personality predictions from social media

- Typical data mining workflow
- Collect personality test data from subjects
- Mine their social media profiles
- Construct predictive models of each personality factor using mined data

Facebook study

Back et al (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological science*

		Actual personality		Ideal self	
Observer rating	*ICC* (consensus)	*r* (accuracy)	$r_{partial}$	*r*	$r_{partial}$ (self-idealization)
Extraversion					
Average observer	.81***	.39***	.32***	.13	.01
Single observer	.31***	.25***	.21***	.08*	.00
Agreeableness					
Average observer	.59***	.22**	.20*	.16	.08
Single observer	.13***	.11**	.11**	.08*	.04
Conscientiousness					
Average observer	.77***	.27**	.26**	.05	−.02
Single observer	.27***	.17***	.16***	.03	−.01
Neuroticism					
Average observer	.48***	.13	.13	.12	.11
Single observer	.09***	.06	.06*	.04	.04
Openness					
Average observer	.72***	.41***	.37***	.24**	.11
Single observer	.23***	.24***	.21***	.14***	.06

Based on explicit other- and self-ratings

Central result: we appear as we are on FB

Twitter study

Golbeck et al (2011). Predicting personality from twitter. In IEEE *SocialCom*.

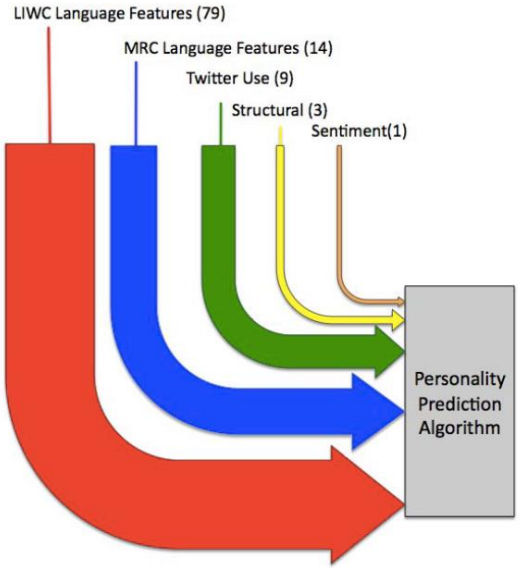
Language Feature	Examples	Extro.	Agree.	Consc.	Neuro.	Open.
"You"	(you, your, thou)	0.068	**0.364**	**0.252**	-0.212	-0.020
Articles	(a, an, the)	-0.039	-0.139	-0.071	-0.154	**0.396**
Auxiliary Verbs	(am, will, have)	0.033	0.042	**-0.284**	0.017	0.045
Future Tense	(will, gonna)	0.227	-0.100	**-0.286**	0.118	0.142
Negations	(no, not, never)	-0.020	0.048	**-0.374**	0.081	0.040
Quantifiers	(few, many, much)	-0.002	-0.057	-0.089	-0.051	**0.238**
Social Processes	(mate, talk, they, child)	**0.262**	0.156	0.168	-0.141	0.084
Family	(daughter, husband, aunt)	**0.338**	0.020	-0.126	0.096	0.215
Humans	(adult, baby, boy)	0.204	-0.011	0.055	-0.113	**0.251**
Negative Emotions	(hurt, ugly, nasty)	0.054	-0.111	**-0.268**	0.120	0.010
Sadness	(crying, grief, sad)	0.154	-0.203	**-0.253**	0.230	-0.111
Cognitive Mechanisms	(cause, know, ought)	-0.008	-0.089	**-0.244**	0.025	0.140
Causation	(because, effect, hence)	0.224	**-0.258**	-0.155	-0.004	**0.264**
Discrepancy	(should, would, could)	0.227	-0.055	**-0.292**	0.187	0.103
Certainty	(always, never)	0.112	-0.117	-0.069	-0.074	**0.347**
Perceptual Processes						
Hearing	(listen, hearing)	0.042	-0.041	0.014	**0.335**	-0.084
Feeling	(feels, touch)	0.097	-0.127	**-0.236**	**0.244**	0.005

Twitter study

Language Feature	Examples	Extro.	Agree.	Consc.	Neuro.	Open.
Biological Processes	(eat, blood, pain)	-0.066	0.206	0.005	0.057	**-0.239**
Body	(cheek, hands, spit)	0.031	0.083	-0.079	0.122	**-0.299**
Health	(clinic, flu, pill)	**-0.277**	0.164	0.059	-0.012	-0.004
Ingestion	(dish, eat, pizza)	-0.105	**0.247**	0.013	-0.058	-0.202
Work	(job, majors, xerox)	0.231	-0.096	**0.330**	-0.125	**0.426**
Achievement	(earn, hero, win)	-0.005	**-0.240**	-0.198	-0.070	0.008
Money	(audit, cash, owe)	-0.063	**-0.259**	0.099	-0.074	0.222
Religion	(altar, church, mosque)	-0.152	-0.151	-0.025	**0.383**	-0.073
Death	(bury, coffin, kill)	-0.001	0.064	**-0.332**	-0.054	0.120
Fillers	(blah, imean, youknow)	0.099	-0.186	**-0.272**	0.080	0.120
Punctuation						
Commas		0.148	0.080	**-0.24**	0.155	0.170
Colons		-0.216	-0.153	**0.322**	-0.015	-0.142
Question Marks		**0.263**	-0.050	0.024	0.153	-0.114
Exclamation Marks		-0.021	-0.025	**0.260**	**0.317**	**-0.295**
Parentheses		**-0.254**	-0.048	-0.084	0.133	**-0.302**

Twitter study

Language Feature	Examples	Extro.	Agree.	Consc.	Neuro.	Open.
GI Sentiment		0.177	-0.130	-0.084	-0.197	**0.268**
Number of Hashtags		0.066	-0.044	-0.030	-0.217	**-0.268**
Words per tweet		**0.285**	-0.065	-0.144	0.031	0.200
Links per tweet		-0.061	-0.081	**0.256**	-0.054	0.064



Statistical tests not corrected for multiple comparisons

Instagram study

Ferwerda et al (2015). Predicting personality traits with instagram pictures. In *Proceedings of the 3rd Workshop on Emotions and Personality in Personalized Systems 2015* (pp. 7-10). ACM.

Personality	Picture properties
Openness to experience	Green, low brightness, high saturation, cold colors, few faces
Conscientiousness	Saturated and unsaturated colors
Extraversion	Green and blue tones, low brightness, saturated and unsaturated colors
Agreeableness	Few dark and bright areas
Neuroticism	High brightness

Generally, across such statistical studies

Easy to predict: OPE

Hard to predict: NEUR, EXTR

Applications

- Personality aware recommendations (Recio-Garcia et al,2009)
- Currently implemented indirectly in CF systems
- Whether more explicit treatments are useful is an open question