

# Determining Personality Traits & Privacy Concerns from Facebook Activity



**Chris Sumner**  
**Alison Byers**  
**Adrian M**  
**The Online Privacy Foundation**

OnlinePrivacyFoundation.org 

Tuesday, 20 December 11

General Flow of talk

My colleagues and I, whom I'll introduce as we go along, are going to talk about some research we conducted to see to what extent you can determine peoples personality traits through their Facebook activity and why we care about that.

This is a relatively untapped and fascinating area of study. We've never had a better chance to observe and analyse behaviour enmass

References:

<http://www.istockphoto.com/stock-photo-13485370-human-mind.php?st=8556d5e>

# Chris Sumner

OnlinePrivacyFoundation.org



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General Flow of talk

Before I continue, and by means of an introduction, I'm Chris Sumner, some of you know me by my twitter handle @TheSuggmeister

Together with a couple of friends, I co-founded the fledgling volunteer organization, The Online Privacy Foundation. We deliver talks about security to the non-geeks in our local communities and also conduct research projects to raise awareness to a broader audience.

References:

<http://www.onlineprivacyfoundation.org> - <http://www.facebook.com/onlineprivacyfoundation/>

OnlinePrivacyFoundation - who are we - [https://www.onlineprivacyfoundation.org/?page\\_id=27](https://www.onlineprivacyfoundation.org/?page_id=27)

# “Facebook profiles reveal personality traits to researchers”



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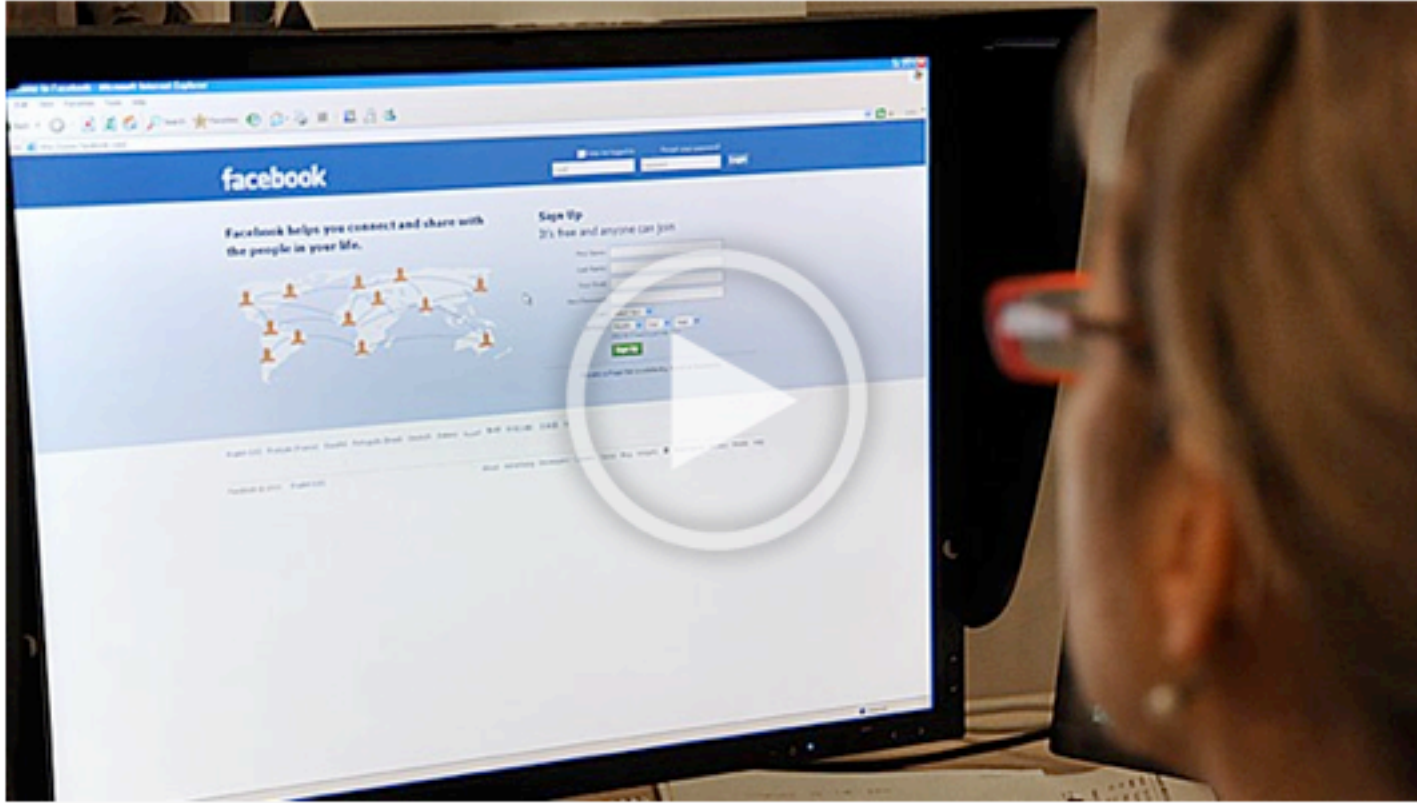
On May 9th this year we saw this article.

Their message is clear “Facebook can be used to predict personality”, which will be interpreted by a lot of people and press as “by only using facebook, employers can determine personality...”

References



## Facebook Can Serve as Personality Test



The homepage for social media website Facebook is shown in this Jan. 26, 2010 photo in Washington. Companies who want to know more about prospective employees can learn a lot by checking their Facebook profiles. (Karen Bleier/AFP/Getty Images)

DiscoveryNews. By ERIC MILLER  
May 13, 2011

“Facebook  
can serve  
as a  
personality  
test”

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Here's another report...same topic much more sure...same thing....

References



# Can you determine personality from Facebook?



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....but can you really determine personality from facebook? To what extent?

References:

<http://www.istockphoto.com/stock-photo-1709840-not-impressed-guy.php?st=54d82c4>

# ...and if you can....



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- and if you can,

References:

<http://www.istockphoto.com/stock-photo-1709840-not-impressed-guy.php?st=54d82c4>





# “So what?”

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General Flow of talk

- so what? what are the implications.
- That's what we set out to find, because in our minds...if you can't determine personality from facebook people need to know.



# Outline

- Introduction

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General Flow of talk...

So our talk covers the following 7 points

Adrian is going to take us through...

a brief introduction to Personality Traits. This should put us in a good position for understanding the rest of the talk.

One note...The CD contains our paper and the slides that will be posted on the blackhat slide will have some speaker notes.

# Outline

- Introduction
- Personality Prediction

# Outline

- Introduction
- Personality Prediction
- Our Research

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Then we'll discuss the research experiment we conducted called "The Big 5 Experiment", which looked at peoples Facebook activity in relation to their personality types.



# Outline

- Introduction
- Personality Prediction
- Our Research
- **Analysis**

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Alison is going to talk about..  
how we analysed the data and what the results told us.....

# Outline

- Introduction
- Personality Prediction
- Our Research
- Analysis
- **Results**

# Outline

- Introduction
- Personality Prediction
- Our Research
- Analysis
- Results
- **Discussion**



# Adrian M

OnlinePrivacyFoundation.org



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General Flow of talk

References

# Quick intro

Adrian M

OnlinePrivacyFoundation.org



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General Flow of talk

I'm Adrian, as well as being part of the OPF, I'm a defcon goon, co-founder of 44 con etc etc...

I'm going to provide a short introduction to personality traits and then take look at 5 key personality traits.

References  
<http://www.istockphoto.com/stock-photo-17096161-chalkboard-with-book.php?st=e64123c>

I



# Theophrastus c. 371 - c. 287 BC

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General Flow of talk

As with many things, you can trace the origins of Personality back to Greece

This chap, THEOPHRASTUS is widely credited with observing differences in the behaviour of people at...





# Theophrastus c. 371 - c. 287 BC

Tuesday, 20 December 11

General Flow of talk  
...parties

He wrote a book titled “The Characters”.

He covers a number of types, including  
the flatterer,  
the dissembler,  
the mean,  
the tactless,  
the garrulous, and  
the avaricious

## References

<http://www.netplaces.com/career-tests/personality-and-your-career/a-short-history-of-the-study-of-personality.htm>

# ***Fast Forward***

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General Flow of talk

Fast forward a few centuries and you'll meet....





# Psychological Types

A REVISION BY R. F. C. HULL  
OF THE TRANSLATION BY H. G. BAYNES

CG  
JUNG

1921

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General Flow of talk

... Carl Jung, who some might consider the godfather of personality types.

INTRO EXTRO - 8 types overall -

“It was Jung who suggested that human behaviour could be classified by how people go about such basic functions as gathering information and making decisions based on that information.

He realized that some people orient themselves to the world outside themselves (extroverts) and some people orient themselves to their inner world (introverts).

He then named the cognitive processes that all people engage in — thinking, feeling, sensing, and intuiting — to come up with eight types.”

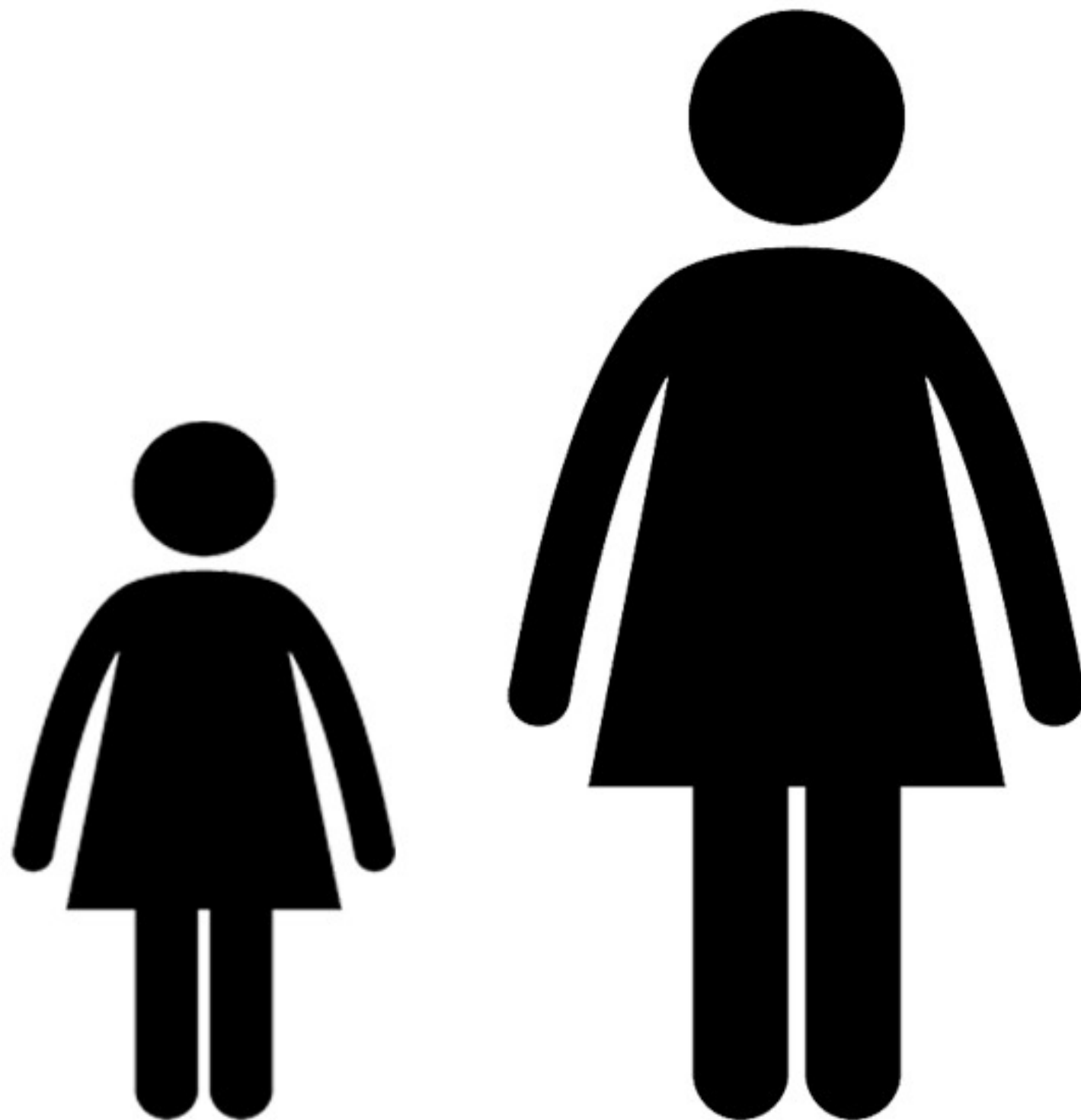
We’ll talk more about these traits later. While he proposed these traits, he didn’t provide a test, in the way many of us are used to seeing these days...

References

Highly readable - <http://www.netplaces.com/career-tests/personality-and-your-career/types-traits-and-temperaments.htm>

Book - Psychological Types (Collected Works of C.G. Jung Vol.6)

# Myers & Briggs



Isobel Briggs Myers

Katherine Briggs

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...enter the daughter and mother team of Myers and Briggs, who were fascinated with Carl Jung's work. **Katherine Briggs** and her daughter **Isobel Briggs Myers**

**Isobel Son in Law**  
**Help people find jobs**

I'm going to skirt over the reasons they got interested in Personality, but essentially Briggs was intrigued by the differences in her daughter and her son in law.

They were spurred on by a desire to find a way to help people find jobs that suited them and create the Myers Briggs Type Indicator of MBTI which is based on Jungs work

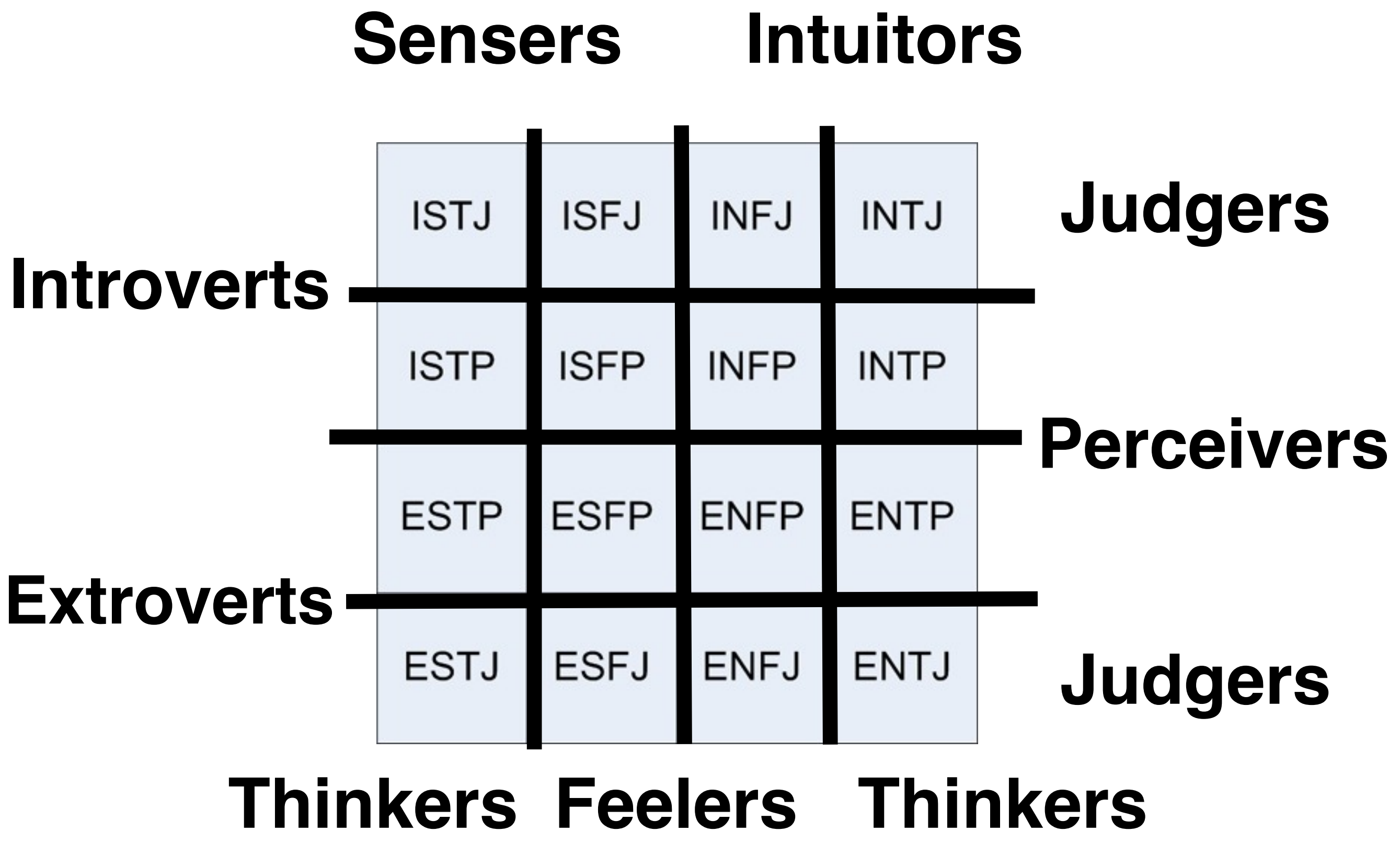
## References

Highly readable - <http://www.netplaces.com/career-tests/personality-and-your-career/types-traits-and-temperaments.htm>

Highly readable - [http://en.wikipedia.org/wiki/Myers-Briggs\\_Type\\_Indicator](http://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator)

Book - Gifts Differing: Understanding Personality Type (By Isabel Briggs-Myers)

Isabel Myers Briggs conducted independent research and tried a series of questions out on friends, family, and students at her children's school until she came up with sixteen distinct personality types. "....



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General Flow of talk

...without going into detail, they divided people into

- Extroverts and Introverts
- Sensors and Intuitors
- Thinkers and Feelers
- and Judgers and Perceivers.

However, this has also drawn some criticisms

References

Highly readable - <http://www.netplaces.com/career-tests/personality-and-your-career/types-traits-and-temperaments.htm>

Highly readable - [http://en.wikipedia.org/wiki/Myers-Briggs\\_Type\\_Indicator](http://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator)

Book - Gifts Differing: Understanding Personality Type (By Isabel Briggs-Myers)





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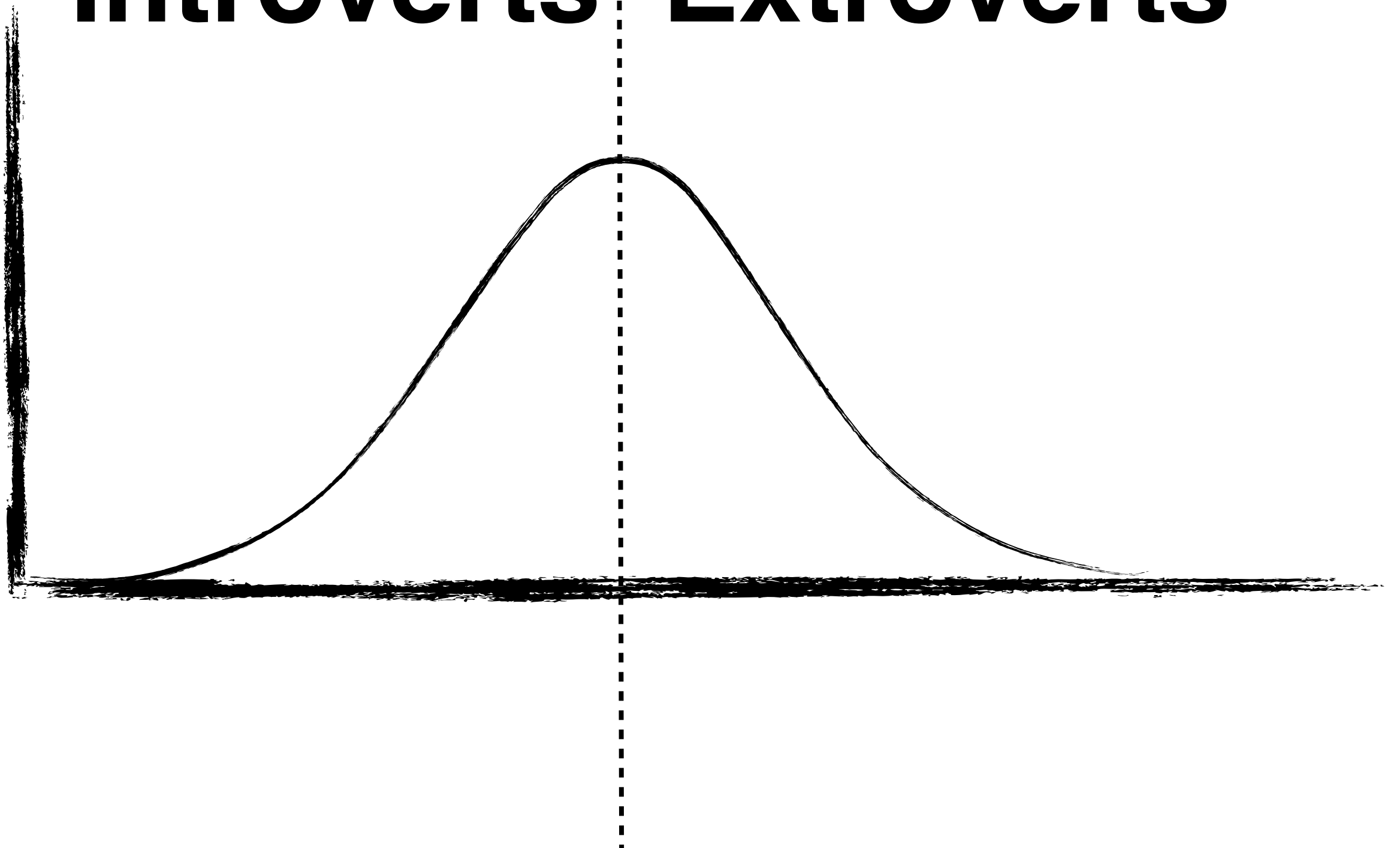
...that is, If implemented incorrectly, which it often is, people get **pigeon holed**.....  
- BINARY

#### References

Highly readable - [http://en.wikipedia.org/wiki/Myers-Briggs\\_Type\\_Indicator](http://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator)

Book - The Cult of Personality: How Personality Tests Are Leading Us to Miseducate Our Children, Mismanage Our Companies, and Misunderstand Ourselves Annie Murphy Paul

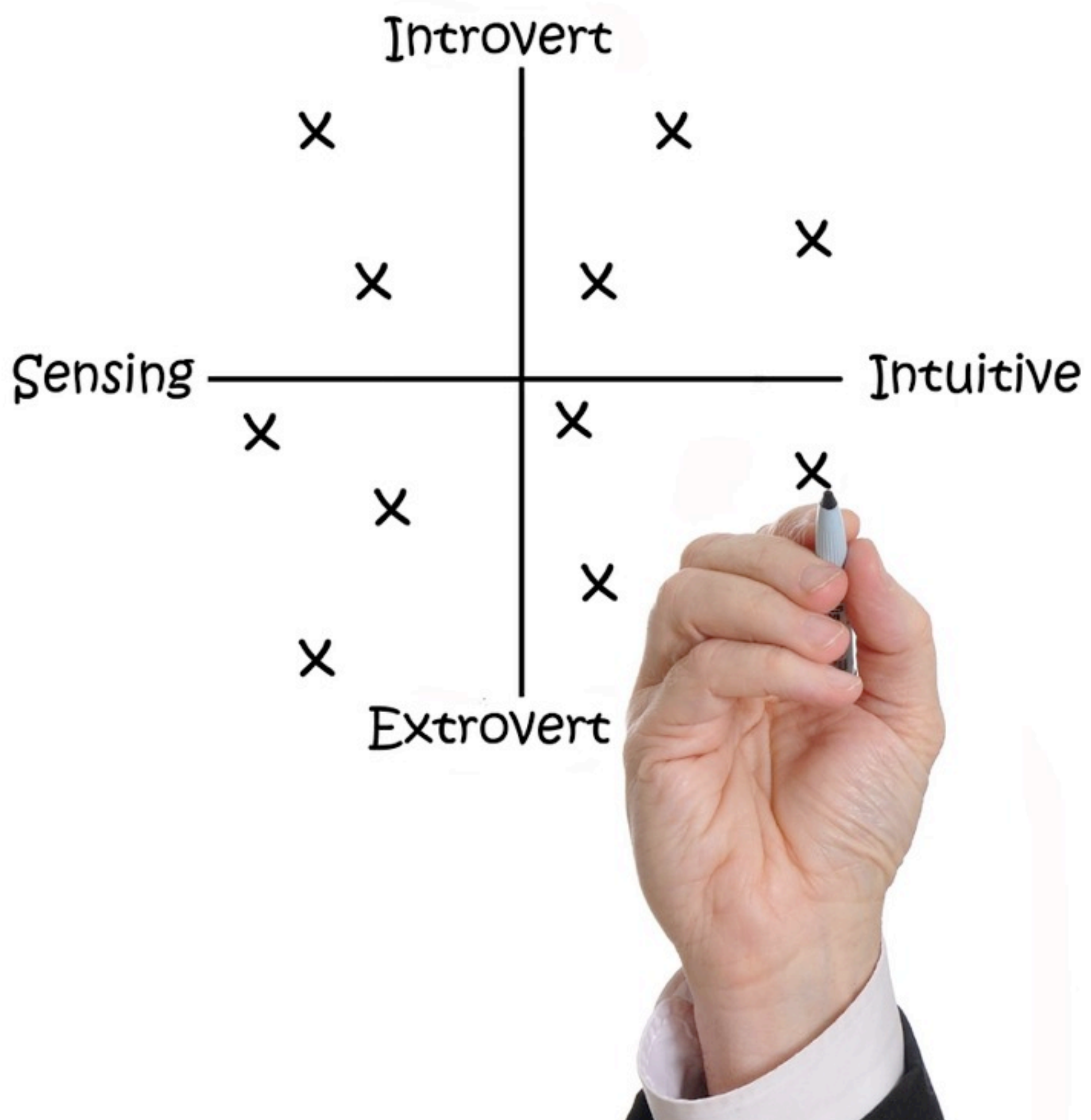
# Introverts   Extroverts



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- This is an approximation of the distribution of introverts and extroverts. One of the major criticisms of Myers Briggs TI is that it suggests the distribution would really be in the shape of a “u” with each end having a sizeable number of introverts or extroverts.

Here we can clearly see that people sort of fall in the middle (in reality, the distribution is likely to be more skewed)... That means, you might get “classified” as an Extrovert, but only be a notch more so than your “introvert classified” friend.



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REALITY SHADES OF GREY

Here's a reasonable example of a a scale might look like...people fall across a spectrum.

There's other criticisms of MBTI, such as the test reliability..that is, for a number of people taking the test, they'll test differently the next time.

Now..





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General Flow of talk

.in the research community, have largely converged on 5 key, high order personality traits.... ...The Five Factor Model. Sometimes called, “The Big 5” or “OCEAN”. OCEAN because it covers 5 high order personality dimensions

- Openness
- Conscientiousness
- Extroversion
- Agreeableness and
- Neuroticism (more of this shortly).

There are a number of tests available to determine these traits, from tests with 100 or more questions to tests with just 10 questions.

In research terms, and as far as we’re aware, the five factor model has received more scrutiny than any other personality model

For our, non-profit objectives there was one final important point. Free tests exist. Free to non-profits in anycase... so lets take a look at those 5 dimensions.

References

Highly readable - [http://en.wikipedia.org/wiki/Myers-Briggs\\_Type\\_Indicator](http://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator)

Book: Snoop, What your stuff says about you, Sam Gosling

# High Scorers Openness



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General Flow of talk

..Keeping the letters in the right order, the first high order trait is Openness...and to help, we used some movie characters to who felt typified these traits.

For openness we chose the crazy doctor from Back to the Future as being a good role model for people high in Openness

General Flow of talk

In terms of someone we can consider high in Openness,we chose Albert Einstein...



# High Scorers Openness



- Imagination
- Curiosity
- Creativity
- Inventiveness

Tuesday, 20 December 11  
General Flow of talk

He's....  
- Imagination  
- Curiosity  
- Creativity  
- Inventiveness.

General Flow of talk  
In terms of someone we can consider high in Openness, we chose Albert Einstein...

# Openness

## Low Scorers



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General Flow of talk

On the other side of the openness spectrum, we chose Spock

General Flow of talk

conventional  
concrete  
traditional  
prefer known to unknown

if they go into a restaurant, odds are that they probably order the same thing/things on each visit.

Next up is....

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Openness\\_to\\_experience](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Openness_to_experience)  
Movie - The Stepford Wives [http://en.wikipedia.org/wiki/The\\_Stepford\\_Wives](http://en.wikipedia.org/wiki/The_Stepford_Wives)  
Book: Snoop, What your stuff says about you, Sam Gosling



# Openness

## Low Scorers

- Conventional
- Traditional
- Concrete



Tuesday, 20 December 11  
Spock - star trek

Spock tends to be  
conventional  
traditional and  
concrete

Logic rules his life.

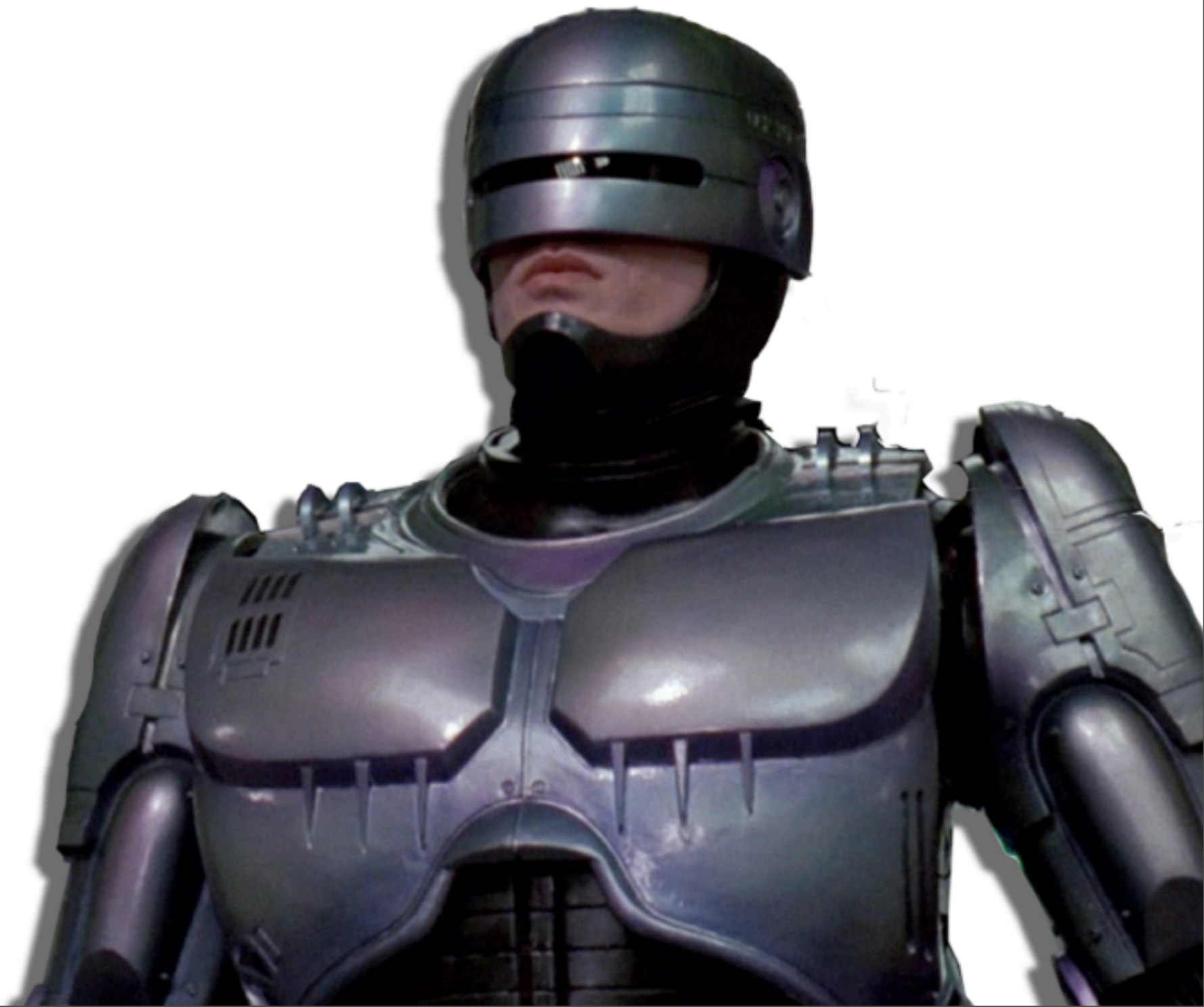
if they go into a restaurant, odds are that they probably order the same thing/things on each visit...it might be consider illogical not to.

Next up is....

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Openness to experience](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Openness_to_experience)  
Movie - The Stepford Wives [http://en.wikipedia.org/wiki/The\\_Stepford\\_Wives](http://en.wikipedia.org/wiki/The_Stepford_Wives)  
Book: Snoop, What your stuff says about you, Sam Gosling

<http://www.istockphoto.com/stock-photo-14088880-businessman-on-red-redux.php?st=0e16575>

# High Scorers Conscientiousness



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General Flow of talk

..It's the RoboCop dimension

Part Man, Part Machine, All Cop....if you give this guy something to do, you can be pretty confident he'll get it done, unlike

## References

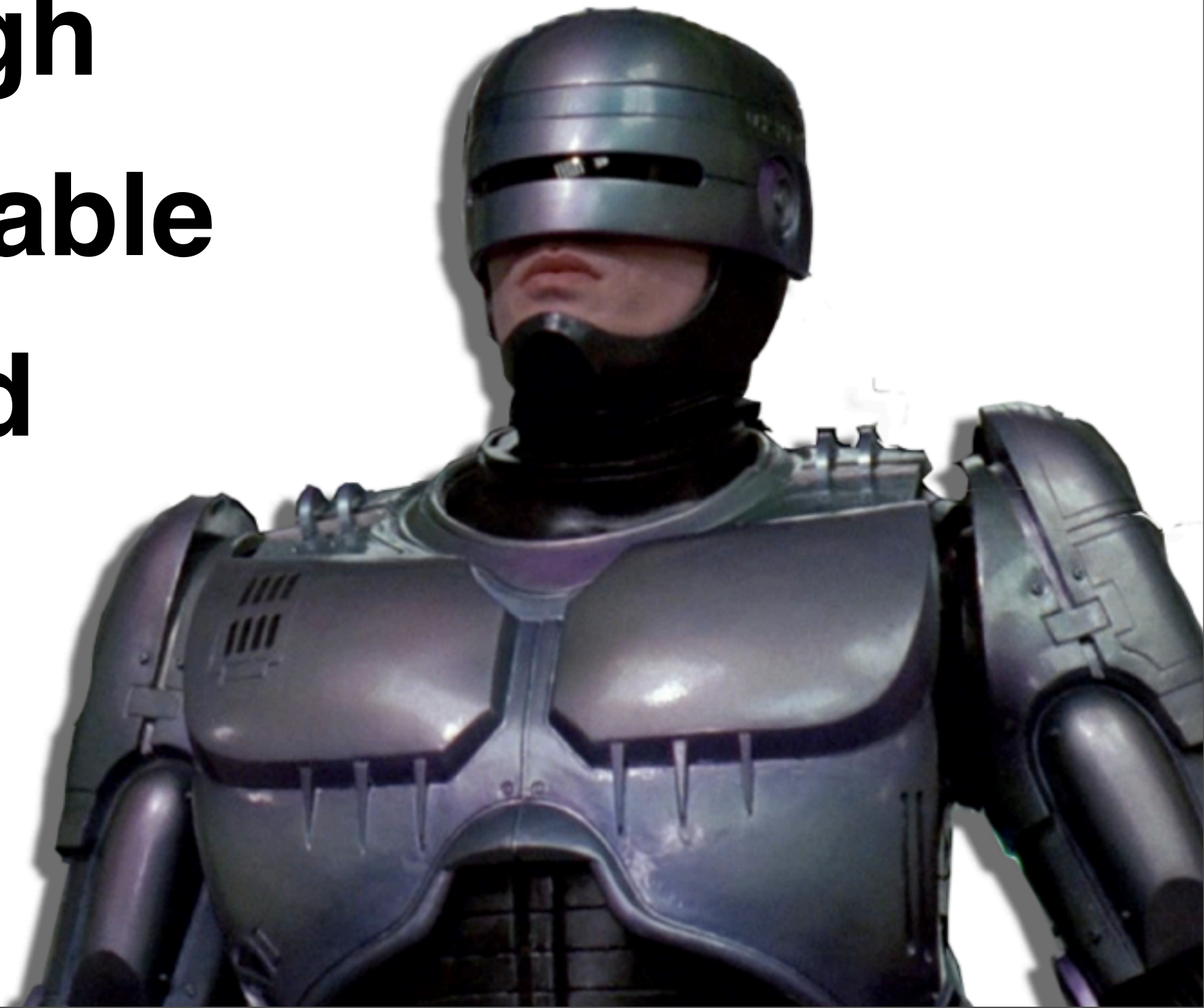
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)

Book: Snoop, What your stuff says about you, Sam Gosling



# High Scorers Conscientiousness

- Thorough
- Dependable
- Focused



Tuesday, 20 December 11  
General Flow of talk  
Conscientiousness...

These are people who tend to be....

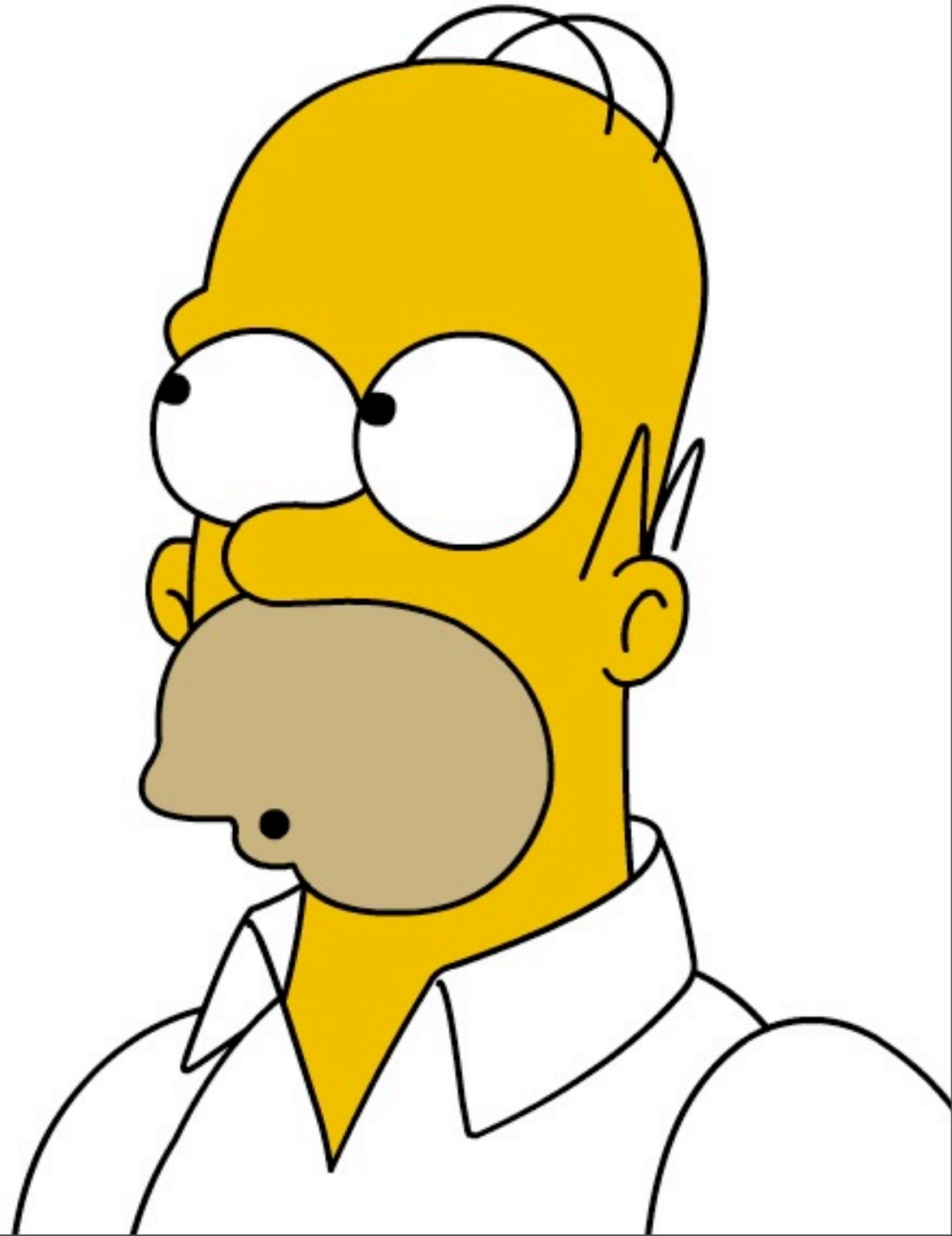
- thorough,
- dependable,
- task focused

Or as Sam Gosling notes in his book Snoop....

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)  
Book: Snoop, What your stuff says about you, Sam Gosling

# Conscientiousness

## Low Scorers



Tuesday, 20 December 11  
General Flow of talk  
Unlike Homer Simpson.

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)



# Conscientiousness

## Low Scorers

- **Disorganised**
- **Poor timekeeping**
- **Careless**
- **Impulsive**



Tuesday, 20 December 11

General Flow of talk

Who, tends to be  
Disorganised  
poor time keepers  
careless  
impulsive

Next up is...

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)  
more

# High Scorers Extraversion



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General Flow of talk

is Extraverstion...

We felt the Ferris Bueller, from the movie Ferris Buellers day off represented extraverts pretty well

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Extraversion](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Extraversion)

# High Scorers **Extraversion**

- **Talkative**
- **Energetic**
- **Enthusiastic**
- **Outgoing**
- **Social**



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General Flow of talk

ADAM SANDLER (waterboy, little nicky, happy gilmore, 51st dates)

talkative  
energetic  
enthusiastic  
assertive  
outgoing  
social...highly social

In contrast to

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Extraversion](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Extraversion)



# Extraversion

## Low Scorers



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General Flow of talk

Introverts like Yoda Much quieter and internally focused than Ferris Beuller

### References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Extraversion](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Extraversion)

Movie: [http://en.wikipedia.org/wiki/Office\\_Space](http://en.wikipedia.org/wiki/Office_Space)

Book: Snoop, What your stuff says about you, Sam Gosling

# Extraversion

Low Scorers

- Reserved

- Shy

- Quiet



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General Flow of talk

These people tend to be more...

- reserved
- shy
- quiet

## References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Extraversion](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Extraversion)

Book: Snoop, What your stuff says about you, Sam Gosling



# High Scorers Agreeableness



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General Flow of talk

Next we have Agreeableness....We felt that Forrest Gump is probably one of the nicest guys you'll ever meet.

He's.....

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Agreeableness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Agreeableness)

Movie: [http://en.wikipedia.org/wiki/Forrest\\_Gump](http://en.wikipedia.org/wiki/Forrest_Gump)

Book: Snoop, What your stuff says about you, Sam Gosling

# High Scorers Agreeableness

- Cooperative
- Sympathetic
- Helpful
- Selfless
- Kind



Tuesday, 20 December 11  
General Flow of talk

helpful  
selfless -  
sympathetic  
kind  
forgiving  
trusting...  
considerate  
cooperative

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Agreeableness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Agreeableness)  
  
Movie: [http://en.wikipedia.org/wiki/Forrest\\_Gump](http://en.wikipedia.org/wiki/Forrest_Gump)  
  
Book: Snoop, What your stuff says about you, Sam Gosling

# Agreeableness

## Low Scorers



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General Flow of talk

At the other end of the spectrum, we have people like..Gordon Gecko from the movie Wall Street

A real nice piece of work with a tag line of “Greed is Good”

### References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Agreeableness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Agreeableness)

Movie : [http://en.wikipedia.org/wiki/Gordon\\_Gekko](http://en.wikipedia.org/wiki/Gordon_Gekko)

Bloomberg Business Week article on CEO sociopaths - <http://bx.businessweek.com/social-networking/your-boss-could-be-a-sociopath-no-really/2681781844226532535-9353e88624c9ef773d051ad787f9cb82/>

Book: Snoop, What your stuff says about you, Sam Gosling



# Agreeableness

## Low Scorers

- **Fault Finding**
- **Quarrelsome**
- **Critical**
- **Harsh**
- **Aloof**



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General Flow of talk

- fault finding
- quarrelsome
- critical
- harsh
- aloof
- blunt

Interestingly, a number of studies have shown a link between people at the top of organizations (e.g. CEO's) and low agreeableness, theres a great article in Bloomberg Business Week called "The Sociopath Network"...Well worth a read

Our final dimension is...

### References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Agreeableness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Agreeableness)

Movie : [http://en.wikipedia.org/wiki/Gordon\\_Gekko](http://en.wikipedia.org/wiki/Gordon_Gekko)

Bloomberg Business Week article on CEO sociopaths - <http://bx.businessweek.com/social-networking/your-boss-could-be-a-sociopath-no-really/2681781844226532535-9353e88624c9ef773d051ad787f9cb82/>

Book: Snoop, What your stuff says about you, Sam Gosling

# High Scorers Neuroticism



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General Flow of talk  
neuroticism....and C-3PO.... The worrisome android from star wars

He's

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Neuroticism](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Neuroticism)

More on Woody Allen - [http://en.wikipedia.org/wiki/Woody\\_Allen](http://en.wikipedia.org/wiki/Woody_Allen)

Book: Snoop, What your stuff says about you, Sam Gosling



# High Scorers Neuroticism

- Easily ruffled, upset
- Anxious
- Worried
- Moody



Tuesday, 20 December 11

General Flow of talk

Easily ruffled and upset

Anxious

Worried

Moody

In stark contrast to....

## References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Neuroticism](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Neuroticism)

More on Woody Allen - [http://en.wikipedia.org/wiki/Woody\\_Allen](http://en.wikipedia.org/wiki/Woody_Allen)

Book: Snoop, What your stuff says about you, Sam Gosling

# Neuroticism

## Low Scorers



Tuesday, 20 December 11  
General Flow of talk

Bond, James Bond  
Shaken....not stirred

References  
Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Neuroticism](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Neuroticism)  
Movie - [http://en.wikipedia.org/wiki/The\\_Big\\_Lebowski](http://en.wikipedia.org/wiki/The_Big_Lebowski)  
Dudeism - <http://dudeism.com/>

# Neuroticism

Low Scorers

- **Handle stress well**
- **Emotionally stable**
- **Calm**
- **Relaxed**



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General Flow of talk

People low in Neuroticism like Bond tend to  
handle stress well  
be emotionally stable  
calm and  
relaxed

## References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Neuroticism](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Neuroticism)

Movie - [http://en.wikipedia.org/wiki/The\\_Big\\_Lebowski](http://en.wikipedia.org/wiki/The_Big_Lebowski)

# How can this be used ?

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General Flow of talk

- Now, can you see how this could be useful?





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General Flow of talk

Who are you going to hire as a pilot? James Bond or C-3PO? I think I'd feel more comfortable with James Bond at the controls.

You see, it **can** be useful to fit the right personalities into the right jobs.

Chris is going to talk about some of the things you can use to predict personality and some of the things you can't....



# Chris Sumner

OnlinePrivacyFoundation.org



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General Flow of talk  
Thank you Adrian....

# things that do



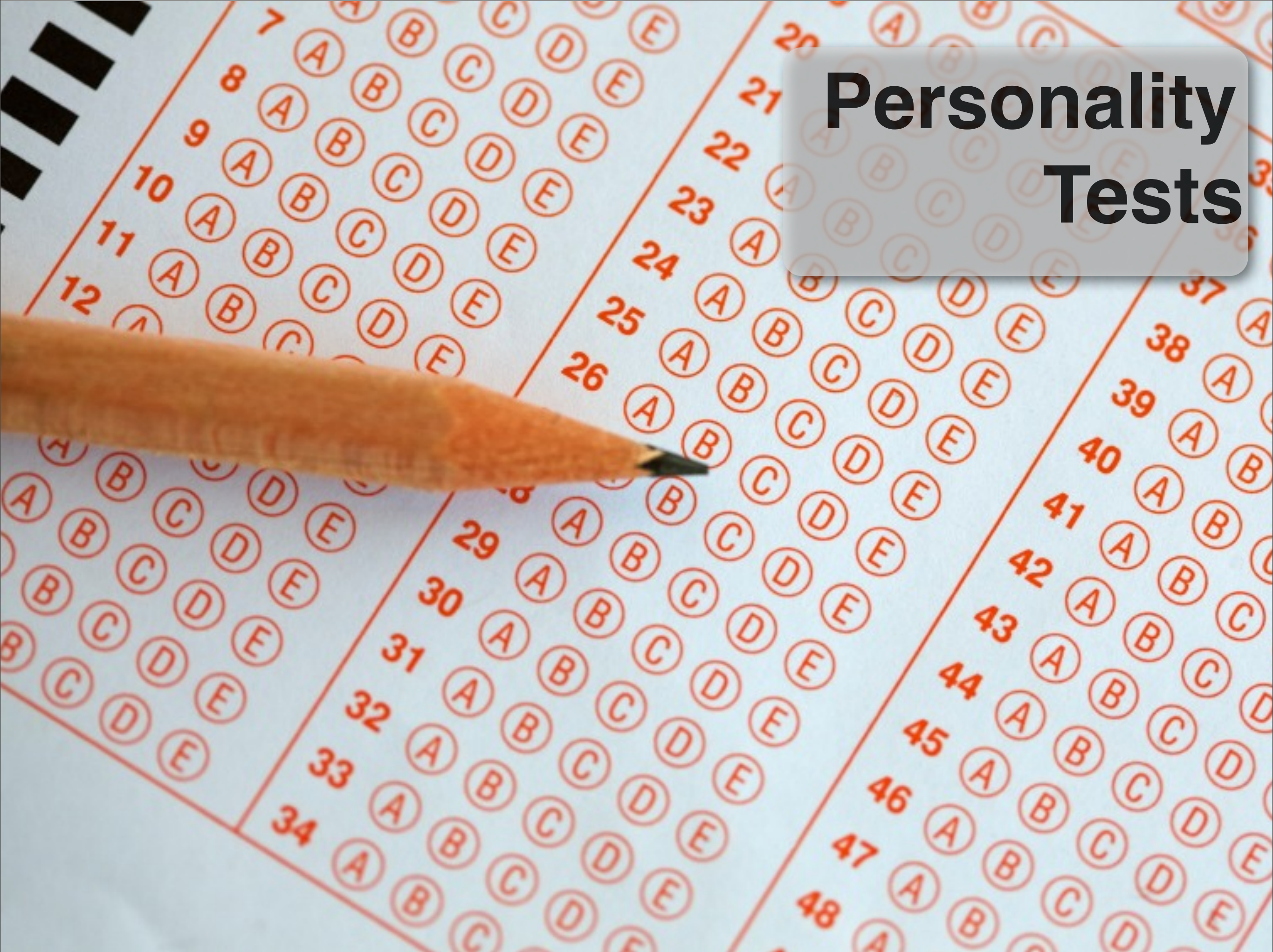
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General Flow of talk

...First we'll take a look at things that you can use to give reasonable clues to someone's personality



# Personality Tests



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<http://www.istockphoto.com/stock-photo-14769209-exam.php?st=bb06b27>

Personality tests like the Big 5 provide among the best clues to someone's personality traits  
They're not without criticism, but by and large, they're the best tool for determining personality traits





Tuesday, 20 December 11  
General Flow of Talk

- A messy living space can indicate a lower degree of conscientiousness....

<http://www.istockphoto.com/stock-photo-17726288-messy-desktop.php?st=b3b9ba9>





Tuesday, 20 December 11  
General Flow of Talk

....Than a tidy desk..

<http://www.istockphoto.com/stock-photo-2979477-office-desk.php?st=896c671>





# MOTIVATION

If you can be motivated by a pretty picture and a few clever words,  
the world would probably be a safer place if you weren't motivated.

*SlapFish.com* 'A Slap in the Face With a Wet Fish'

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General Flow of Talk

- Motivational posters could indicate above average levels of neuroticism.





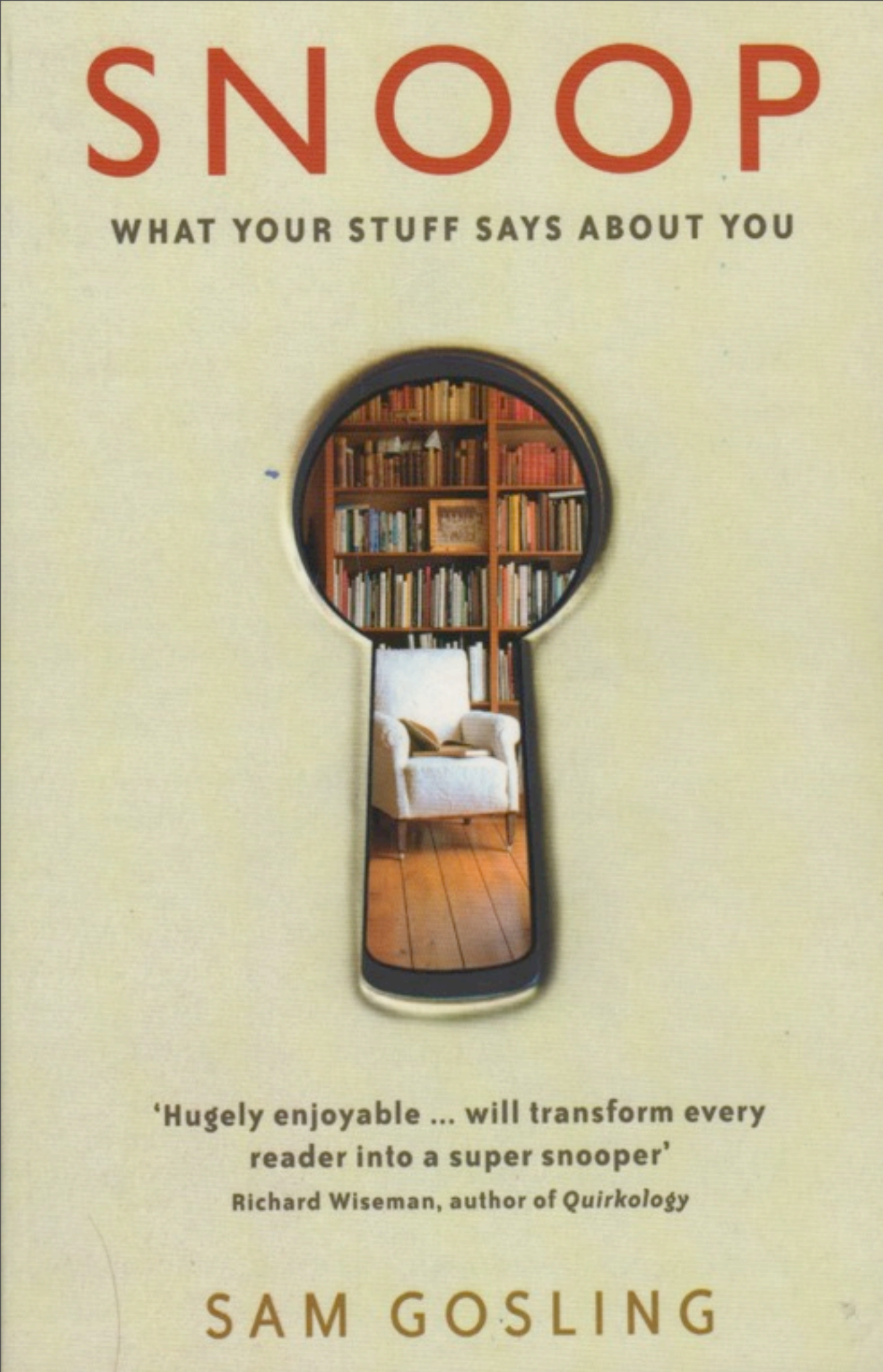
Tuesday, 20 December 11  
General Flow of Talk

Music provides other clues

People who prefer classic music tend to be more introverted  
While people who prefer rap tend to be bolder and more outgoing...extraverted

<http://www.istockphoto.com/stock-photo-17039529-3d-music-notes-dancing-away.php?st=52975f3>





# Professor Sam Gosling

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General Flow of talk

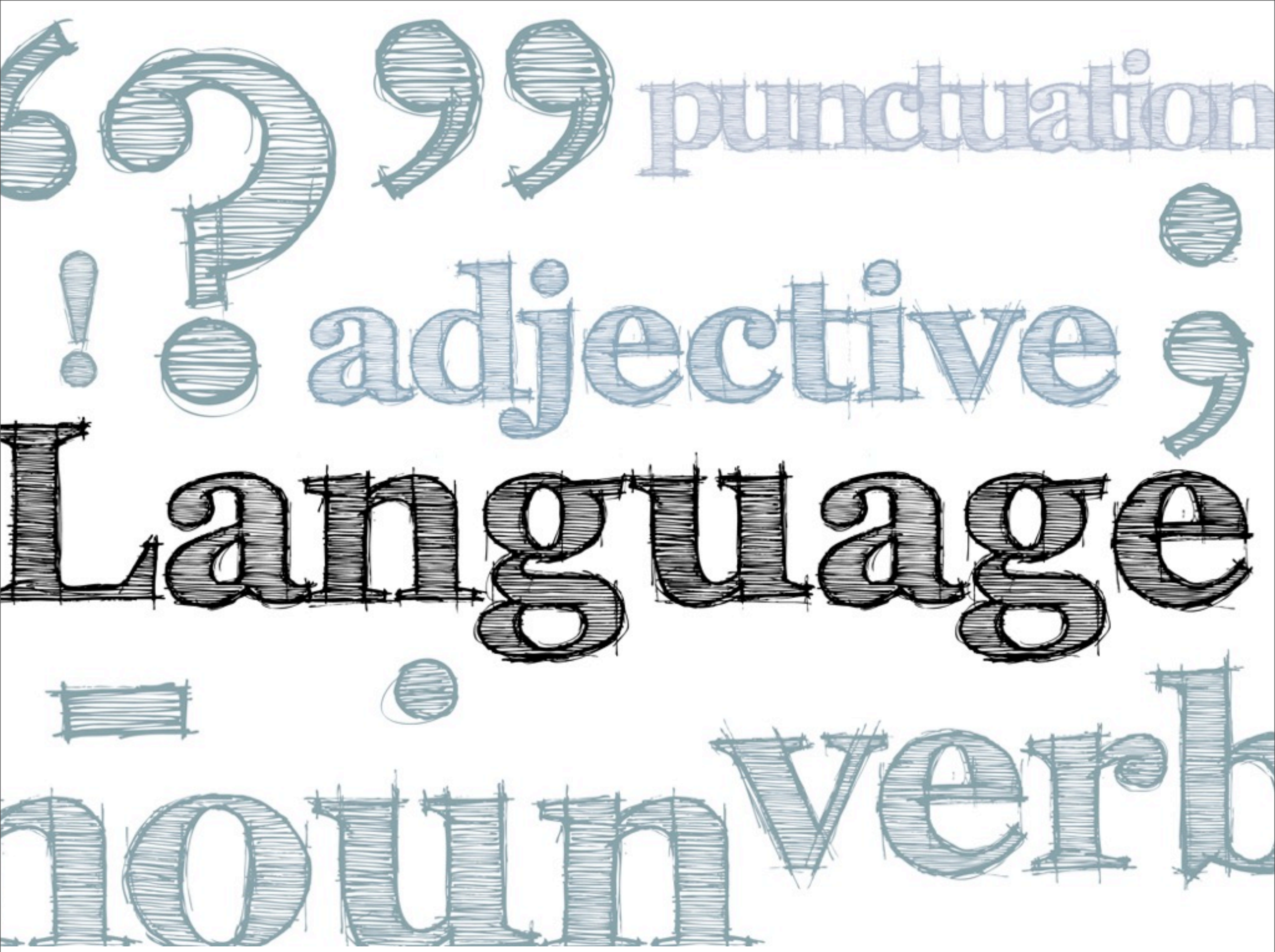
In this book, Professor Sam Gosling looks at what peoples rooms/living spaces say about them. For instance

References

Book: Snoop, What your stuff says about you, Sam Gosling

Video : [http://fora.tv/2008/06/16/Sam\\_Gosling-Snoop\\_The\\_Secret\\_Language\\_of\\_Stuff](http://fora.tv/2008/06/16/Sam_Gosling-Snoop_The_Secret_Language_of_Stuff)

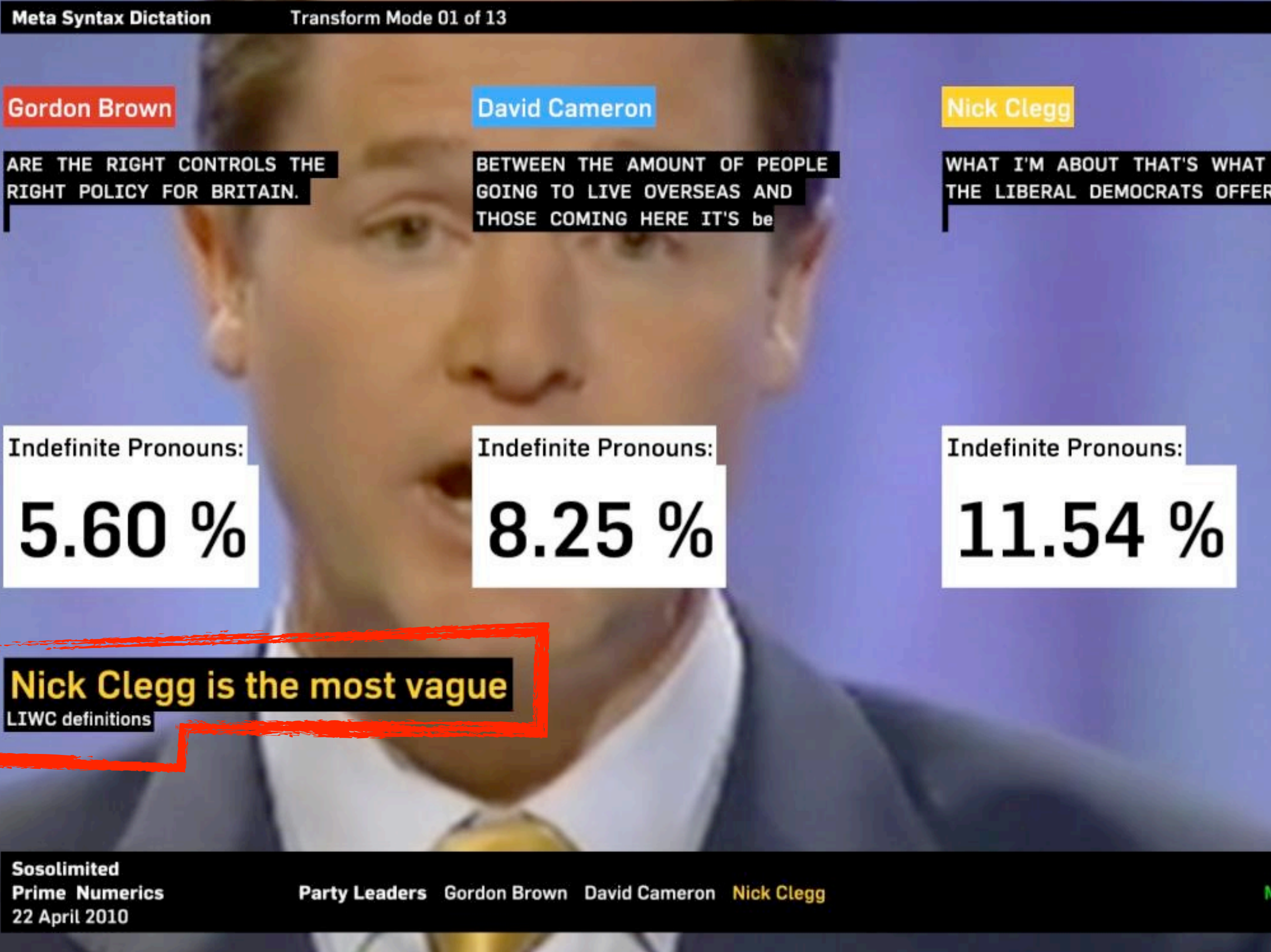




Tuesday, 20 December 11  
General Flow of Talk

....The language we use can provide personality clues too...





Tuesday, 20 December 11

General Flow of talk

In this graphic we see how linguistic analysis was used during the last UK elections. This is Nick Clegg, our deputy prime minister and the analysis is telling us he's "The most vague"

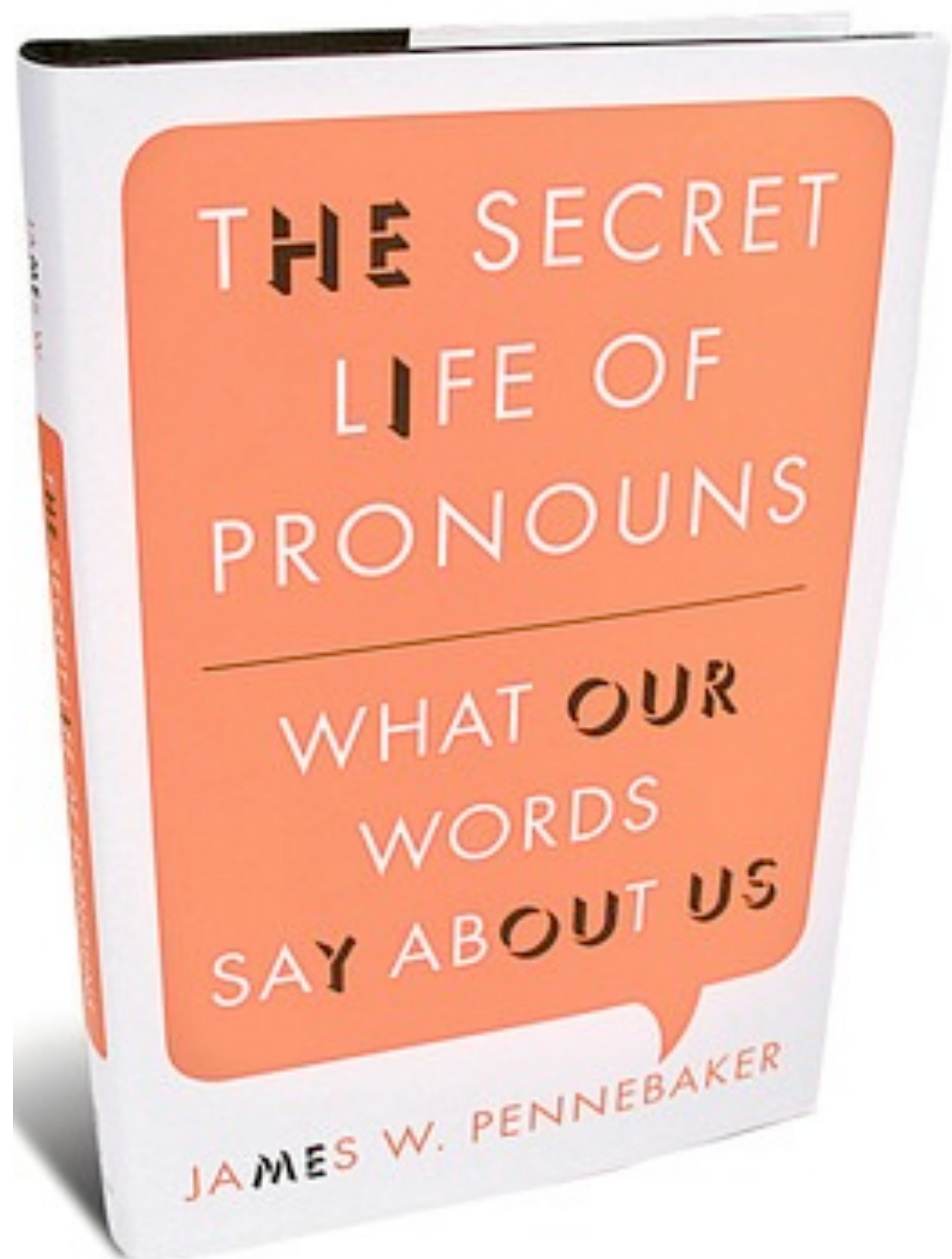
This is a fascinating area of study in its own right....

References

The Big 5 Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)

"THE UK ELECTION TELEvised DEBATES - CAN PSYCHOLOGY UNRAVEL THE GAME PLAN?" <http://knol.google.com/k/raj-persaud/the-uk-election-televised-debates-can/4kby5muufrzo/25#>

# James W. Pennebaker



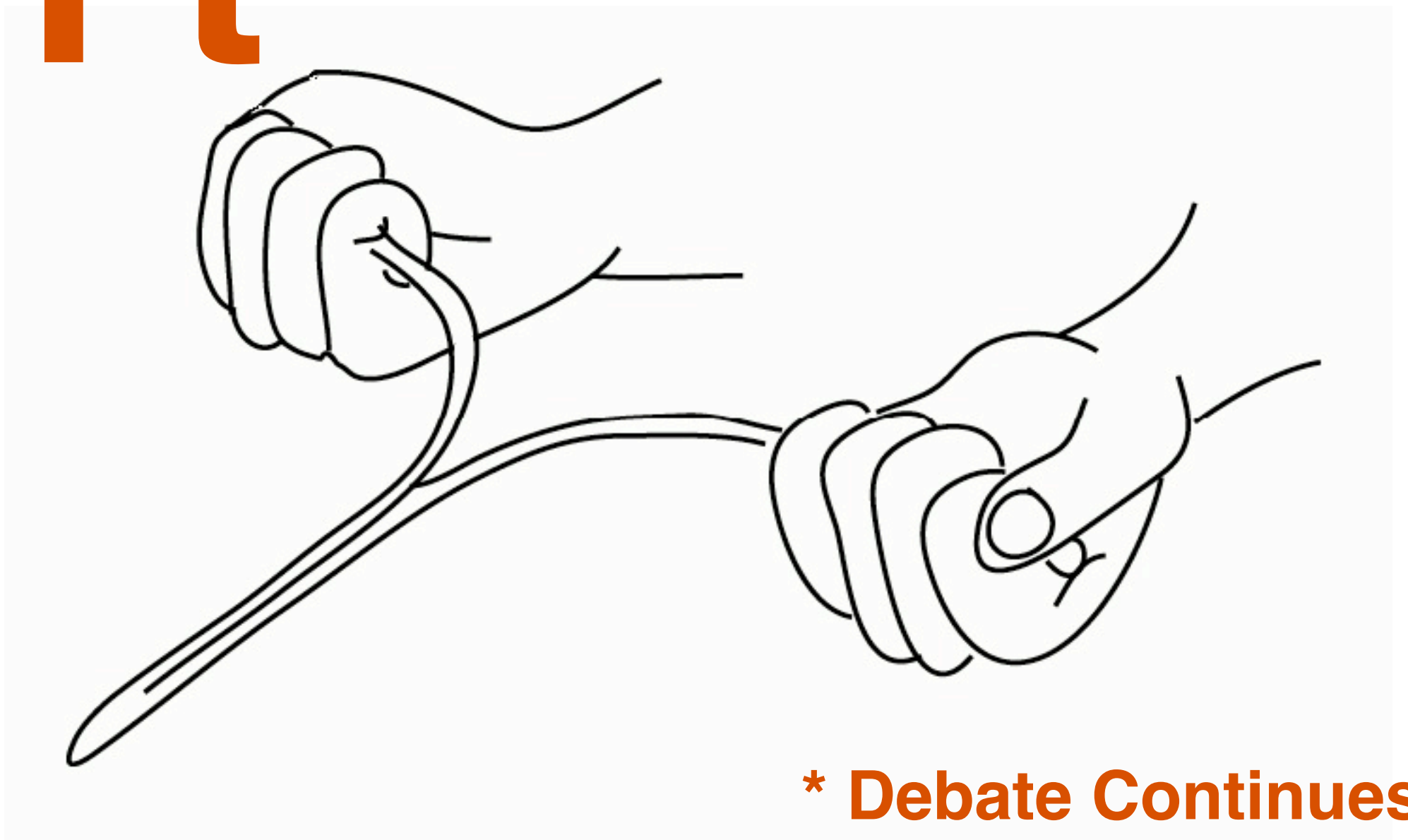
Tuesday, 20 December 11

General Flow of Talk

...one of the leading professors in the world, James Pennebaker (also based at UoT in Austin) has been exploring this for some time.



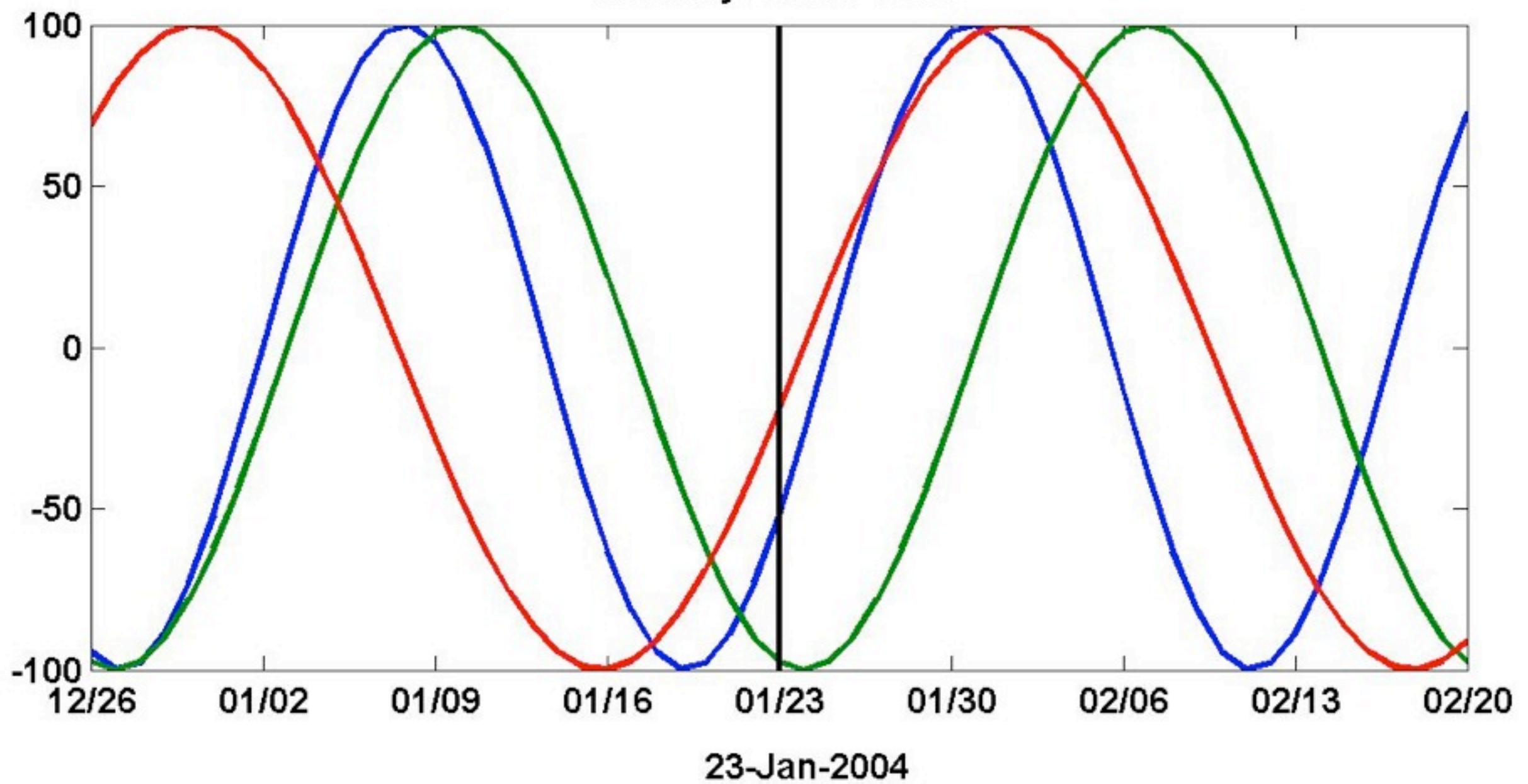
# things that don't\*



Tuesday, 20 December 11  
General Flow of talk

- Now, let's have a quick look at things which there's no scientific evidence to support...like this water diviner

birthday: 06-Jul-1946



Physical  
Emotional  
Intellectual

Tuesday, 20 December 11  
General Flow of talk

- Biorhythms.
- They have a strong following, but there's no empirical evidence to suggest they work



Tuesday, 20 December 11  
General Flow of talk

- The same goes for palmistry





This is my  
handwriting  
(using a tablet) <sup>It's</sup> bad

Tuesday, 20 December 11

General Flow of talk

- and to some extent handwriting, although there's still some debate here.
- Now...why have we mentioned things that work and thing that don't you might be asking...

# Corporate Personality Testing



Tuesday, 20 December 11

General Flow of talk

Yet Corporate america, in particular have a fascination with trying to predict personality

All of the techniques we share have, rightly and wrongly have been used in pre employment screening at some point in the past

## References

A wide range of studies. For an easy read, this book Book - The Cult of Personality: How Personality Tests Are Leading Us to Miseducate Our Children, Mismanage Our Companies, and Misunderstand Ourselves Annie Murphy Paul

Caveat, this book comes from the angle of finding issues. The truth is likely somewhere in the middle

Papers & articles -

“Reconsidering the use of personality tests in personnel selection contexts”

“Personality testing in employment: useful business tool or civil rights violation”

“Companies use of psychometric testing and the changing demand for skills. A review of the literature”

“Employers relying of personality tests to screen applicants”

<http://www.istockphoto.com/stock-photo-17545247-business-interview.php?st=b61bfdf>





twitter



xanga.com

You Tube



friendfeed



StumbleUpon

hi5



LIVEJOURNAL

Linked in

bebo

YAHOO! 360°  
BETA



del.icio.us

Mashable  
All That's New on the Web



mixx  
your blend of the web



reddit

Tuesday, 20 December 11

General Flow of talk

- Now, in 2011, we have people using more and more social media.

References

Book: Snoop, What your stuff says about you, Sam Gosling

Video : <http://www.youtube.com/watch?v=tVuoNAeTpUU> <-- what facebook says about you.





## If an employee were posting damaging social media content about your company, how would you know?

It is important to monitor the public social media activity of employees, to mitigate bad publicity, loss of intellectual property, security violations, and other potential negative impacts on your business.

[GET STARTED](#)

## ENABLING FAIR AND CONSISTENT HIRING

It's the Catch-22 of hiring today...

<p><b>If employers...</b> <i>Google job candidates</i></p>	<p><b>If employers...</b> <i>Don't Google job candidates</i></p>
<p><b>Then employers...</b> <i>Are vulnerable to discrimination charges</i></p>	<p><b>Then employers...</b> <i>Are vulnerable to litigation due to negligent hires</i></p>
<p><b>And job candidates...</b> <i>Are vulnerable to discrimination</i></p>	<p><b>And job candidates...</b> <i>Are unrecognized for assets, achievements, and contributions</i></p>

### SOCIAL INTELLIGENCE FAQs



Social Intelligence<sup>SM</sup> Hiring, our pre-employment background screening product, lets employers and hiring professionals reap the benefits of using social media in making hiring decisions, without the legal risks. [READ MORE](#)

Tuesday, 20 December 11

General Flow of talk

And companies like this springing up....Social Intelligence. There are others around.

Actually, and it's important to stress this. I kind of like this company for a number of reasons.

If you're going to have someone look at your NetRep, I'd say it's better that a company like this do it in a controlled manner following strict guidelines. If you want to see what they do, there's a great Gizmodo article.

But, the point here is. Companies can look at your online reputation today. There doesn;t appear to be any firm scientific basis to support this, i.e. **are we measuring the right variables and measuring them consistently?**

### References

- Gizmodo article : <http://gizmodo.com/5818774/this-is-a-social-media-background-check>
- Social Intelligence : <http://www.socialintel.com/home>



Tuesday, 20 December 11

General Flow of talk

- By now...alarm bells should be ringing right?
- Is it possible to determine personality from facebook or is it just hocus pocus like palmistry?



# Uh-oh



Tuesday, 20 December 11

General Flow of talk

- And if you can, will we see Minority Report style thought police?



# Can you ?

# Can't you ?

Tuesday, 20 December 11

General Flow of talk

- So can you or can't you determine personality from Facebook activity?



Tuesday, 20 December 11

General Flow of talk

...So we decided to conduct a research experiment

<http://www.istockphoto.com/stock-photo-16193676-adventures-in-mind-reading.php?st=80d7ec9>

<http://www.istockphoto.com/stock-photo-17499468-nerdy-chemistry-student.php?st=26d2a39>

Scientist

<http://www.istockphoto.com/stock-photo-16177783-adventures-in-mind-reading.php?st=3244113>

# THE BIG Experiment

Tuesday, 20 December 11

General Flow of talk

...which we called “The Big 5 Experiment”

In a nut shell, this is what the application / experiment does....

References

The Big 5 Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)





Tuesday, 20 December 11

...we collected all of this into a mass of

<http://www.istockphoto.com/stock-photo-7717357-woman-s-hand-holding-a-funnel.php?st=bee0849>

...  
brain - <http://www.istockphoto.com/stock-photo-13485370-human-mind.php?st=a4eaf38>

[facebook\\_logo.jpg](#)[facebook\\_logo.jpg](#)

#### General Flow of talk

...it presents users with a 44 question personality test called “The Big Five Inventory” or BFI test, by Oliver John.  
We actually added a 45th question about privacy

We requested, and where they existed pulled down 74 Facebook data points, including things with Photo’s, Descriptions on Photos, Biography, Interests, Friends etc etc. Just about everything, expect email and chats.

We got a tone of data out, which we also examined for

Linguistic Inquiry and Word Count (Or LIWC). Take a look at Professor James Pennebaker’s work on LIWC for more information. In simple terms ...

we set about researching this to see to what extent you can predict personality from Facebook activity and of what practical use there is. You see, statistical significance is a different beast to practical significance...more on that later.

#### References

The Big Five Inventory (BFI) - <http://www.ocf.berkeley.edu/~johnlab/bfi.htm>

Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)

LIWC tools - <http://www.liwc.net/>

# I am someone who is talkative

Disagree Strongly	Disagree a little	Neutral	Agree a little	Agree Strongly
-------------------	-------------------	---------	----------------	----------------



# I am someone who is concerned about privacy

Disagree Strongly	Disagree a little	Neutral	Agree a little	Agree Strongly
-------------------	-------------------	---------	----------------	----------------



Tuesday, 20 December 11  
We asked 44 questions to get a reasonably accurate view of someones high order traits. The one's adrian shared a few moments ago





Tuesday, 20 December 11

...we collected all of this into a mass of

<http://www.istockphoto.com/stock-photo-7717357-woman-s-hand-holding-a-funnel.php?st=bee0849>

...

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[facebook\\_logo.jpg](#)[facebook\\_logo.jpg](#)

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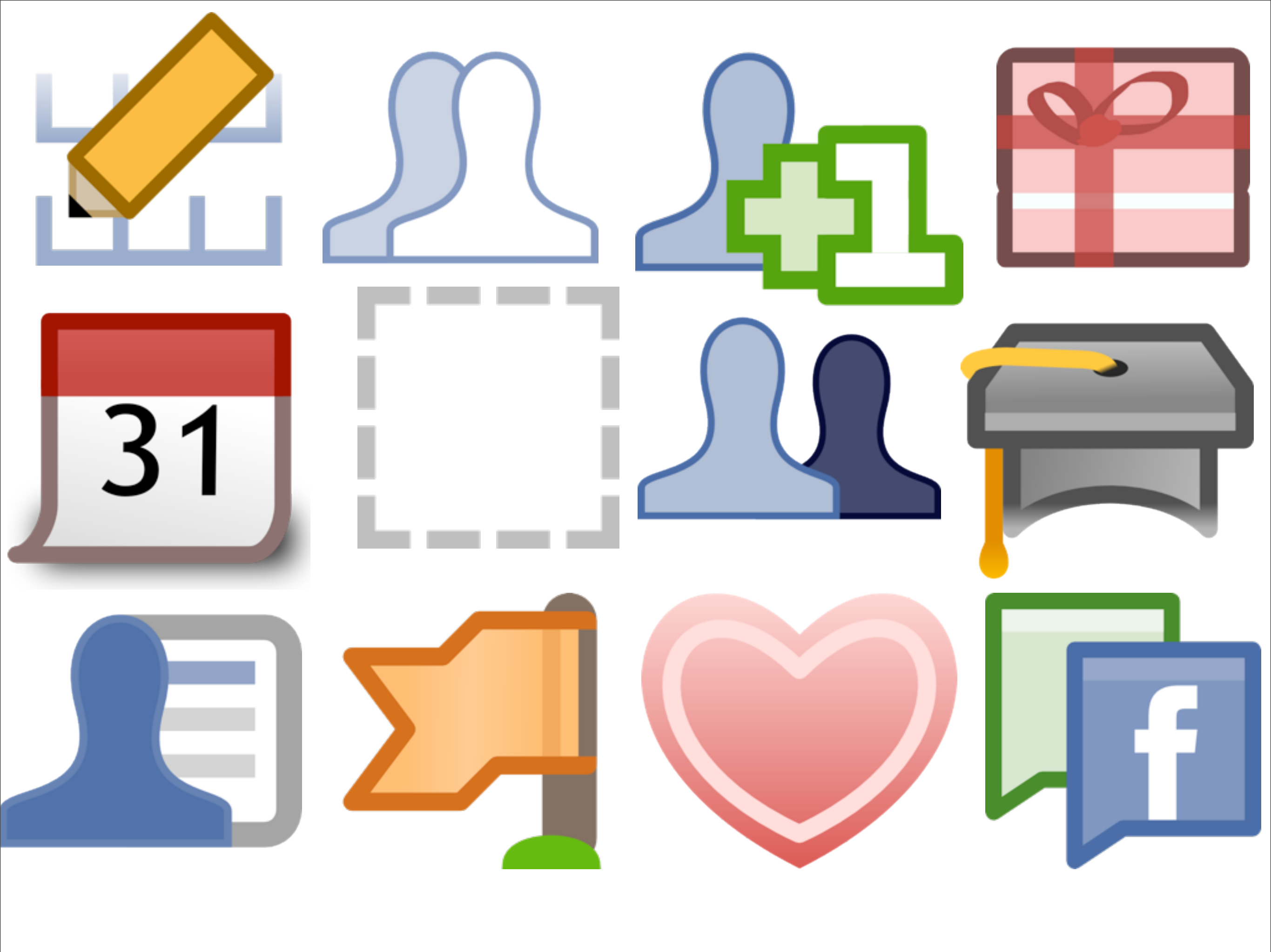
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LIWC tools - <http://www.liwc.net/>



Tuesday, 20 December 11

At the same time, we pulled down 74 facebook data points. Number of Friends, number of posts, number of comments on posts, relationship status etc.



Tuesday, 20 December 11  
and we also looked at the Language used in Wall Posts and Photo Descriptions





### Request for permission

FarmVille is requesting permission to do the following:

**Access my basic information**

Includes name, profile picture, gender, networks, user ID, list of friends and any other information I've shared with everyone.





**FarmVille**  
★★★★☆

By proceeding, you agree to the FarmVille [Terms of Service](#) and [Privacy policy](#) · [Report app](#)

Logged in as (Not you?)

Allow


Leave app

### Request for permission

The Big Five Personality Experiment is requesting permission to do the following:


**Access my basic information**

Includes name, profile picture, gender, networks, user ID, list of friends and any other information I've shared with everyone.







**The Big Five Personality Experiment**


**Send me email**

The Big Five Personality Experiment may email me directly at 7h3.5u99y@gmail.com · [Change](#)


**Post to my Wall**


The Big Five Personality Experiment may post status messages, notes, photos and videos to my Wall

**Access posts in my News Feed**

**Access my data any time**

The Big Five Personality Experiment may access my data when I'm not using the application


**Access my custom friend lists**

**Check-ins**

The Big Five Personality Experiment may read my check-ins.

**Access my Profile information**

Likes, music, TV, movies, books, quotes, About me, Activities, Interests, Groups, Birthday, Hometown, Current location, Religious and political views and Work history

**Access my family & relationships**

Family members and relationship status

**Access my photos and videos**

Photos uploaded by me

By proceeding, you agree to the The Big Five Personality Experiment [Terms of Service](#) and [Privacy policy](#) · [Report app](#)

Logged in as Suggy Sumner (Not you?)

Allow

Don't allow

Tuesday, 20 December 11

General Flow of talk

Now it's important to note where we may have introduced a bias  
you see, our application asks for a lot of information. Farmville is on the left hand side...our application is on the right.

References

The Big 5 Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)



Tuesday, 20 December 11

The more information you ask people to share, the more likely they are to drop out. In our case, since we asked for everything, we had a huge drop out rate.....further, we didn't offer rewards like iPads.





Tuesday, 20 December 11

General Flow of talk

- To compensate, we targeted people through

- Asking friends/family to take the test

- Advertising on Facebook

- Tweeting and re-tweeting.

- Adding information on our project to Digg and Reddit and finally, the most successful approach

- Flyer distribution and talking to people....Over 5,000 flyers. We really targets Chineham in the UK and Boise, Idaho in the USA.

And with that, we ended up with a lot of data. Data from 537 participants. but we had a problem. While we know a bit about statistics, we're not experts...so we quickly recruited one, gave her our data set and asked her to "figure it out" :-)

Please welcome Alison Byers to the podium

References

- The Big 5 Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)





x 527

Tuesday, 20 December 11

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...

brain - <http://www.istockphoto.com/stock-photo-13485370-human-mind.php?st=a4eaf38>

[facebook\\_logo.jpg](#)[facebook\\_logo.jpg](#)

General Flow of talk

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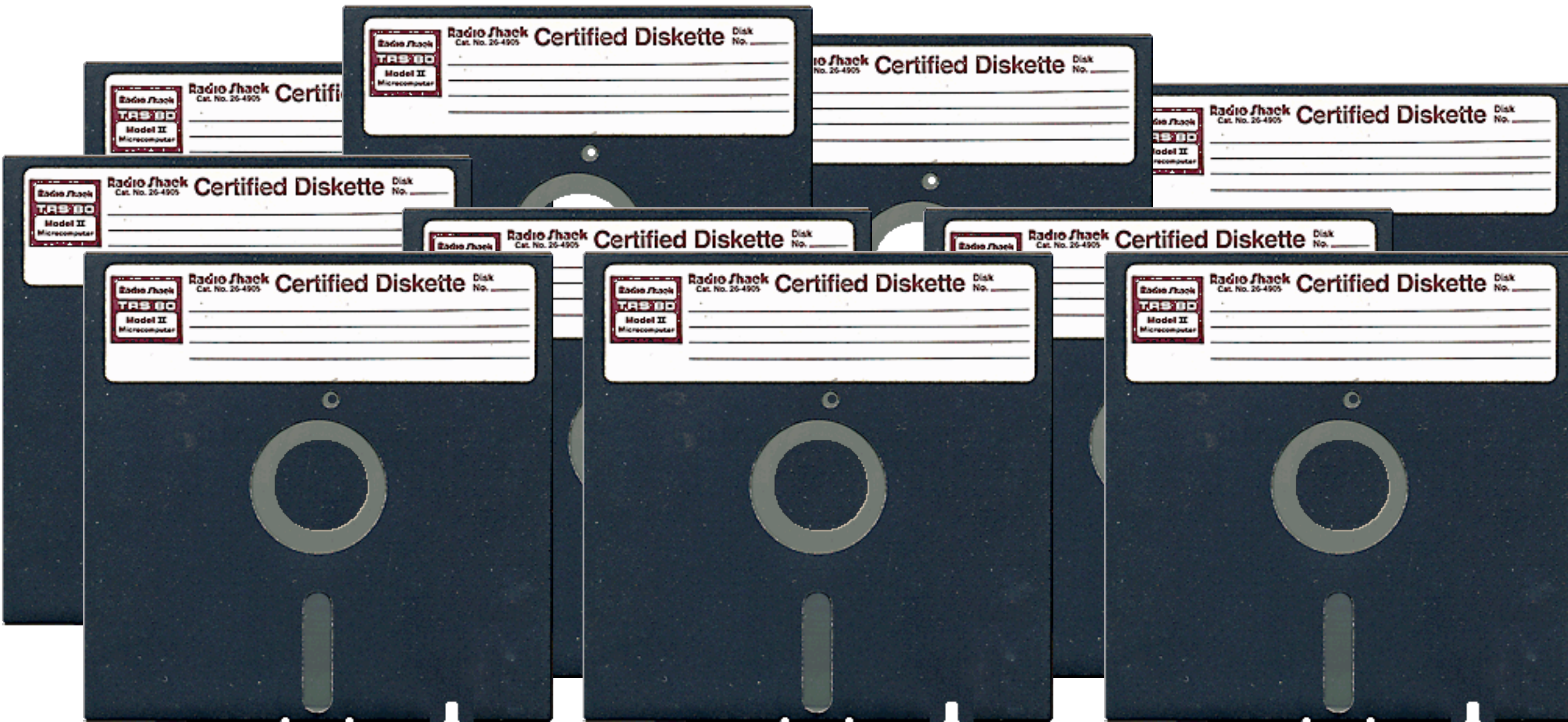
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Personality Experiment [https://www.onlineprivacyfoundation.org/?page\\_id=49](https://www.onlineprivacyfoundation.org/?page_id=49)

LIWC tools - <http://www.liwc.net/>









# Alison Byers

OnlinePrivacyFoundation.org



Tuesday, 20 December 11

General Flow of talk

I'm Alison, I'm a statistician.....

References

OnlinePrivacyFoundation - who are we - [https://www.onlineprivacyfoundation.org/?page\\_id=27](https://www.onlineprivacyfoundation.org/?page_id=27)



Tuesday, 20 December 11

General Flow of talk

Tell a little bit about what I did with the data, the decisions we made along the way, let you know some of our results and then talk a little bit about what this actually means in the real world.

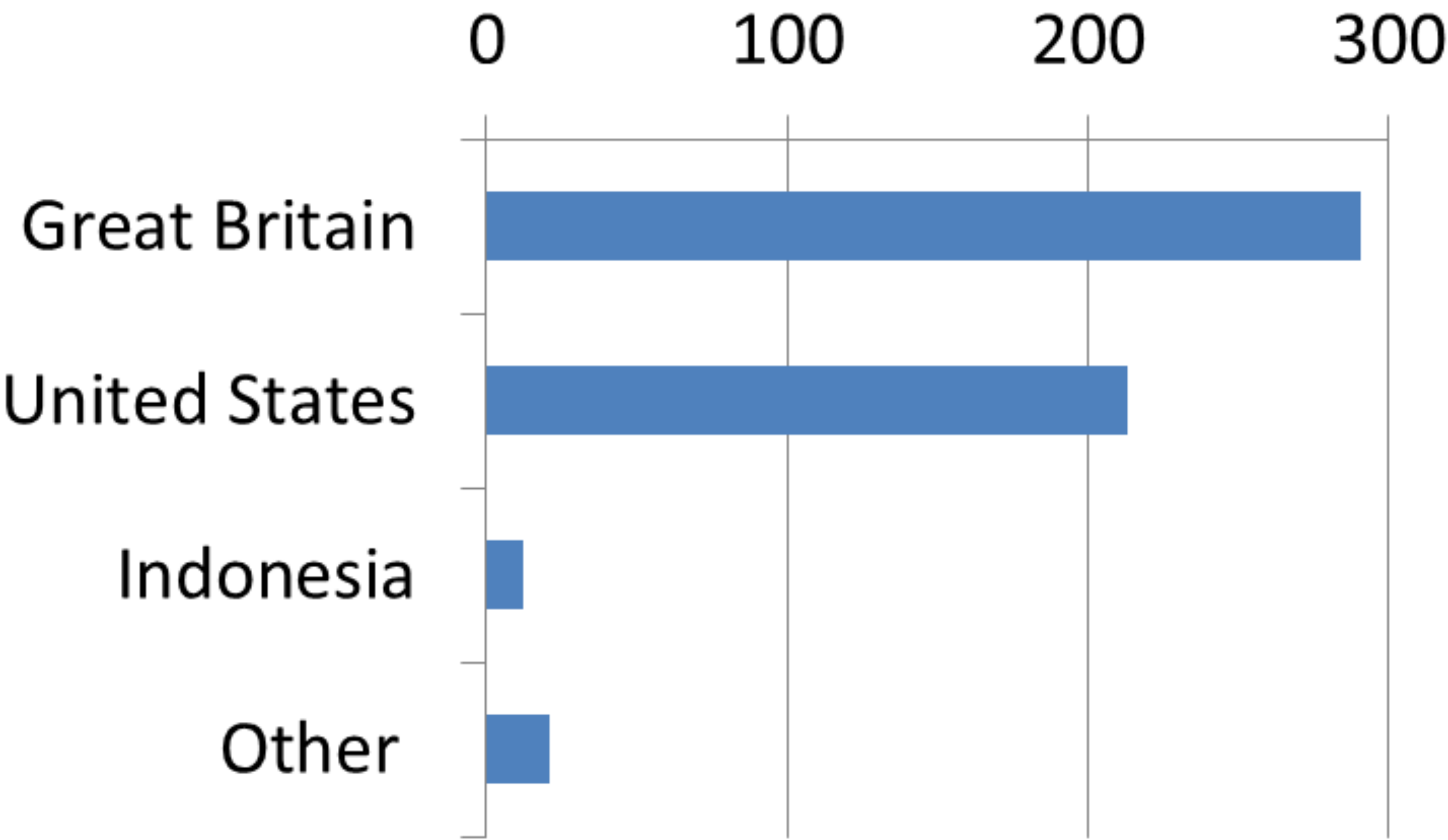
In performing this study, the first thing we had to do was come up with some hypotheses about what we thought the data might show us. Our null hypothesis was that there was no relationship between a person’s personality type, their concerns over privacy issues and their Facebook activity. Our alternative hypothesis was that there was a relationship between these variables.

The first thing I had to do is familiarise myself with the data – if you don’t know your data, you can’t hope to analyse it properly. The first thing I did was to look at the demographics of the data and take a look at the age, sex and location of our participants.

References

Facebook demographics - <http://www.insidefacebook.com/2010/06/08/whos-using-facebook-around-the-world-the-demographics-of-facebooks-top-15-country-markets/>  
Facebook demographics - <http://www.ignitesocialmedia.com/social-media-stats/2011-social-network-analysis-report/#Facebook>

# Country of Registration



Tuesday, 20 December 11

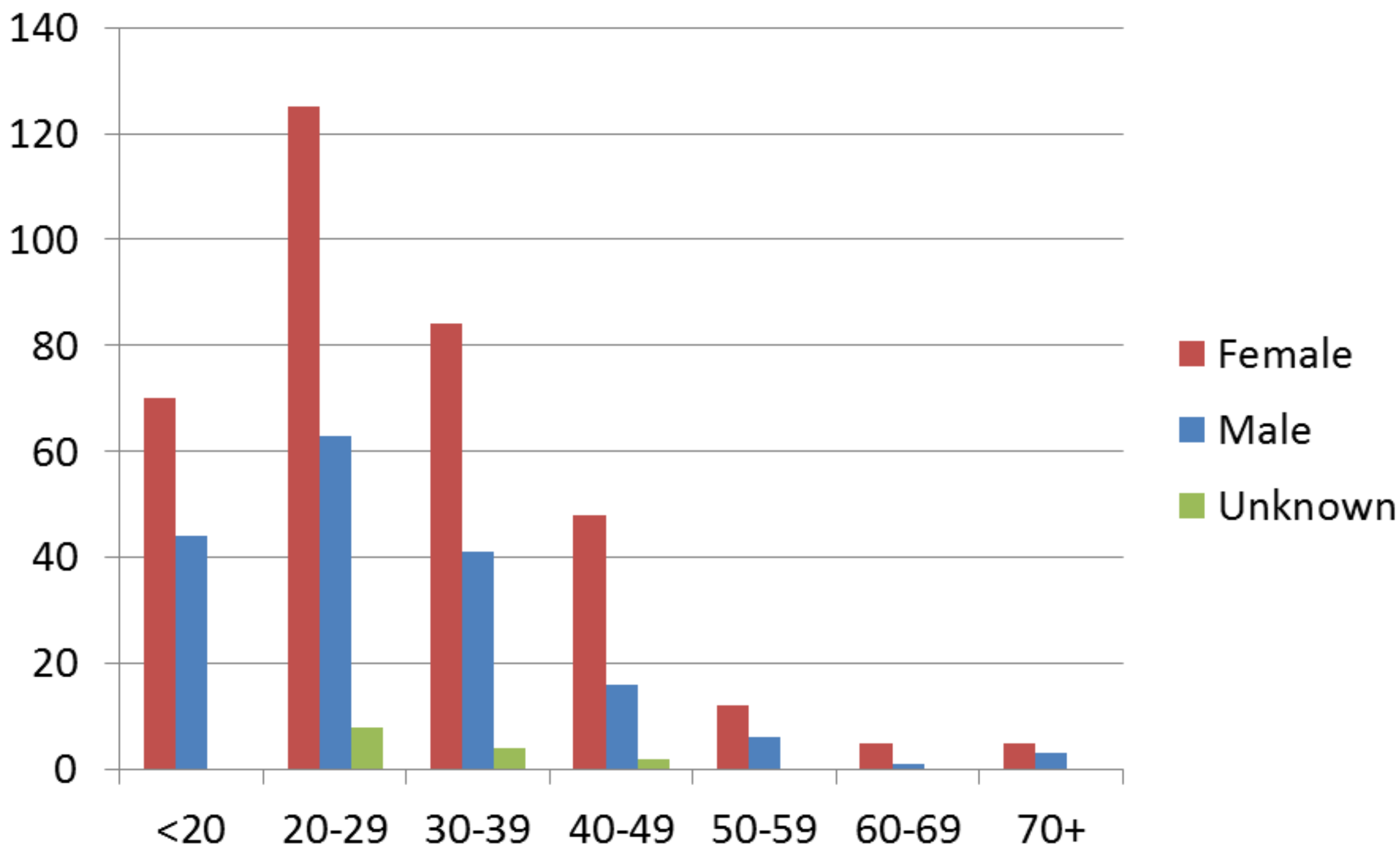
General Flow of talk

The vast majority of our respondents were from the US and Great Britain, most likely reflecting the exposure we had in each of these countries in terms of advertising and word of mouth. However this isn't truly reflective of the overall distribution of Facebook users, as there are more users in Indonesia and India than there are in Great Britain.

References



# Age and Sex



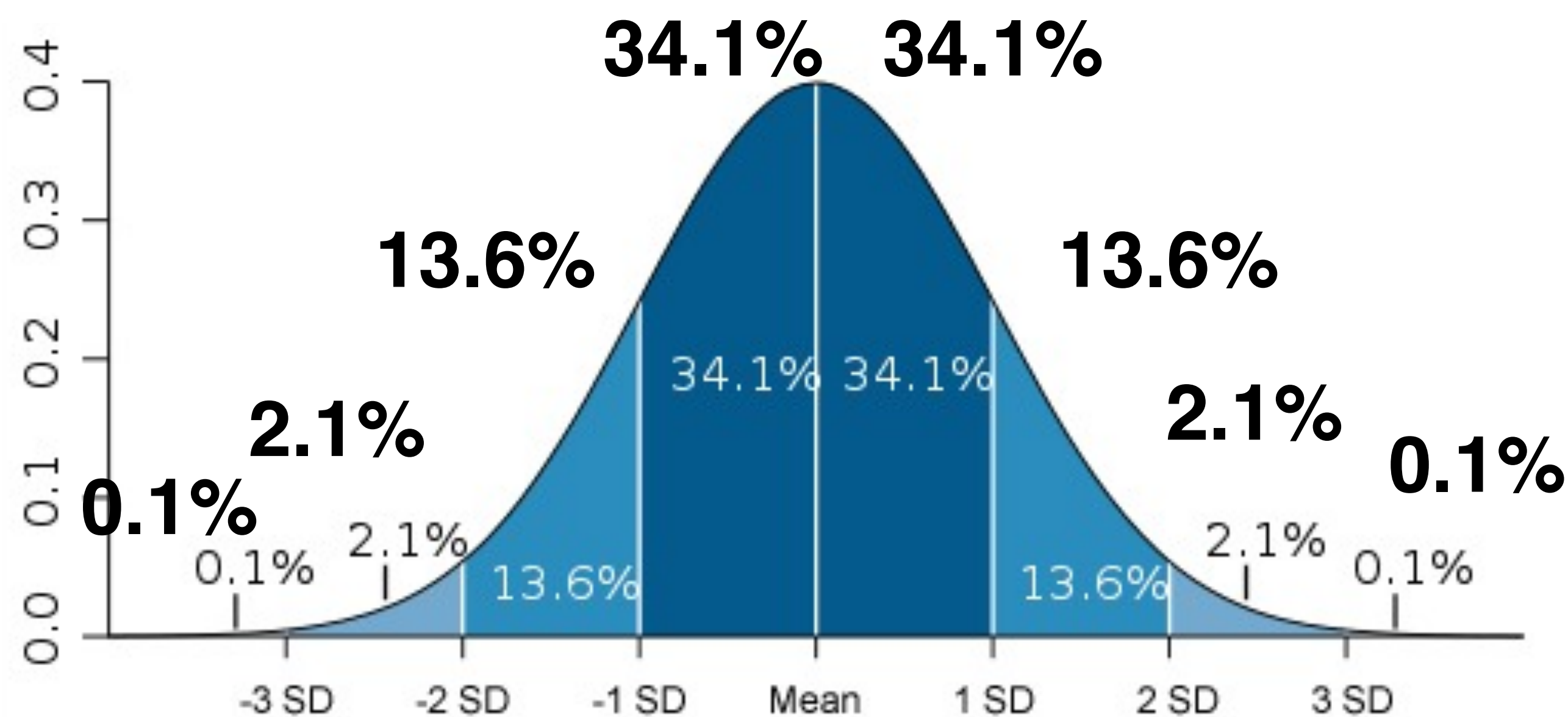
Tuesday, 20 December 11

## General Flow of talk

Over 2/3 of our participants were female, which differs from the sex split of the Facebook population, however, this **may** reflect higher tendencies in females to volunteer their time in studies such as these. This 2:1 ratio has also been noted in other studies of personality and online media.

The greatest proportion were in the 20 – 29 age group, and the overall age distribution of our sample is pretty representative of the underlying age distribution of all Facebook users.

## References



# Mean

Tuesday, 20 December 11

General Flow of talk

Before I go on, I'm going to have to do a little housekeeping. Much of what I will be talking about refers to the Normal Distribution, so I'm just going to give a brief overview of what is meant by this. I'm sure many of you know this already, so my apologies, but if you don't get this, you won't have a clue what I'm talking about for the next 5 minutes.

The normal distribution is pattern for the distribution of a set of data which follows this bell shaped curve. Many variables follow this pattern, for example, height, weight, IQ score – they all follow this distribution.

For a normal distribution, the mean, mode and median for the normal distribution are all the same - in the case of IQ, they are all 100 - the value in the centre of the bell curve.

A measure called the standard deviation is used to measure the spread of values across the bell curve. So, in terms of IQ, for example, about 68% of people will have an IQ level within 1 standard deviation above or below the mean, 95% of people will have an IQ that is within 2 standard deviations above or below the mean and 99% of people will have an IQ that falls within 3 standard deviations of the mean.

So that's a whistle stop tour of the normal distribution, so hopefully the rest of this will make sense now.

References



Tuesday, 20 December 11

General Flow of talk

So after figuring out who was in our sample, my next step was to look at the responses to the questions themselves to decide how to analyse these variables.

Just in case you were interested, for almost all the analysis for this study, I used the Statistical package SPSS.

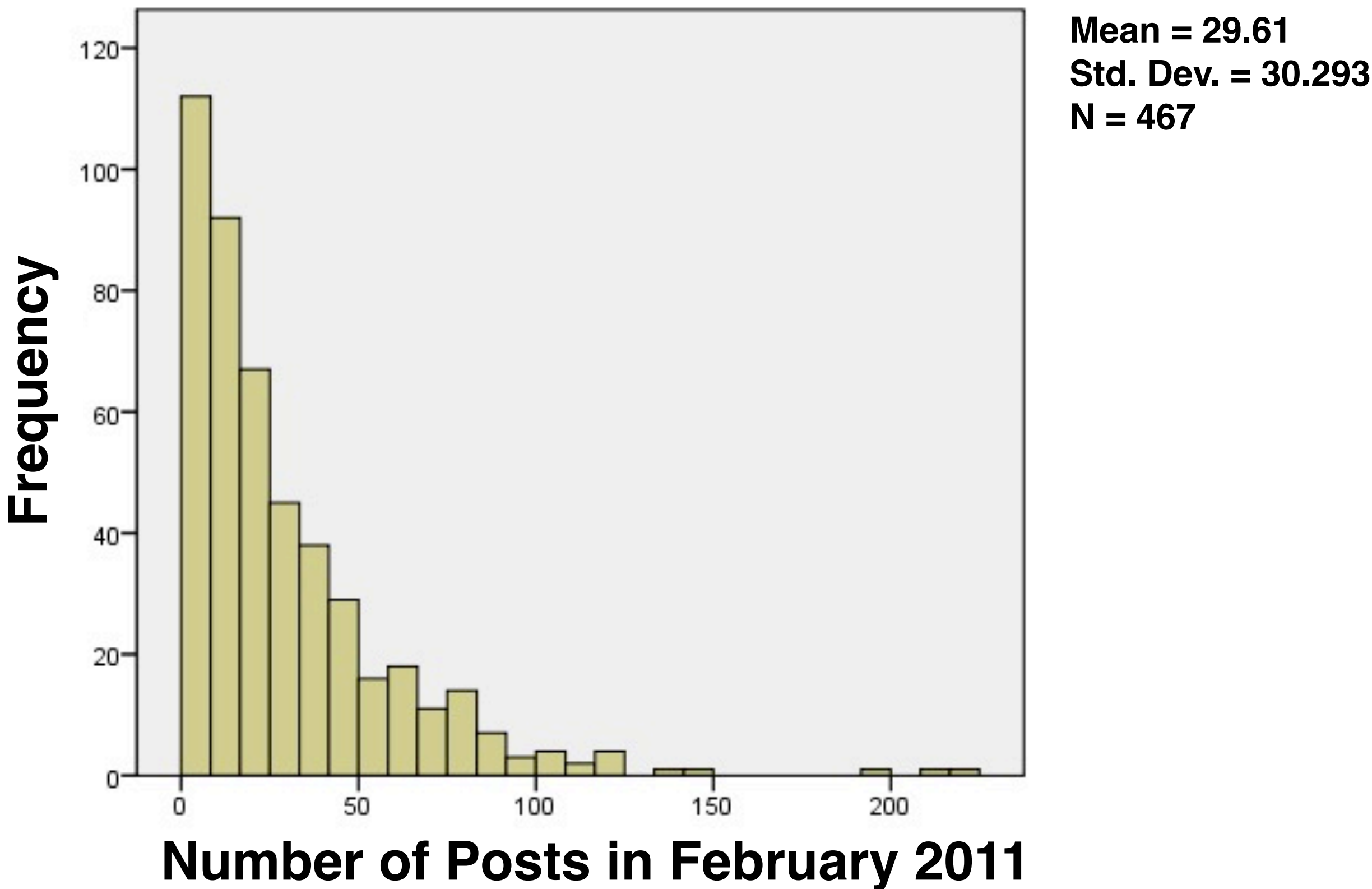
Firstly, I used SPSS to produce descriptive statistics of mean, median, stdev, minimum and maximum values and also skewness and kurtosis, which are indications of the shape of the distribution. I also created histograms of the data to be able to see the distributions.

References

SPSS Software - <http://www-01.ibm.com/software/uk/analytics/spss/>



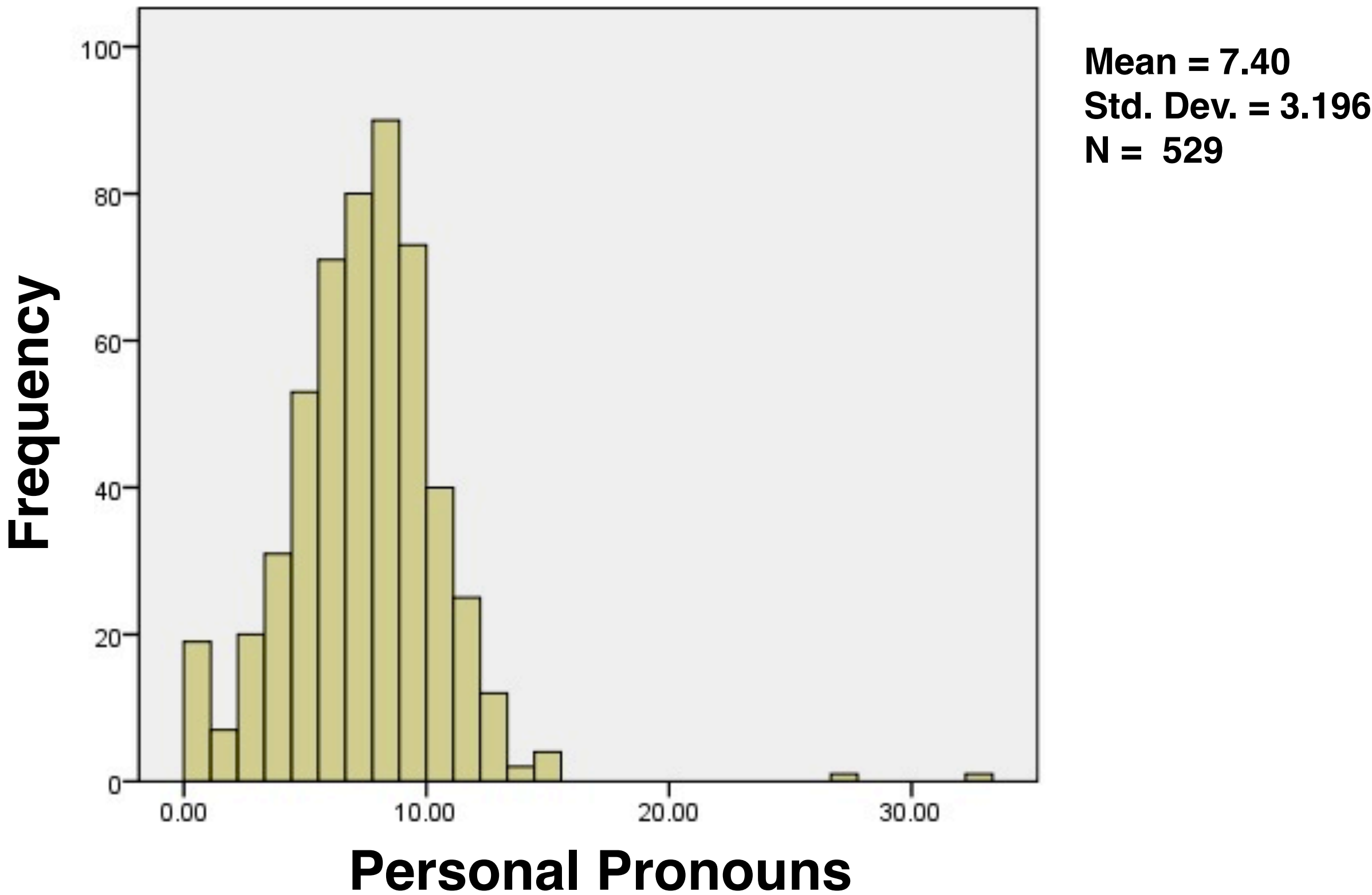
# Histogram



Tuesday, 20 December 11  
General Flow of talk  
For example, a distribution like this has a very high positive skew and it is quite clear that it is not normally distributed.

References

# Histogram



Tuesday, 20 December 11

General Flow of talk

A distribution like this, however, looks like it has potential to satisfy a normal approximation, so further tests need to be performed to see whether we can actually use a normal approximation or not.

I used SPSS to perform Kolmogorov-Smirnov tests for normality, which tests the data to see if it can be reasonably assumed that it fits the normal distribution. The results showed that actually none of the variables in our study could be considered normally distributed.

References

# Pearson



# Spearman



Tuesday, 20 December 11

General Flow of talk

But why is this important?

When analysing data, there are two types of analysis – parametric and non-parametric, or in the case of correlational analysis like ours, Pearson’s Analysis or Spearman’s Analysis.

Pearson’s is better and much more preferable, as it looks at the magnitudinal differences between datapoints. But it can only be used on continuous data whose underlying population approximates the normal distribution and on variables whose relationship is linear.

Spearman’s, on the other hand, can be performed on rank order data, or on continuous data that does not satisfy the needs of Pearson’s test. However, if you use Spearman’s on continuous data, it converts all nominal values into ranks, therefore you lose the magnitude of difference between the variables, so Spearman’s can be less sensitive and less powerful than Pearson’s.

So in deciding what analysis to perform, we need to look at the data and decide if we can reasonably say that the samples come from a normally distributed population and that any two variables will have a linear relationship. If we can – Pearson’s, if not, Spearman’s.

BUT there is an exception to this rule called the Central Limit Theorem, which states that with sufficiently large sample sizes, all samples of a given population approach the normal distribution. Under this rule, our sample of 537 is ‘sufficiently large’ therefore, if we wanted to, we COULD, under the central limit theorem, state that all variables were normally distributed and therefore use the preferred Pearson’s test.

References



# Spearman



Tuesday, 20 December 11

General Flow of talk

But despite all this, I still chose the Spearman’s test. There are 3 main reasons for this:

- As I said before, the Kolmogorov-Smirnov tests for normality showed that none of the variables satisfied tests for normality
- As far as I know, we know nothing of the underling population distributions, for example, what is the distribution of all 750 million Facebook users’ levels of neuroticism? So I wasn’t happy to state that the underlying populations were normal, therefore the samples should be.
- And finally, with sufficiently large sample sizes (as ours is), the Spearman’s test is only slightly less powerful than Pearson’s.

Taking all this into account, I thought we should err on the side of caution and use the Spearman’s test and be confident in our conclusions, rather than use Pearson’s and risk statistical errors.

Spearman’s has been used in other studies of online use and personality

References



Tuesday, 20 December 11

General Flow of talk

Our study was primarily a correlational study between the Big 5 personality aspects, self reported privacy concerns and Facebook activity.

It is important to remember that a correlation between two variables does not indicate a causal relationship between those two variables. For example....

... there is a very strong correlation between ice cream sales and shark attacks. This does not mean that ice cream causes shark attacks, but that there is a related factor – the weather – the warmer it is, the more people will buy ice creams and go swimming in the sea. Any correlational relationship we find must be regarded carefully, as there may well be a related factor that influences both variables.

I'll hand back to Chris to take us through the results

References

# Chris Sumner

OnlinePrivacyFoundation.org



Tuesday, 20 December 11

General Flow of talk  
<Chris takes mic>

References:

<http://www.onlineprivacyfoundation.org> - <http://www.facebook.com/onlineprivacyfoundation/>

OnlinePrivacyFoundation - who are we - [https://www.onlineprivacyfoundation.org/?page\\_id=27](https://www.onlineprivacyfoundation.org/?page_id=27)





Tuesday, 20 December 11

General Flow of talk

- Lets take a look at the results.... We'll take a look at, what we felt, were the most interesting results.
- The paper, on your CD's will provide more granular details.

<http://www.istockphoto.com/stock-photo-11435957-chart.php?st=e475e50>

<http://www.istockphoto.com/stock-photo-17355024-searching-and-filtering-words-on-blackboard.php?st=855b9a6>



# Privacy

Tuesday, 20 December 11

General Flow of talk

- One result really demands some more focus...especially at BlackHat.... [privacy](#)

<http://www.istockphoto.com/stock-photo-3943958-shhhh.php?st=e117df3>

	Ex	Ag	Co	Ne	Op
Ex					
Ag	0.203 **				
Co	0.223 **	0.266 **			
Ne	-0.289 **	-0.314 **	-0.318 **		
Op	0.198 **	0.090 *	-0.019	-0.92 *	
Pr	-0.117 **	-0.95 *	-0.005	0.129 **	0.066

Tuesday, 20 December 11  
General Flow of talk

One of the most interesting finding was the link between self reported personality and privacy. Here we can see statistically significant relationships between privacy, extraversion, agreeableness and neuroticism.

\*\* means statistically significant at the .01 level, while \* means statistically significant at the .05 level

before we look more closely, at the other relationships similar to what other studies have found?.....???? Assuming a yes, then this adds weight to the reliability of our study

OK, so let’s take a look at the relationships and then discuss what that might mean



	Ex	Ag	Co	Ne	Op
Ex					
Ag	0.203 **				
Co	0.223 **	0.266 **			
Ne	-0.289 **	-0.314 **	-0.318 **		
Op	0.198 **	0.090 *	-0.019	-0.92 *	
Pr	-0.117 **	-0.95 *	-0.005	0.129 **	0.066

Tuesday, 20 December 11  
General Flow of talk

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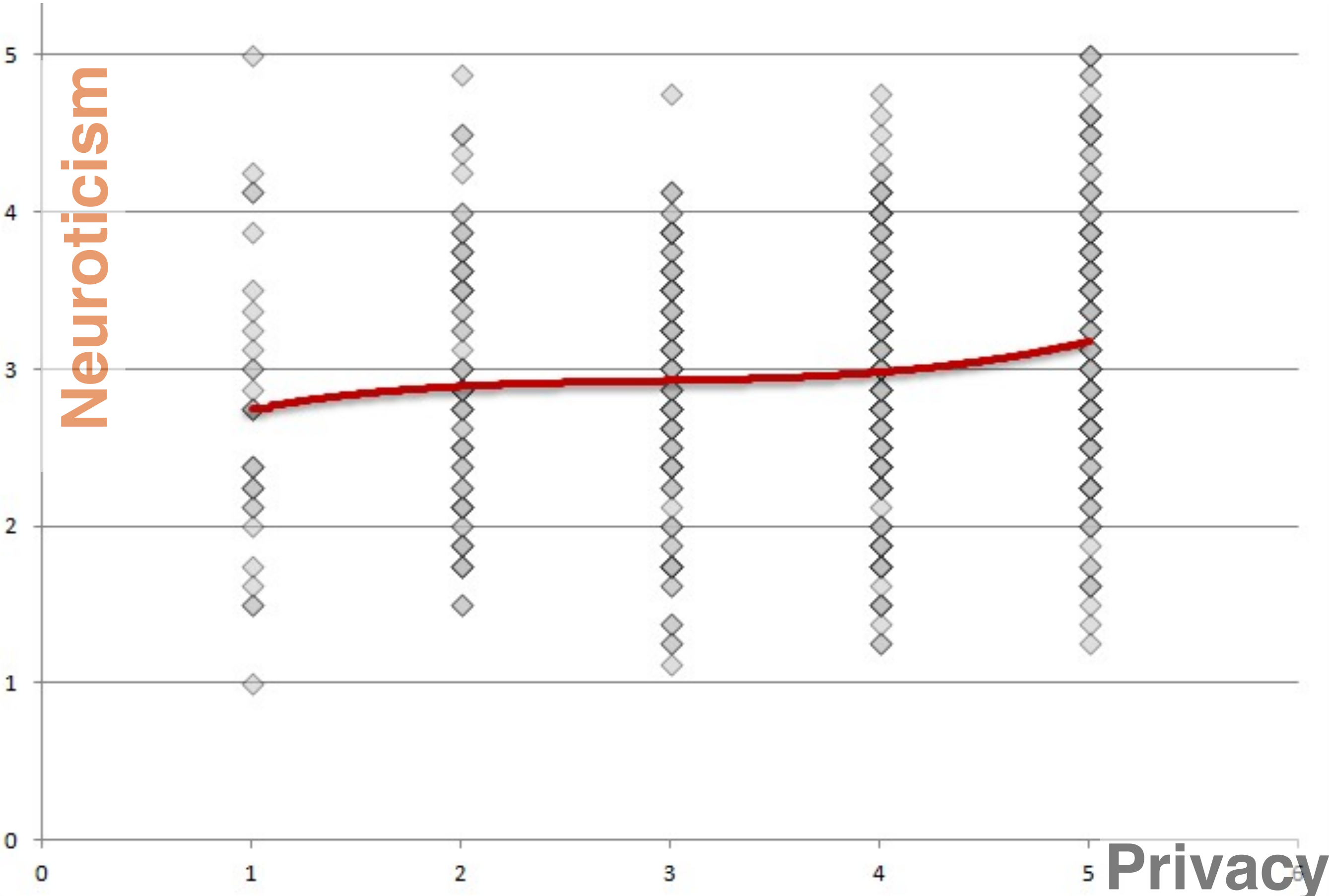
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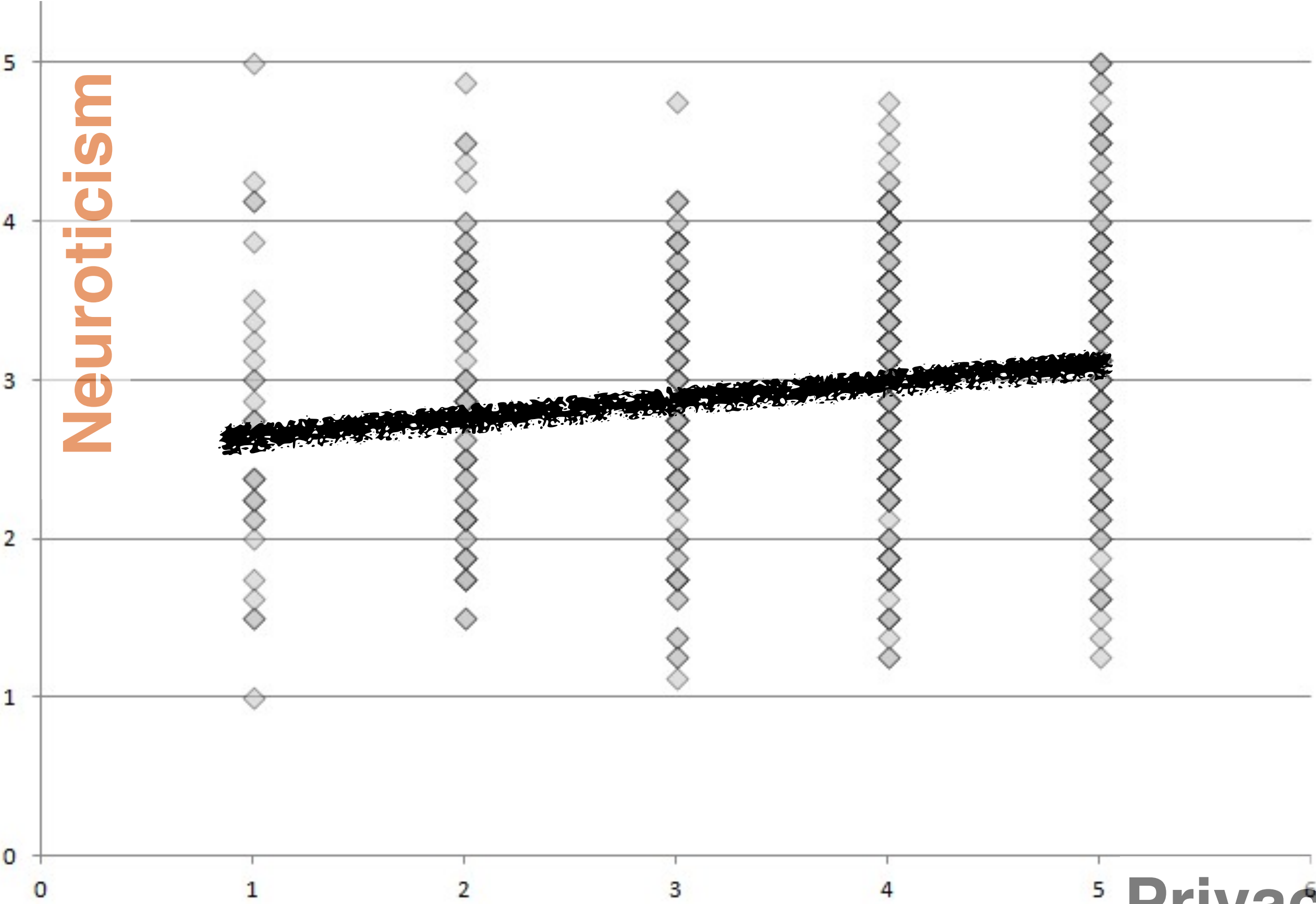
# Neuroticism & Privacy

Neuroticism



Privacy

# Neuroticism & Privacy



Tuesday, 20 December 11

General Flow of talk

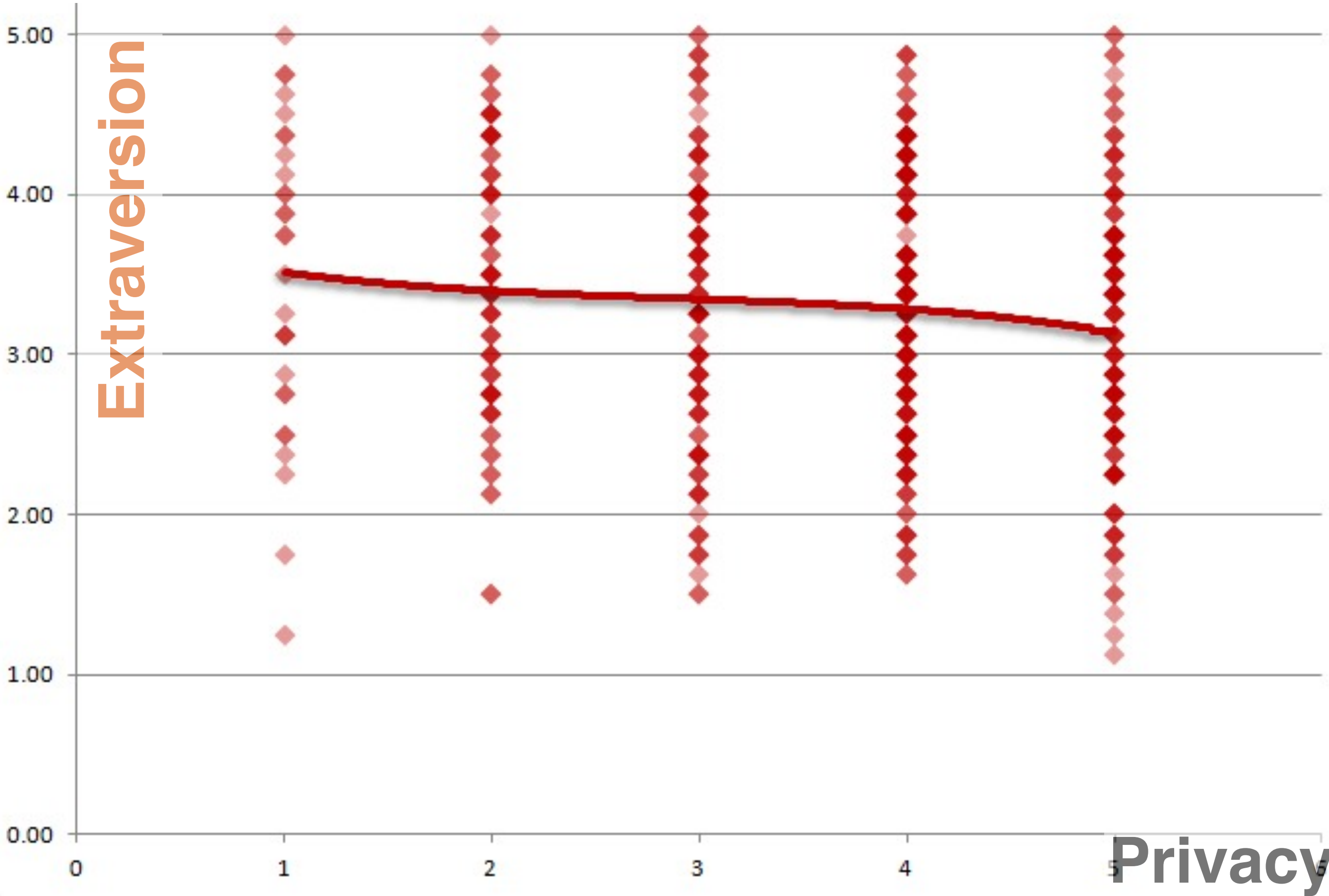
We'll start off with the most significant result

Here we see that the high the levels of neuroticism, the greater the concern for privacy. Not altogether surprising, as this could be another thing for people scoring highly here to worry about.

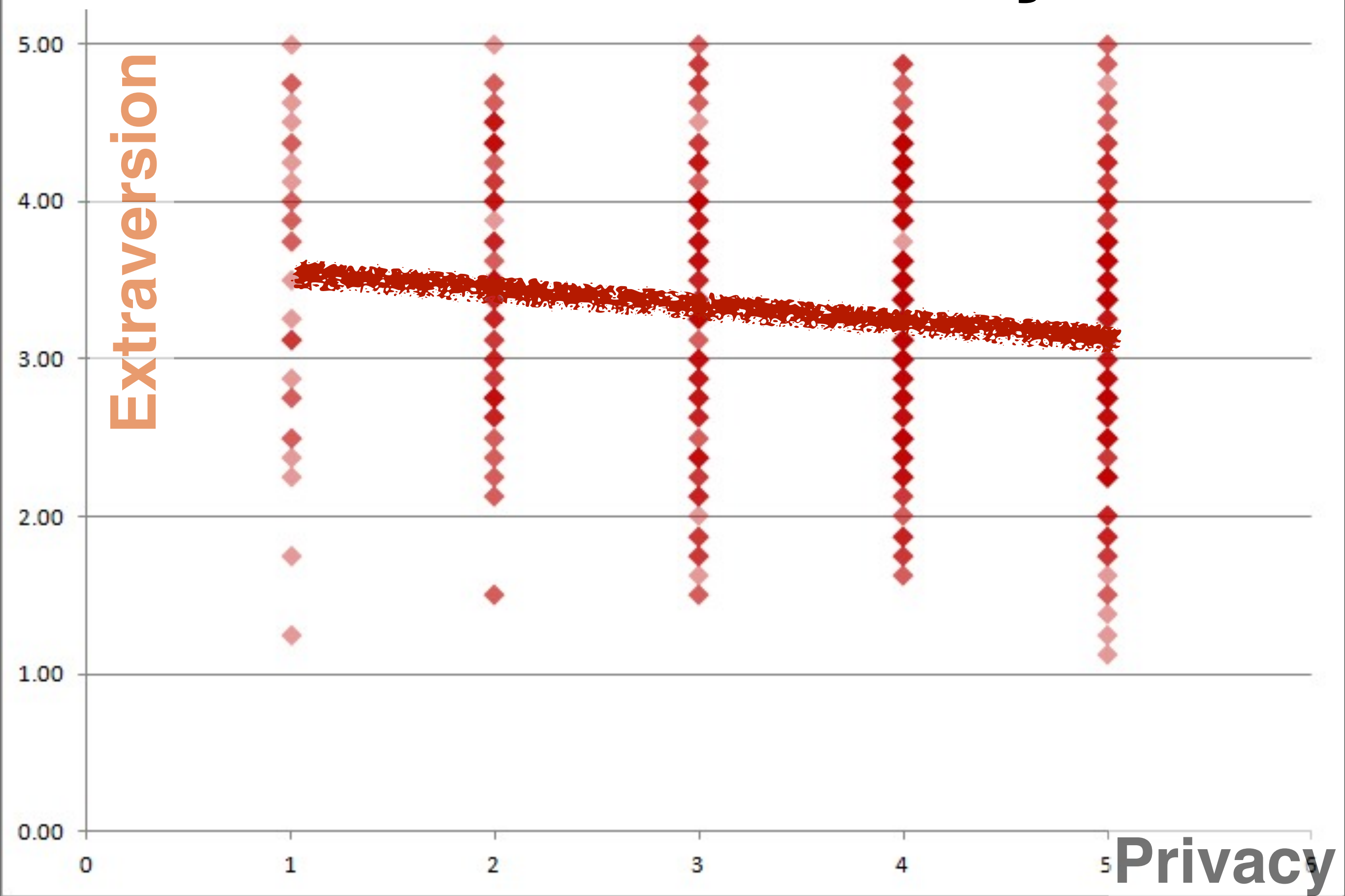
So, we've seen some interesting links between personality and privacy, but is this reflected in Facebook activity.



# Extraversion & Privacy



# Extraversion & Privacy



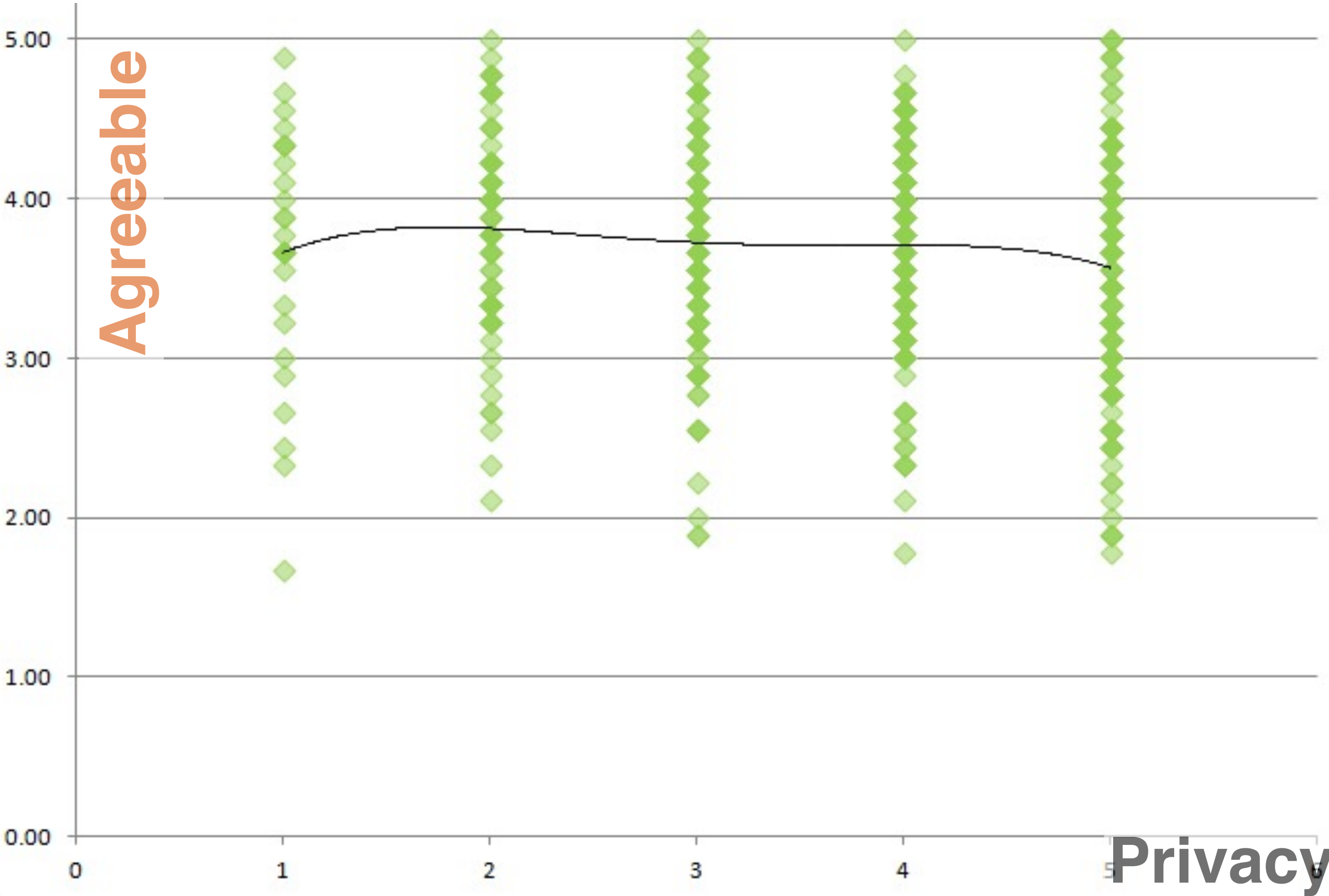
Tuesday, 20 December 11

So extraversion, these are people who tend to be gain energy from being around people.

We see that the more extroverted a person claims to be, the less they are concerned about privacy. This could be for a number of reasons, but we do know that extroverts tend to take more risks, but that doesn't necessarily mean they're not concerned about those risks.

# Agreeableness & Privacy

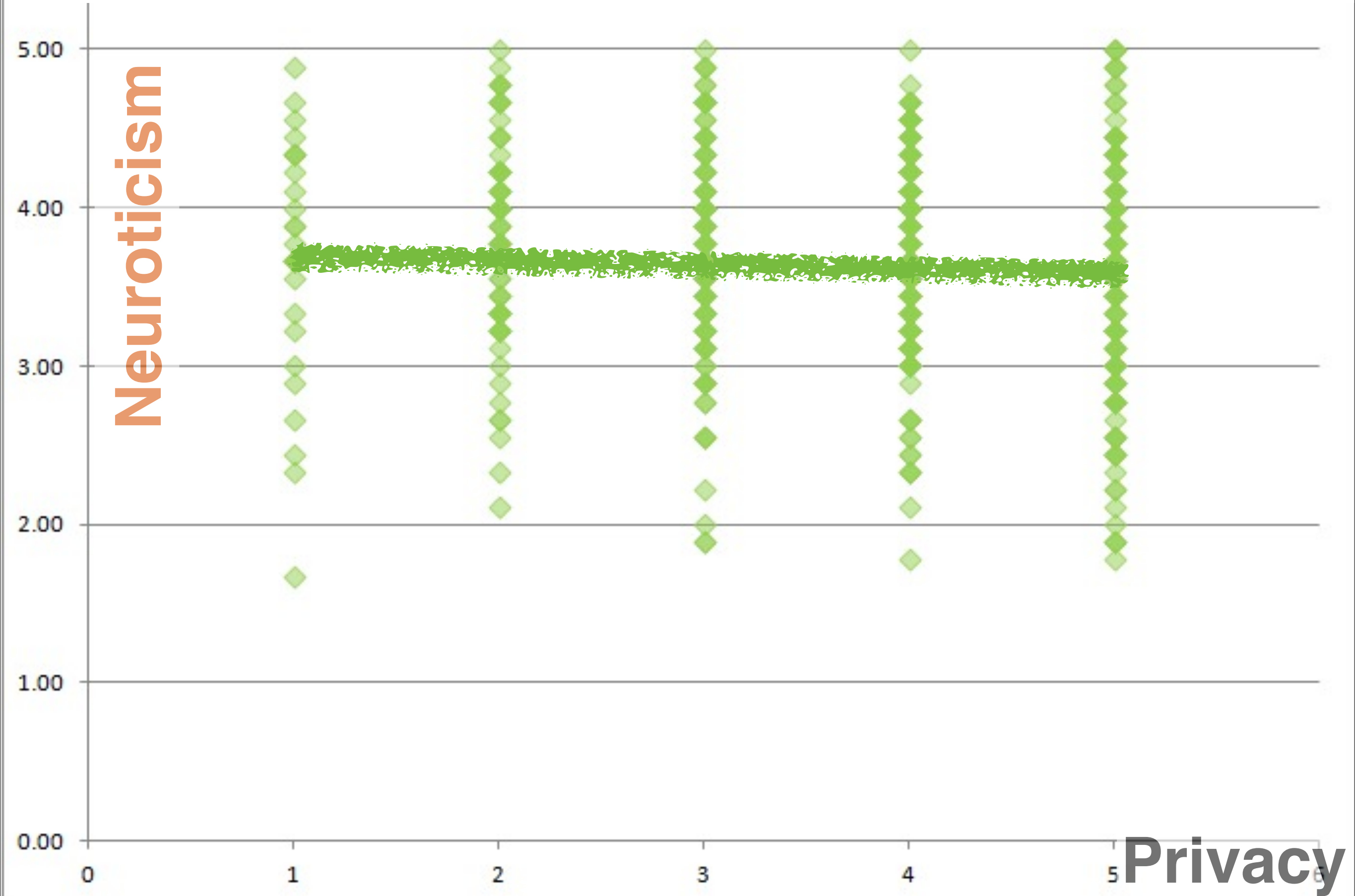
Agreeable



Privacy



# Agreeableness & Privacy

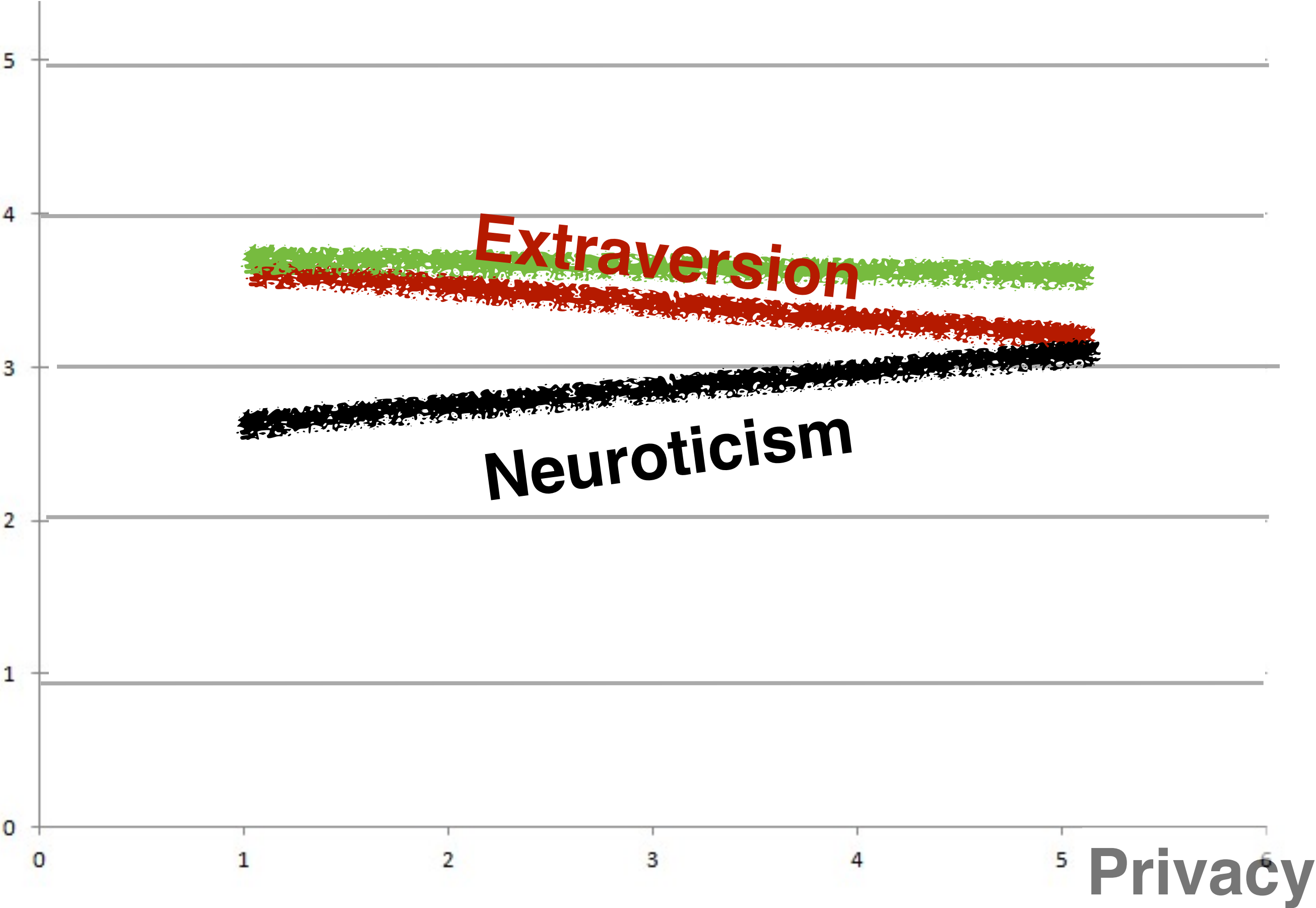


Privacy

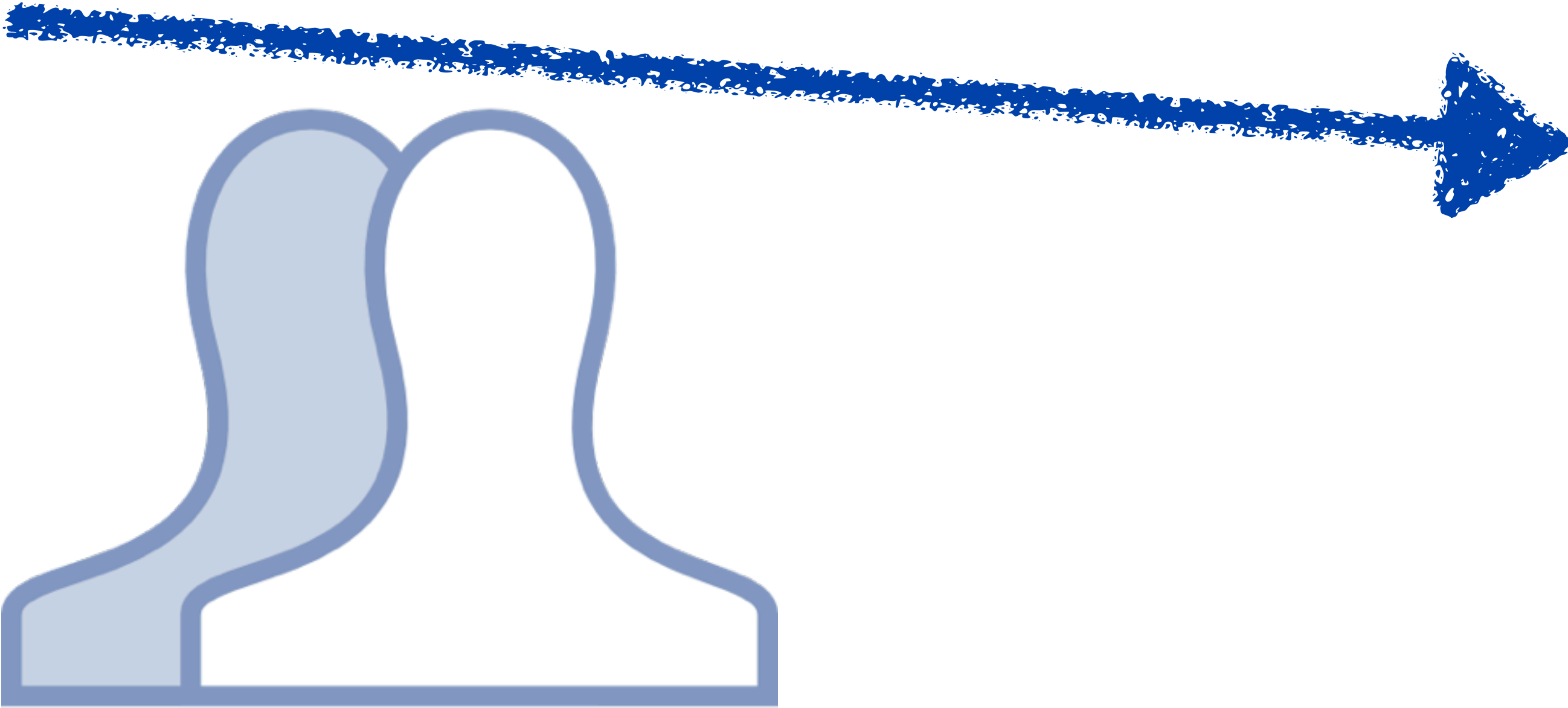
Tuesday, 20 December 11

Agreeableness. As agreeableness increases, concerns from Privacy diminish. We know that agreeableness and trust are related, so perhaps agreeable people are look at privacy risk differently.

# Personality & Privacy



# Friend Count & Privacy



Tuesday, 20 December 11  
Now, are there any clues to privacy concerns from facebook?

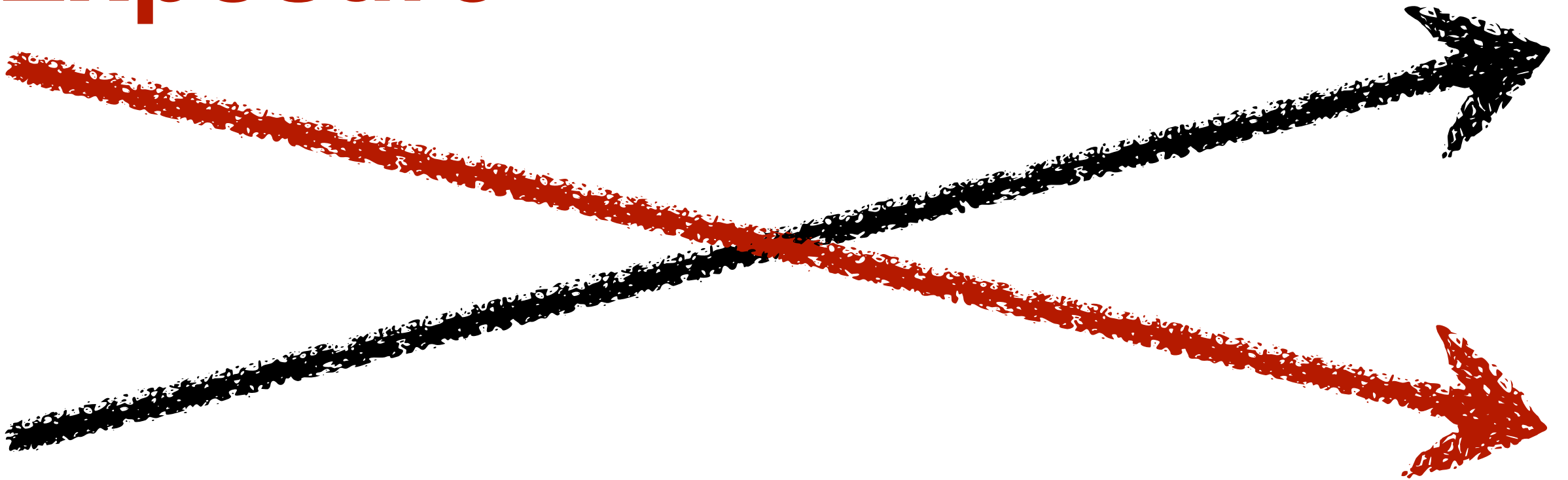
The only statistically significant result we found was in friend count. The greater the friend count, the lower the concern for privacy.  
Other results were consistent in the direction of their relationship, but were not statistically significant.

Anecodtally, if someone has 1000 facebook friends, you'd guess that they're simply not going to know them all \*that\* well....however, we're also pre-supposing that facebook users all use facebook the same way....they don't



# A Privacy Paradox?

**Exposure**



**Concern**

Tuesday, 20 December 11

What was most interesting to me is this interesting paradox. The people most concerned, arguably have the least to be concerned about. Ironically, they state that they're concerned about online privacy, but at the same time use social networks.

There's some fascinating writings on this and other privacy paradox's e.g. <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1394/1312>

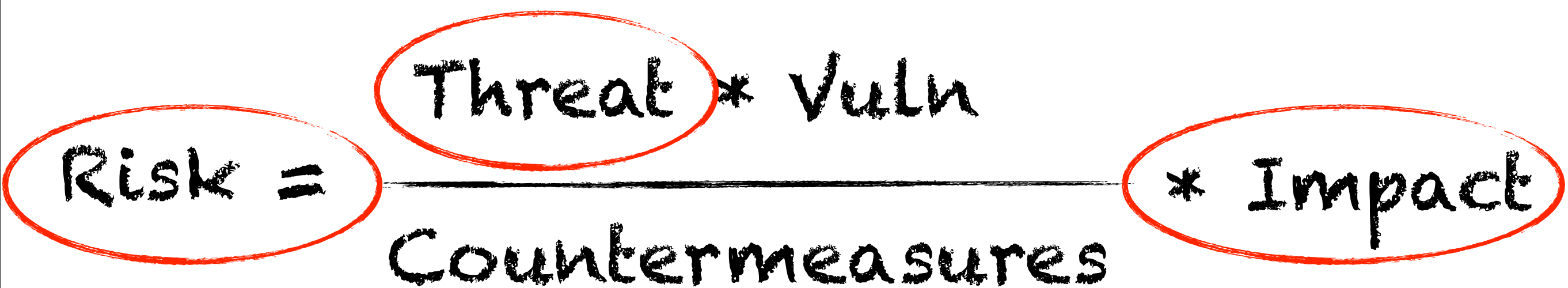
# but who's right?



Tuesday, 20 December 11

General Flow of talk

Do extraverts just see risk differently?



A hand-drawn diagram illustrating a risk equation. The word "Risk" is circled in red on the left, followed by an equals sign. A horizontal line extends from the equals sign. Above the line, the word "Threat" is circled in red, followed by an asterisk and the word "Vuln". Below the line, the word "Countermeasures" is written. To the right of the line, an asterisk is followed by the word "Impact", which is also circled in red.

$$\text{Risk} = \frac{\text{Threat} * \text{Vuln}}{\text{Countermeasures}} * \text{Impact}$$

Tuesday, 20 December 11

So here's a thought...maybe some people just perceive the risk equation differently...and maybe that's down to individual personality traits.

Could be that they perceive less threat

or maybe the same threat, just less impact

or happy to accept risk.

It may well be that agreeable people simply receive a small threat



# Awareness & Training

Tuesday, 20 December 11

This area of study raises interesting questions in awareness campaigns, service design etc.  
We don't have all the answers here, but we do suggest that this is an interesting area of future research

It really questions whether your awareness programs are really going to reach the audiences they need to reach the most.

# High Scorers Extraversion

- Friends
- Photos
- Positive Emotions
- Comments attracted



Tuesday, 20 December 11

General Flow of talk  
Our results show a positive correlation between Extraversion and the number of  
friends  
photos  
comments they attract  
use of positive emotions  
biologicy process

# High Scorers Extraversion



Tuesday, 20 December 11

Did extroverts attract more comments or was it simply because they had more friends to attract comments from?



# Bigger Audience



Tuesday, 20 December 11

We found comments of particular interest. Were extraverts attracting more comments because they're better at working the room, or was it simply because they had a bigger audience to begin with?

Further analysis illustrated a sig postive relationship between friends and posts made in feb and post commetns received. This provides support to the assertion that it's the number of friends a person has rather than a persons level of extraversion.....etc etc

Our findings do support the assertion of Sam Gosling an others that consistent with offline behaviour extravertys are more engages in online social media than introverts  
<http://www.istockphoto.com/stock-photo-17648366-concert-crowd.php?st=fbb50b1>

# High Scorers Extraversion

- Fewer books



Tuesday, 20 December 11

General Flow of talk

On the other hand they would have fewer books listed on their Facebook page.

This doesn't mean they read less. it could just be that they don't, for whatever reason, list books as much as introverts.

References



# High Scorers Openness

- ~~Money~~ biography

- Religion

Detests

movies

music



Tuesday, 20 December 11

## General Flow of talk

The analysis we performed on the data showed statistically significant findings that suggests that people with higher openness scores will use more words to do with negative emotions and anger and be more open to talking about things like money, religion and death. They will also write more about themselves and give more information about their hobbies and interests.

## References



# High Scorers Openness

Less of...

- Family

- Words per sentence



Tuesday, 20 December 11

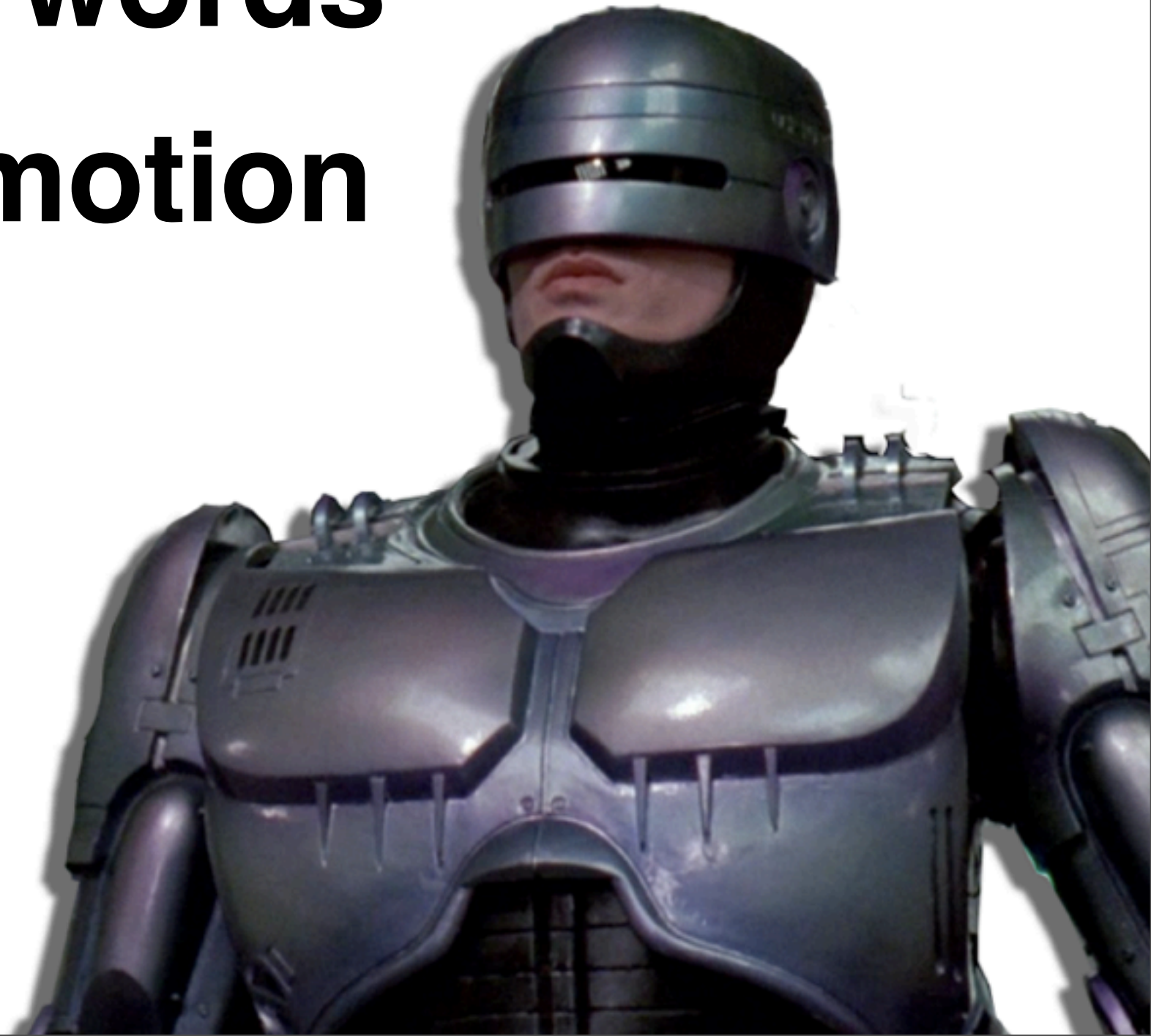
## General Flow of talk

The analysis we performed on the data showed statistically significant findings that suggests that people with higher openness scores will use more words to do with negative emotions and anger and be more open to talking about things like money, religion and death. They will also write more about themselves and give more information about their hobbies and interests.

## References

# High Scorers Conscientiousness

- Dictionary words
- Positive emotion
- Family
- Age



Tuesday, 20 December 11

General Flow of talk

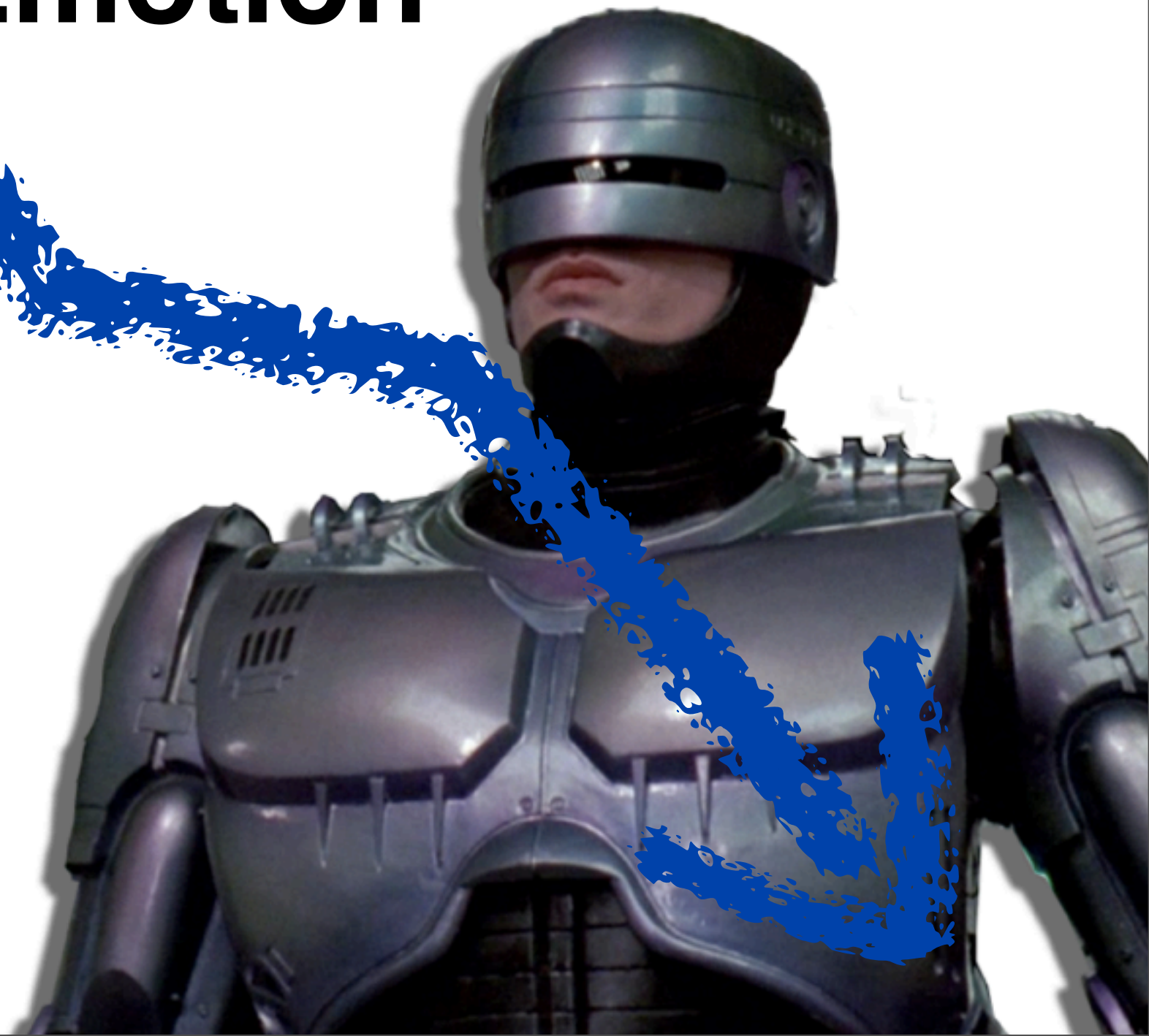
Our study suggested that a person with high levels of conscientiousness will be older, use proper words and talk about their family, and use words to do with positive emotion and inclusion.

References



# High Scorers Conscientiousness

- Negative Emotion
- Swearing
- Anger
- Death



Tuesday, 20 December 11

General Flow of talk

Conversely, they are less likely to talk about death, to swear and use angry words or words to do with negative emotion.

References

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)

more

disorganised  
poor timekeeping  
careless  
impulsive

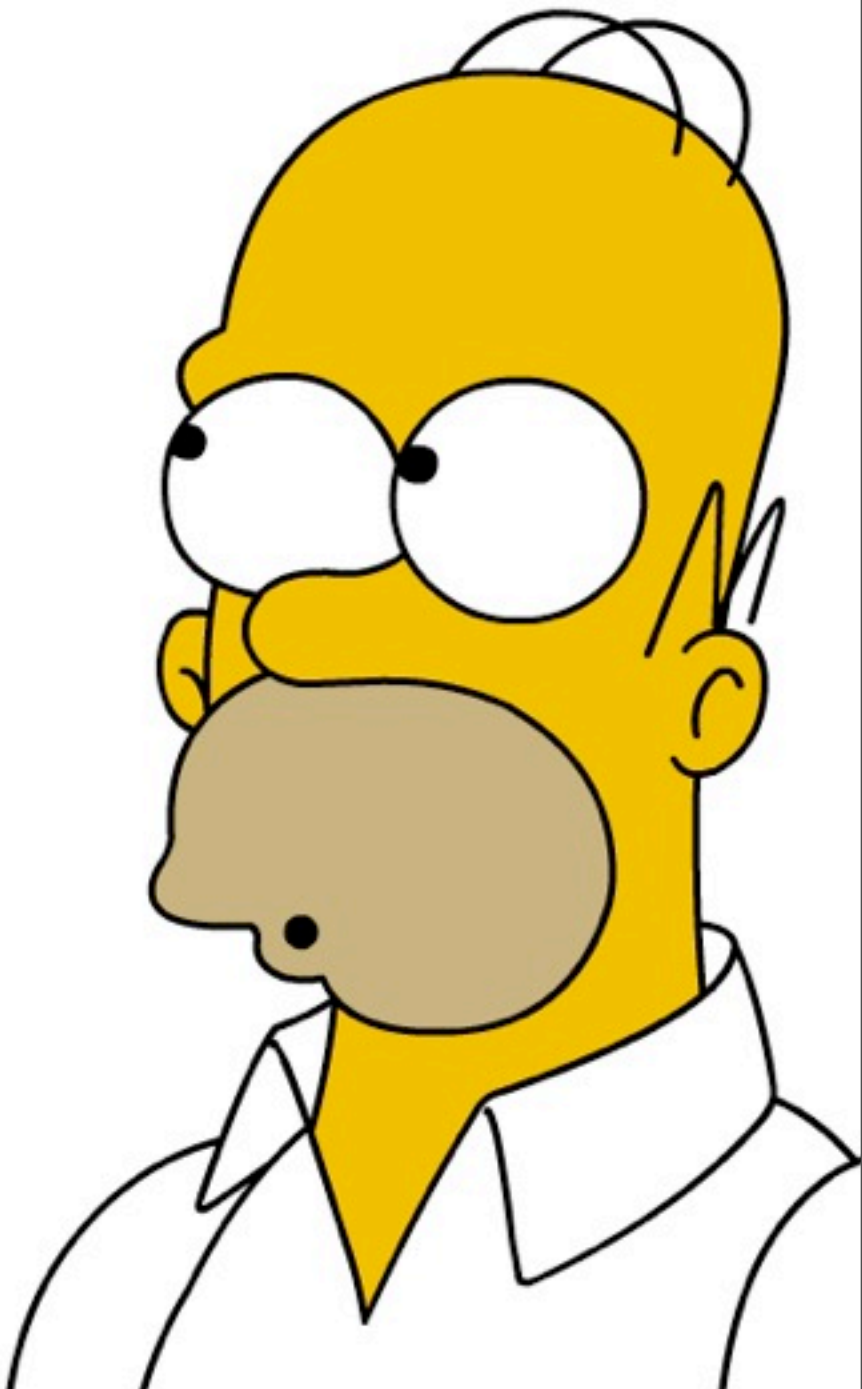
Next up is,,,



# Conscientiousness

Low Scorers

More swearing?



Tuesday, 20 December 11

General Flow of talk

Conversely, they are less likely to talk about death, to swear and use angry words or words to do with negative emotion.

References

References

Highly readable - [http://en.wikipedia.org/wiki/Big\\_Five\\_personality\\_traits#Conscientiousness](http://en.wikipedia.org/wiki/Big_Five_personality_traits#Conscientiousness)  
more

- disorganised
- poor timekeeping
- careless
- impulsive

Next up is,,,

# High Scorers **Agreeableness**

- **Longer sentences**
- **Comments Received**
- **Positive emotion**
- **Friends**
- **Photos**
- **Age**



Tuesday, 20 December 11

General Flow of talk

Our study suggested that a person with higher levels of agreeableness will be older, have more friends on Facebook, and post more photos and comments. They will also use longer sentences, but perhaps fill spaces with words like er or um, and use words to do with positive emotion.

References

# High Scorers Agreeableness

**-No sig negative correlations**



Tuesday, 20 December 11

General Flow of talk

We found no statistically significant negative associations with agreeableness

References



# High Scorers Neuroticism

- Longer Posts
- More Albums



Tuesday, 20 December 11

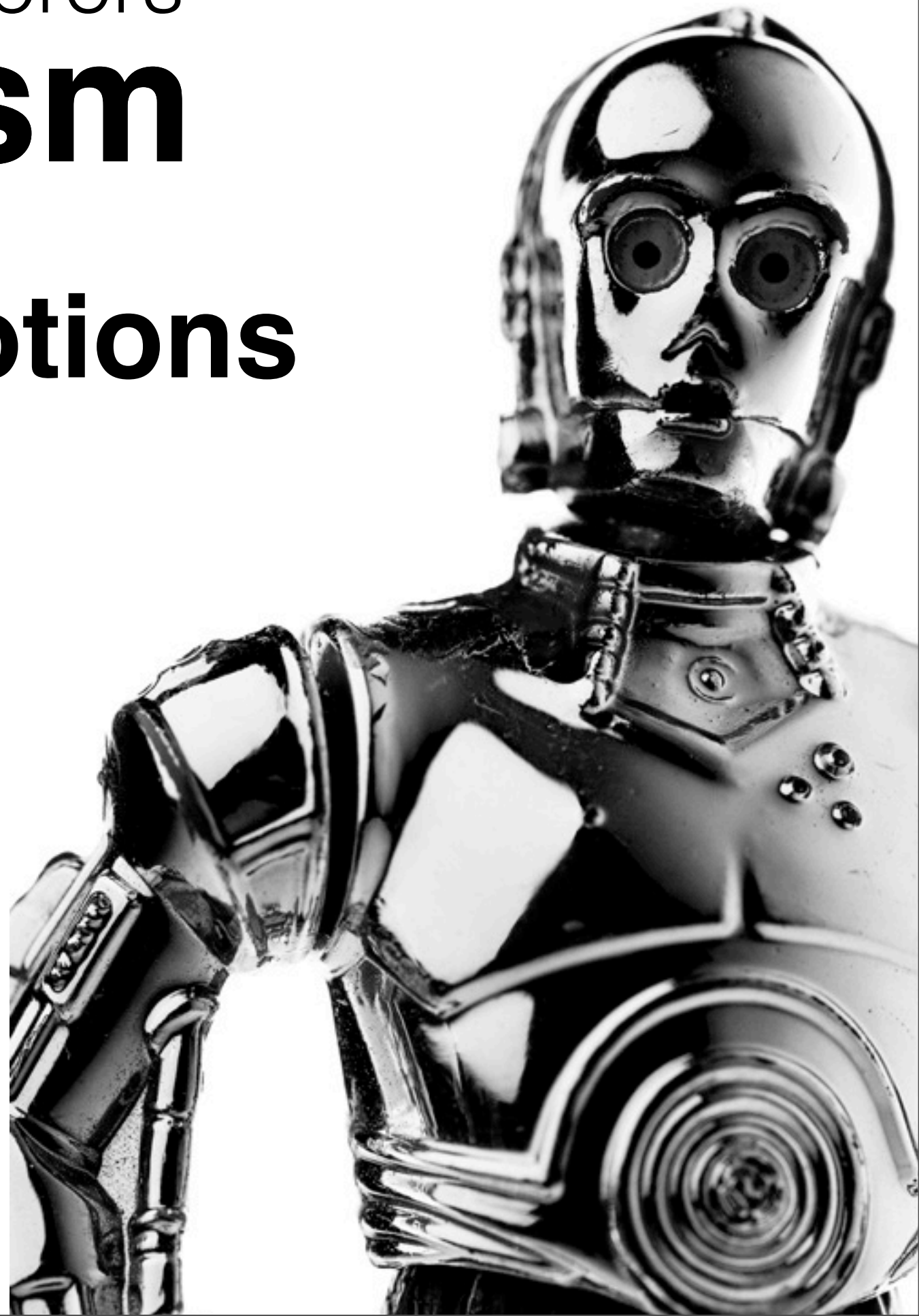
General Flow of talk

And finally, our study showed that people with higher levels of neuroticism tend to post more photo albums, have longer posts and swear more, as well as using words to do with negative emotion, anxiety, anger and sadness.

References

# High Scorers Neuroticism

- Negative emotions
- Swearing
- Sadness
- Anxiety
- Anger



Tuesday, 20 December 11

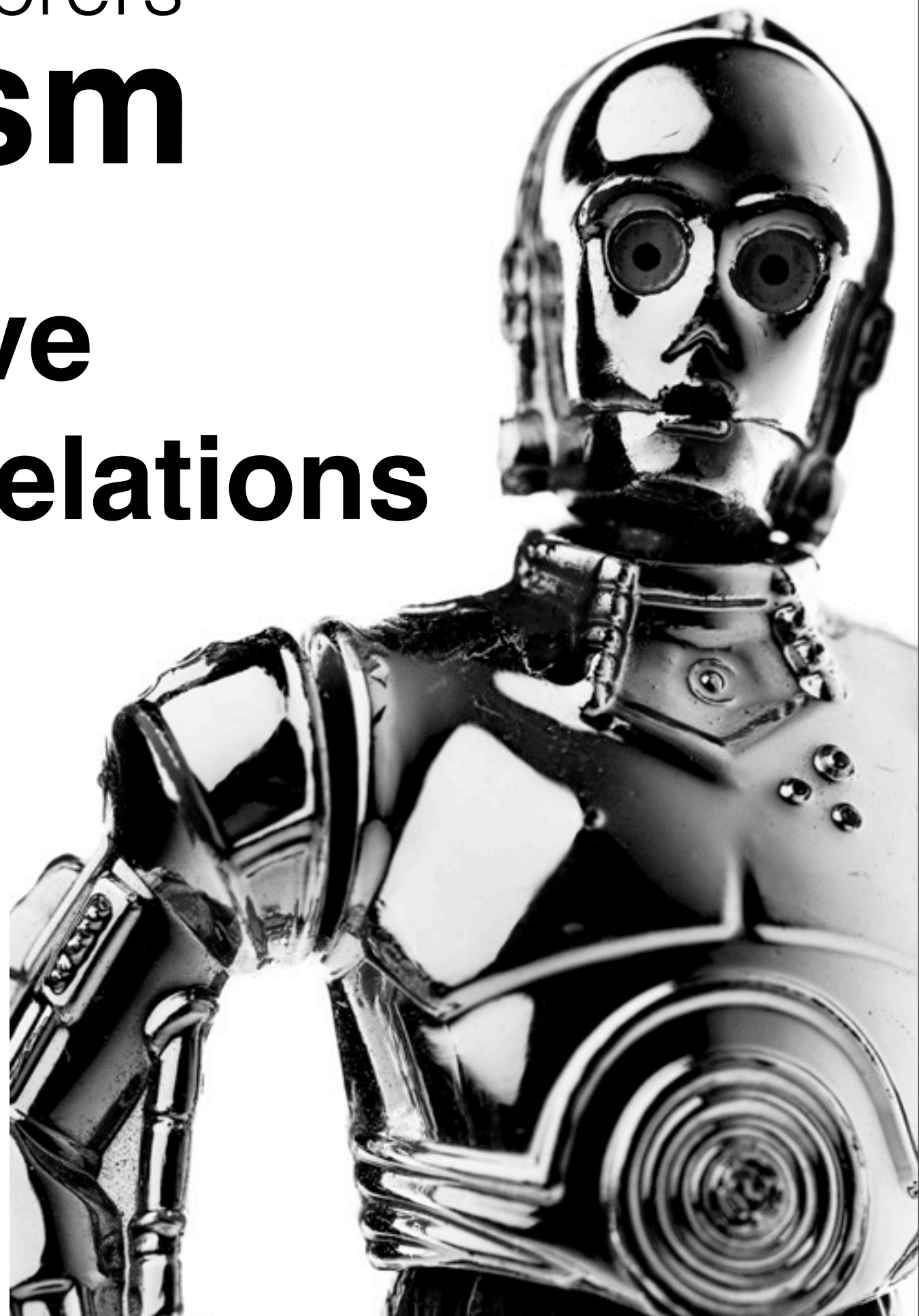
General Flow of talk

And finally, our study showed that people with higher levels of neuroticism tend to post more photo albums, have longer posts and swear more, as well as using words to do with negative emotion, anxiety, anger and sadness.

References

# High Scorers **Neuroticism**

## **-No sig negative correlations**



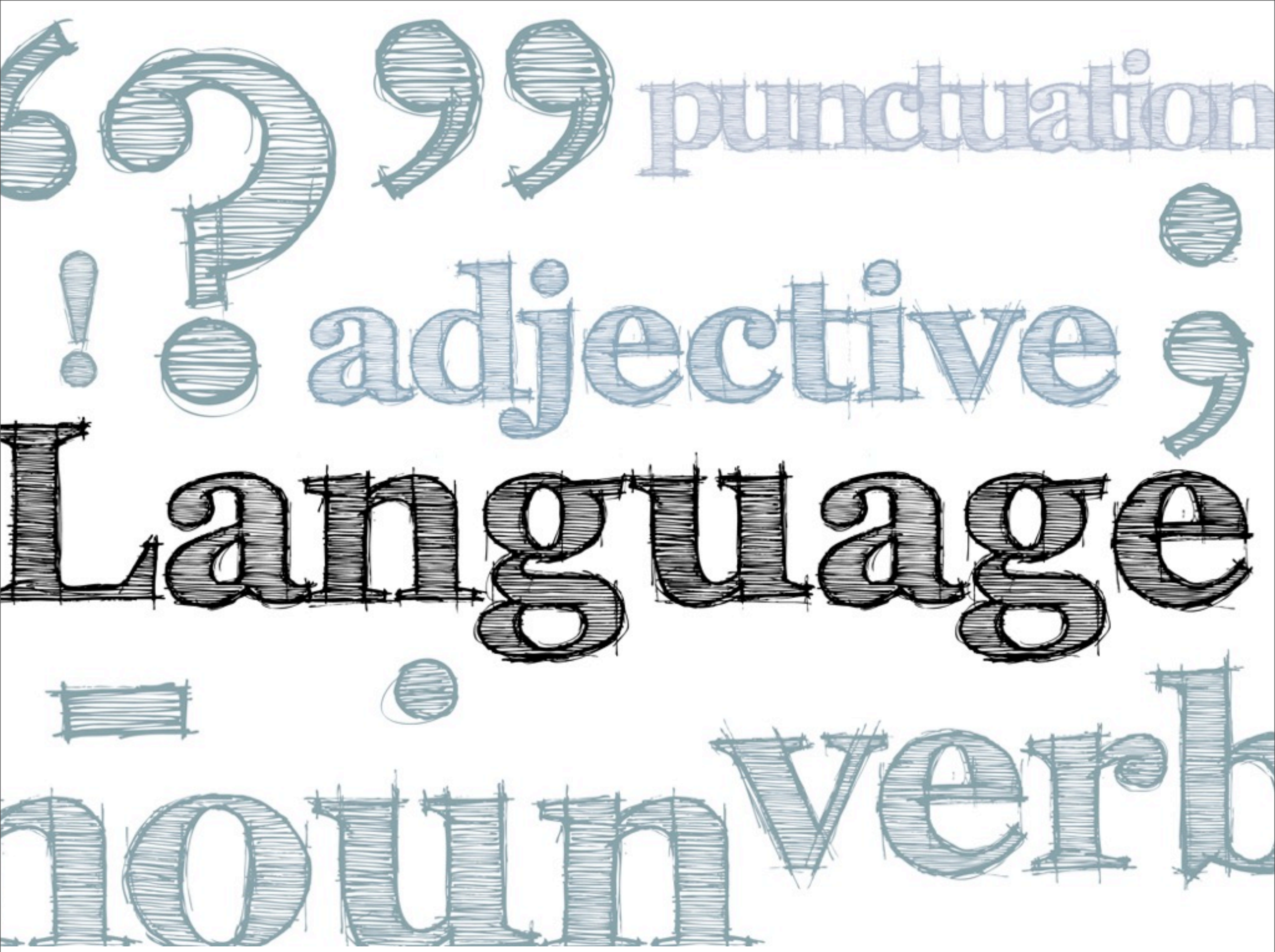
Tuesday, 20 December 11

General Flow of talk

Again, we found no statistically significant negative associations with neuroticism.

References





Tuesday, 20 December 11

differences between bio's, photo descriptions and posts

# Differences in language

**Bio**

Most lost,  
leaves  
openness &  
word count

# Spontaneity?



# Supports & Extends Prior Research



Tuesday, 20 December 11  
supports and extends

<http://www.istockphoto.com/stock-photo-9618498-the-new-bay-bridge.php?st=cd13f0f>

# Significance

Strong **v** Weak

Tuesday, 20 December 11

General Flow of Talk

or Strength and use a pic of a weight lifter

So what? I've said a lot about statistical significance, but what does all this mean in the real world? To explain this, I'm afraid I need to go back to the stats.

When performing a correlational analysis using SPSS, this is what the output looks like.

# ➔ Nonparametric Correlations

[DataSet1]

Correlations

			EXTROVERSI ON	Number of Friends
Spearman's rho	EXTROVERSION	Correlation Coefficient	1.000	.240**
		Sig. (2-tailed)	.	.000
		N	537	534
	Number of Friends	Correlation Coefficient	.240**	1.000
		Sig. (2-tailed)	.000	.
		N	534	534

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**$H_0$  = There is no relationship**  
 **$H_1$  = There is a relationship**

Tuesday, 20 December 11  
General Flow of talk

This value is called the p value and it lets me know whether a correlation is statistically significant or not. But again, what does that mean? If we go back to our hypotheses: our Null Hypothesis stated that there was no relationship between personality and Facebook activity. Our alternative hypothesis stated that there is a relationship between personality and Facebook activity.

The p value is the probability of, if the null hypothesis is true, it's the probability that we could find a result at least as extreme as the one we observed in our study. So basically, the smaller the p value is, the more evidence we have to reject the null hypothesis and accept that there is a relationship between our variables.

So in translating this correlation to having meaning in the real world, we're not concerned with the p value, as all this tells us is the probability that we've made the right conclusion. To find out the strength of the relationship between these two variables, we need to look at this value, which is the r value, or the coefficient of correlation.

In correlational analysis, what you really want is a value as close to 1 or -1 as you can get, as this indicates a very strong relationship. So intuitively, we can see that in this case, it may be a statistically significant relationship but it doesn't appear to be a very strong one.

To find out exactly how strong, we need to square the r value to get what is called the coefficient of determination, and this will tell us the percentage of variance, or fluctuation, in one variable that can be predicted or explained by the other variable. In this case, if we square our r value of 0.24, we get roughly 0.05, which translates to 5%. So even though this correlation is statistically significant, it illustrates that only 5% of the variance of one variable can be explained by the other.

In a nutshell, you have to look beyond the fact that something is statistically significant and start to look at the strength of the relationship.

Some mention of this....Now, many of our results we in the  $r = .1$  to  $.24$  range



# A statistically significant result indicates that we are valid in stating that there is a relationship.

Tuesday, 20 December 11

General Flow of talk

A statistically significant result indicates that we are valid in stating that there is a relationship.

References

# It does not indicate the strength of that relationship



Tuesday, 20 December 11  
General Flow of talk

It does not indicate the strength of that relationship.

References

A result can be statistically significant, but only explain a small amount of variance in the data.

Tuesday, 20 December 11  
General Flow of talk

A result can be statistically significant, but only explain a small amount of variance in the data.

Now we've cleared that up, I'll hand back to Chris...

References



# 0.08

(N=3956)

*Islam & Schottenfeld 1994*



Tuesday, 20 December 11  
General flow of talk

Relationship between ever smoking and subsequent incidence of lung cancer is small...but it's important to us.

# edge

Tuesday, 20 December 11

General Flow of talk

The key thing to bear in is that results give you an edge.

so if we take 100 people, it may mean that you'll predict correctly 53% of the time. This isn't great for basing critical decisions on, but it means you're going to be right more often than not.

“if you want to make an  
educated **bet**, you would be  
crazy to bet against the odds.”

James Pennebaker

Tuesday, 20 December 11

General Flow of talk

In other words

“if you want to make an educated bet, you would be crazy to bet against the odds”

References



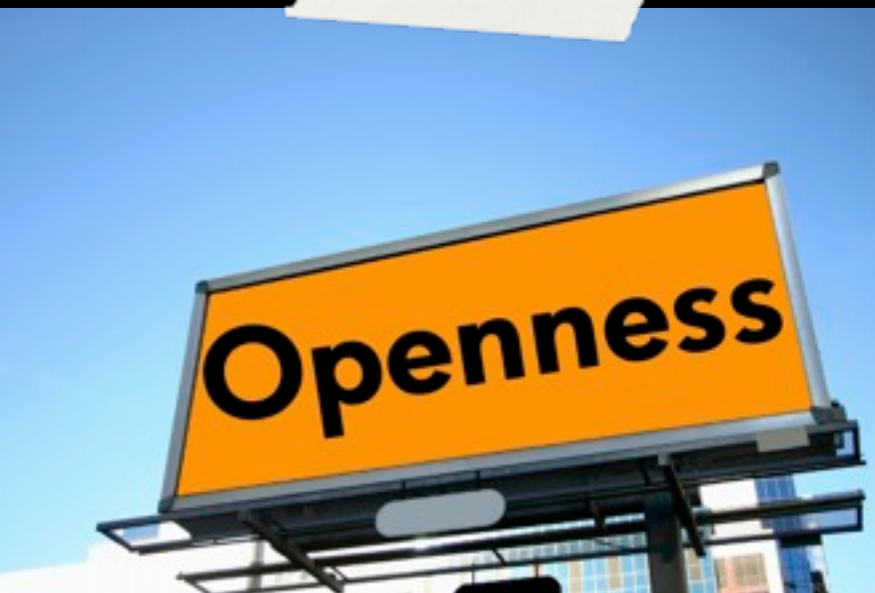


# “So what?”

Tuesday, 20 December 11  
General Flow of talk

- so what...well lets look at 3 case studies

# We looked at...



Marketing



Fraud



Screening



# Online Marketing

A large billboard with an orange background and the word "Openness" in bold black text. The billboard is mounted on a metal structure with a walkway and stairs. In the background, a modern building with blue glass windows is visible under a clear blue sky.

**Openness**

Tuesday, 20 December 11





Tuesday, 20 December 11

General Flow of talk

If you want to see a really cool use of sentiment analysis, take a look at “we feel fine”.org Sentiment Analysis

In future, you might be able to “guess” someone’s personality through the ads they receive

Well advertising is perhaps a practical use, but what about something a little more interesting.

References

<http://www.wefeelfine.org/>

# Fraud



Tuesday, 20 December 11  
<http://www.istockphoto.com/stock-photo-16393841-computer-hacker-with-mask.php?st=0168af5>



# Agreeableness & Gullibility



Tuesday, 20 December 11  
General Flow of talk

we know that agreeableness is positively correlated with gullibility .

Further, a recent Cisco report talks about increase in spear phishing..

So, imagine sifting through the (public) social media profiles of a group of people with the help of Maltego by Paterva

So what if we could find people who may be more gullible than others, OR to put it another way, in rank order, who are the post pwnable people in a group.

If you're looking for the weakest point in a group, this should give you a headstart. <click to next slide>

References  
Maltego - <http://www.paterva.com/>

URL's to images and some rough thoughts/Notes  
=====

<http://www.istockphoto.com/stock-photo-9610849-target-locked.php?st=10c6eb2>



> Access Granted



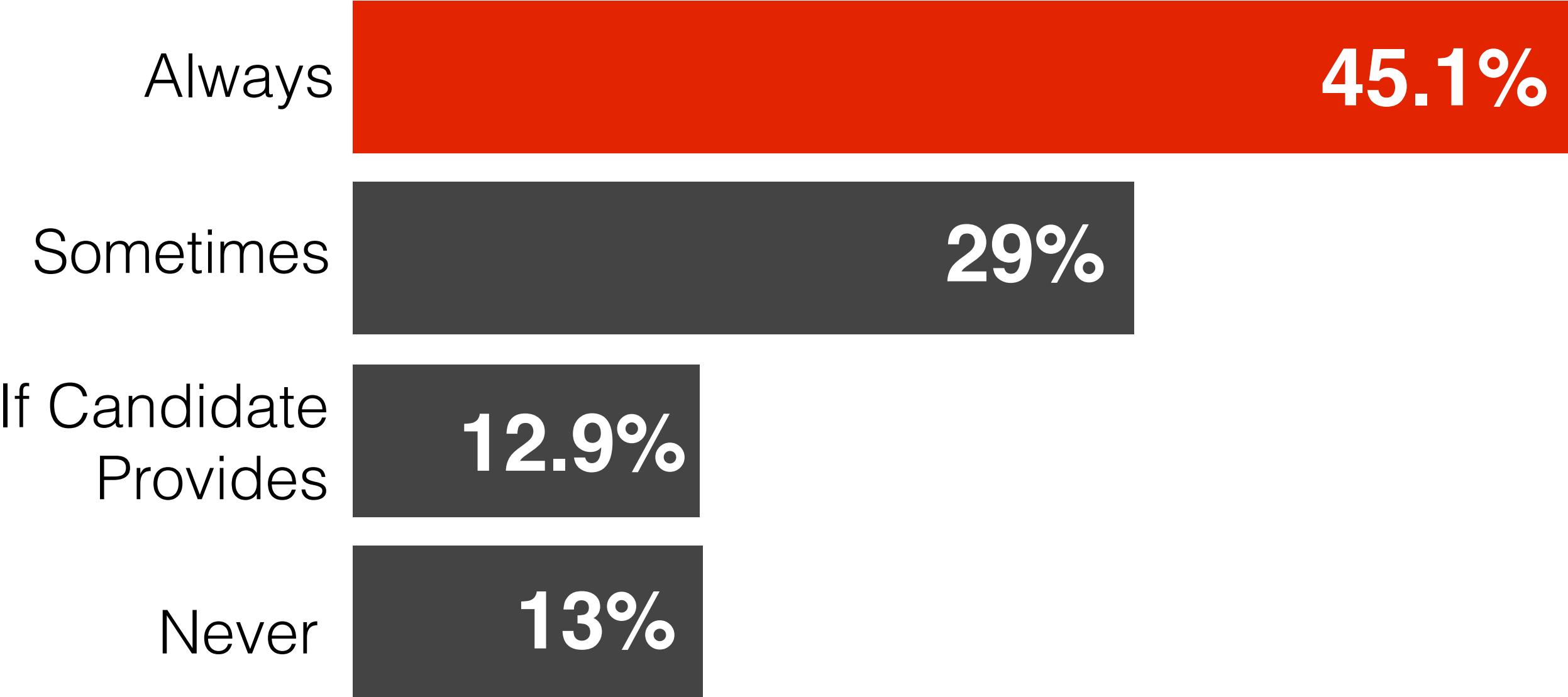
# Pre Screening



Tuesday, 20 December 11  
Pre Screening

<http://www.istockphoto.com/stock-photo-5229919-rejected-job-resume-crumpled-up-and-thrown-away-in-garbage.php?st=62ee633>

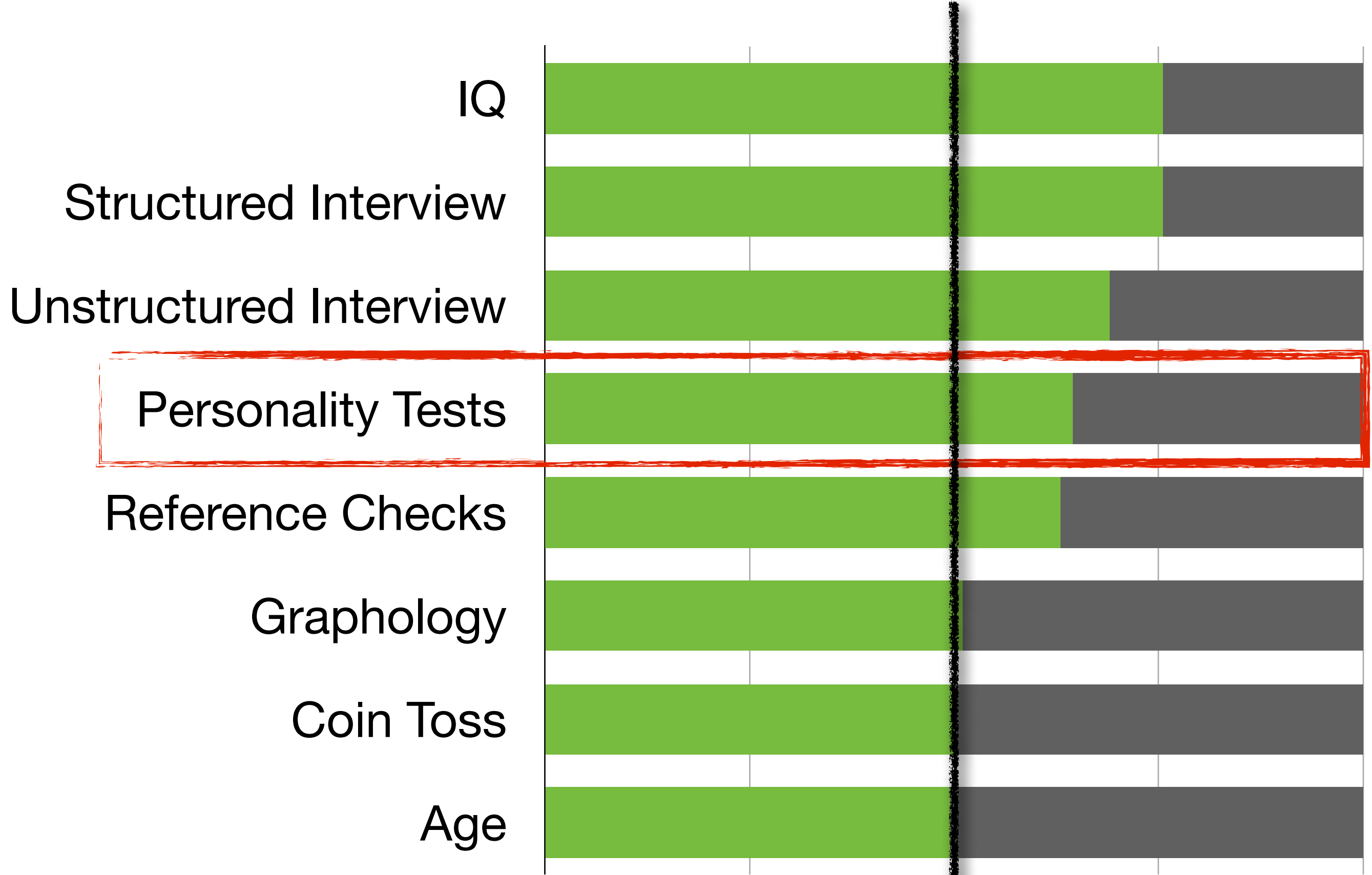
# Online searches of candidates



*Jobvite Social Recruiting Survey 2011*



# Job performance



*Schmidt & Hunter 1998*  
*Morgeson et al 2007*

# personality



Personal Space

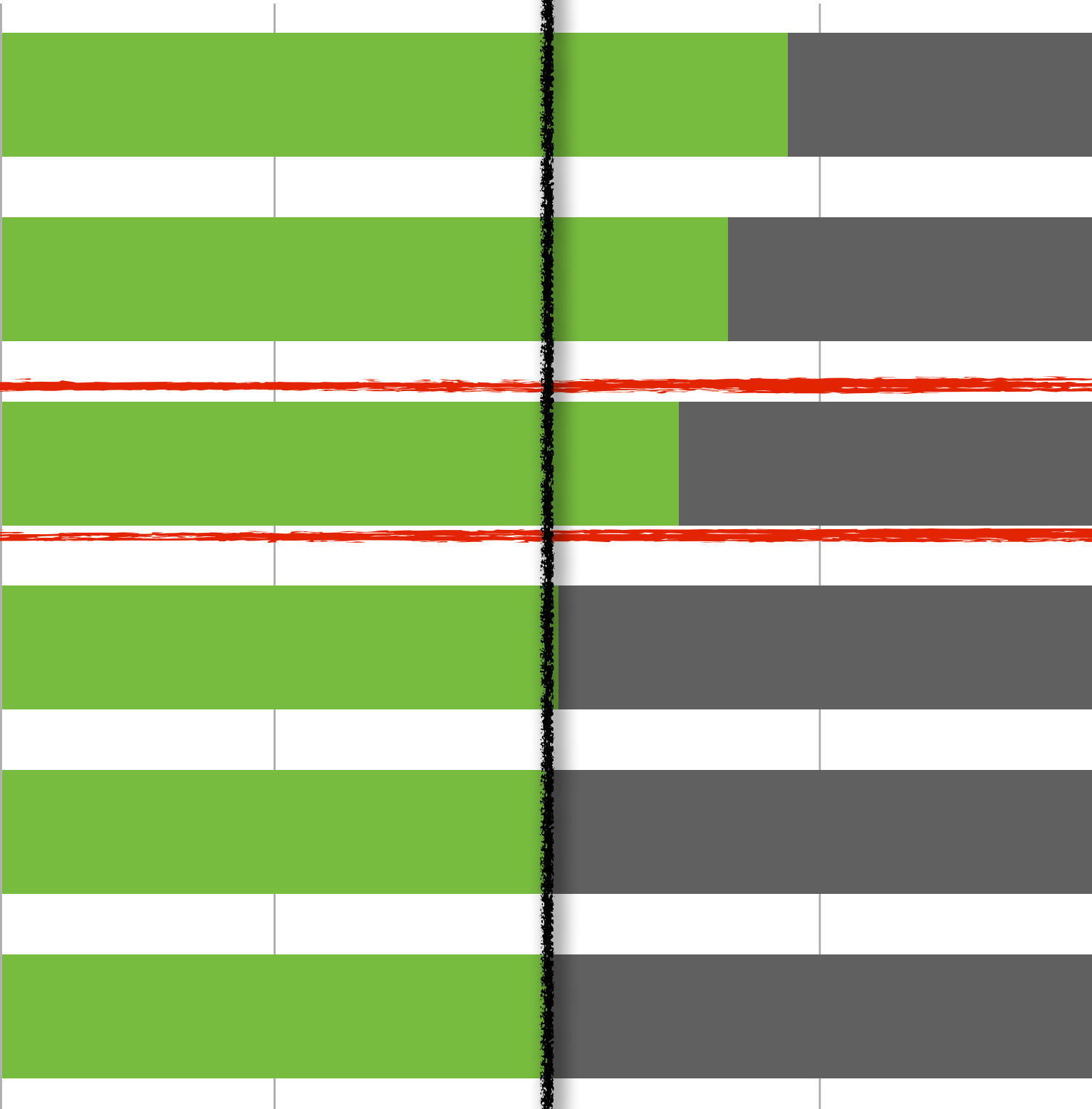
Resume

Facebook

Graphology

Phrenology

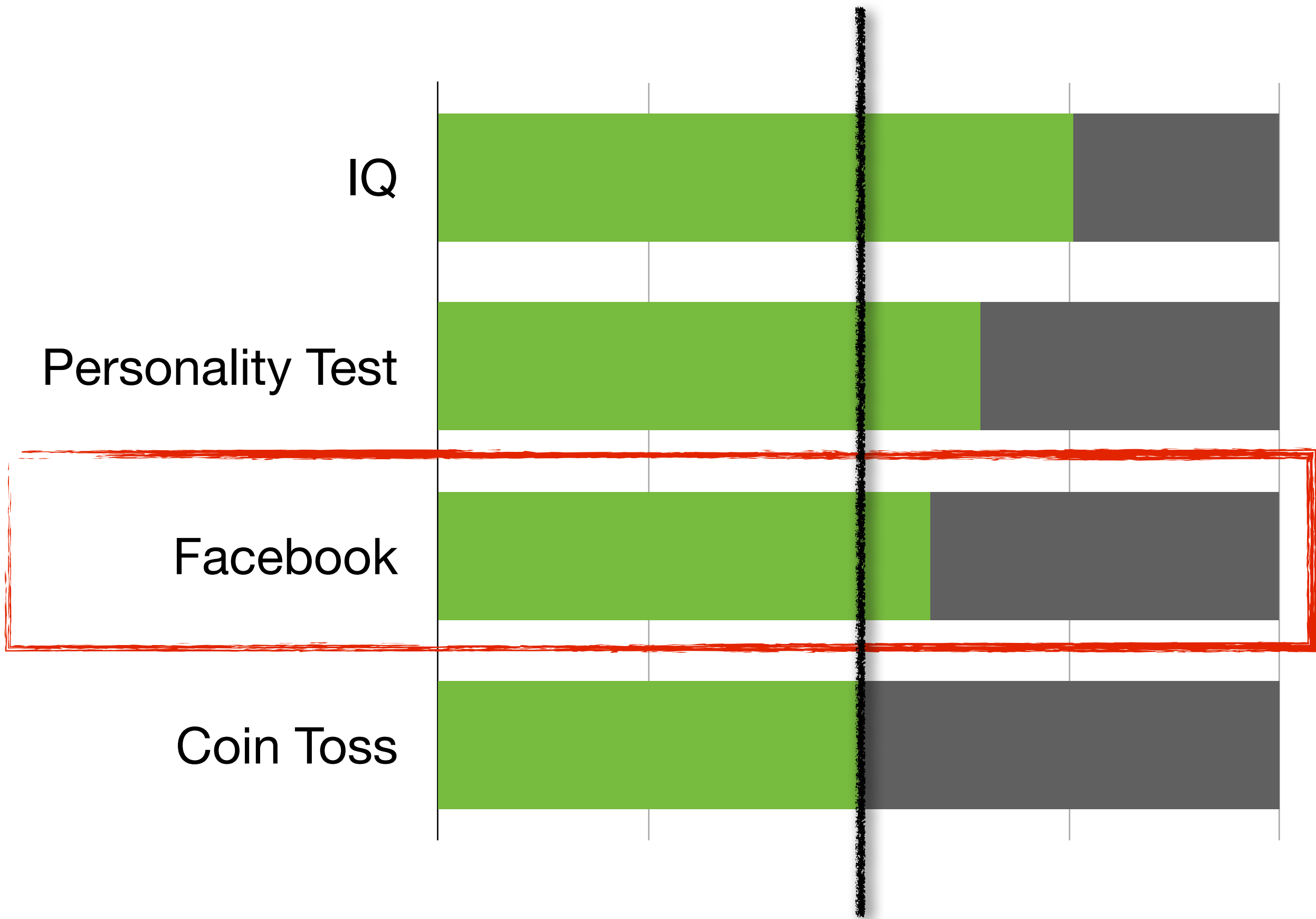
Coin Toss



*Estimates Only*

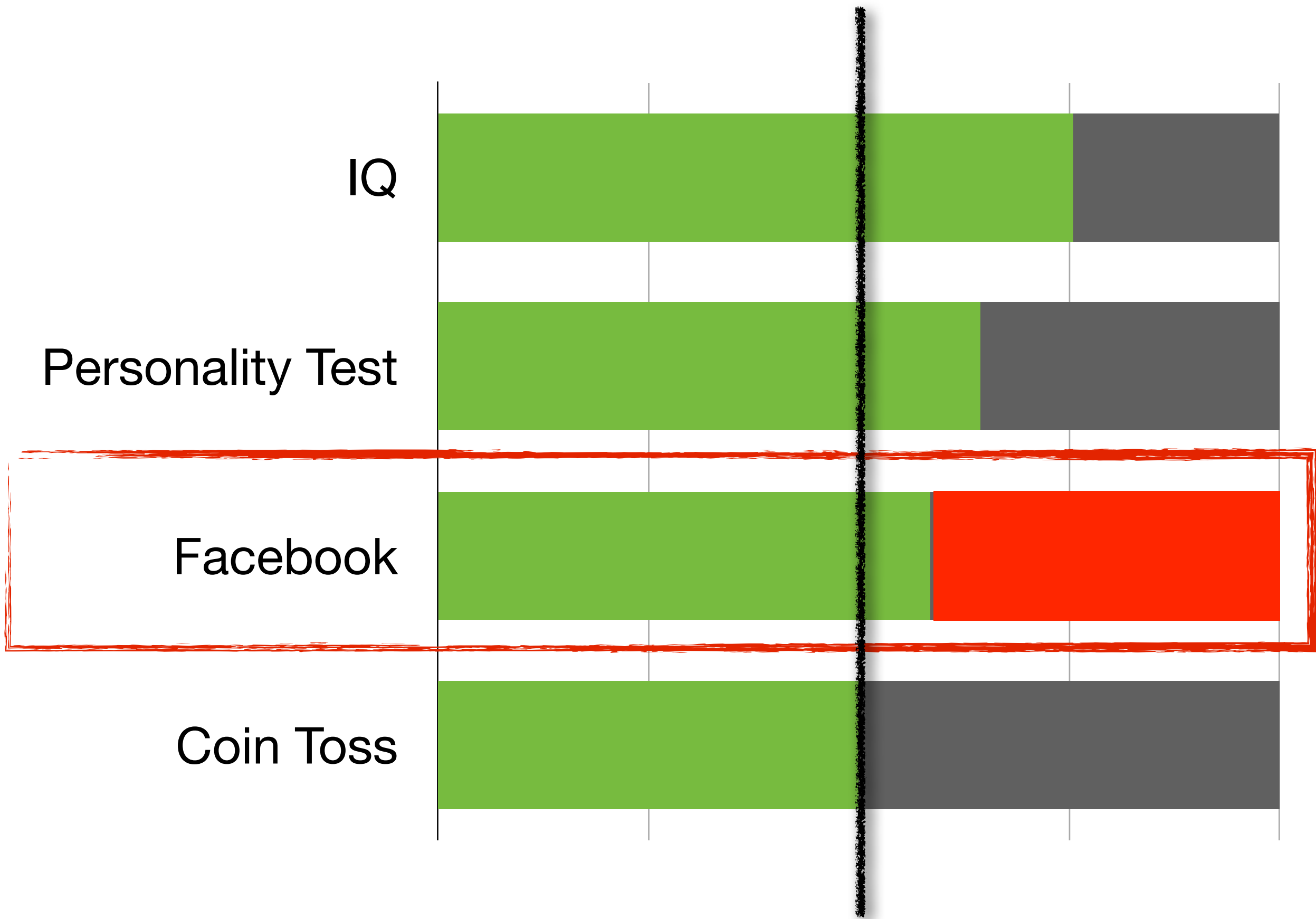
*Based on rudimentary inspection of available research (see notes)*

# Job Performance & Personality



*Estimates Only*  
*Does not take into account possibility of incremental benefit*





*Estimates Only*  
*Does not take into account possibility of incremental benefit*

Tuesday, 20 December 11  
and now lets look at how facebook might do.  
a lot of room for error

# Residual Questions

- Reliability & Validity
- Is it discrimination?
- Is it an **unfair** invasion of privacy?



Tuesday, 20 December 11

<http://www.istockphoto.com/stock-photo-17354272-red-megaphone-on-green-blank-blackboard.php?st=735c7d1>

take home message





Tuesday, 20 December 11

<http://www.istockphoto.com/stock-photo-17590100-backhoe-excavator-demolishing-old-residential-driveway.php?st=d1c6618>

We're scraping the surface,,, just because we didn't find strong enough relationship, doesn't mean that someone won't find one tomorrow. Infact we're already investigating other predictive approaches, such as genetic algortithms. Early results from University of Florida are promising. With 40% accuracy, they can rank people on a scale

- Inter relationships

- Could reduce error rate to as little as 10%

- We working on that and also taking a deeper look at privacy concerns





Tuesday, 20 December 11

<http://www.istockphoto.com/stock-photo-7388845-the-end.php?st=5c45aa5>



...just one more thing

**Bonus material...**





# *dating*



Tuesday, 20 December 11

**General Flow of talk**

- dating!**
- Imagine being able to tell if he/she’s going to be high maintenance?
- So if we look at their Facebook posts/activity and it suggests they might be high maintenance, then perhaps we’ll be forewarned and forearmed....and on the look out for other clues.
- PROMISCUITY. can he can’t keep it in his trousers? If he’s high in openness, maybe his desire to experience new things also extends to other people
- PLAYERS - ‘The Rachel Papers’ by Martin Amiss. The main character,Charles Highway, deftly adapts his personality/approach based on his pray.
- You could write your dating profiles/email and running it through a personality filter to suggest tweaks and make you look more attractive to your target market. This would make a particularly interesting research project, perhaps for someone’s who’s currently single.
- For some people, sizing up other people is a a skill already poses..
- Again, the odds work for us here. We don’t mind being wrong, but we should be right, more often...slightly

**References**



# Sock Puppets

Tuesday, 20 December 11

## General Flow of talk

- Following on from Personality enhanced spear-fishing, you may have seen some of the hacking events in the news earlier this year?
- well, allegedly, it turns out you have “organisations” using fake personas, called, Sock Puppets. These sock puppets are used to feed misinformation and sway public opinion.
- Rather than explain SockPuppets...

## References



# tweak your personality



Tuesday, 20 December 11

## General Flow of talk

- you could try tweak your personality?
- what are you going to do, to WHO, and WHY.
- very difficult to pull off....CONSISTENTLY
- ...and what would you change your personality to anyway?

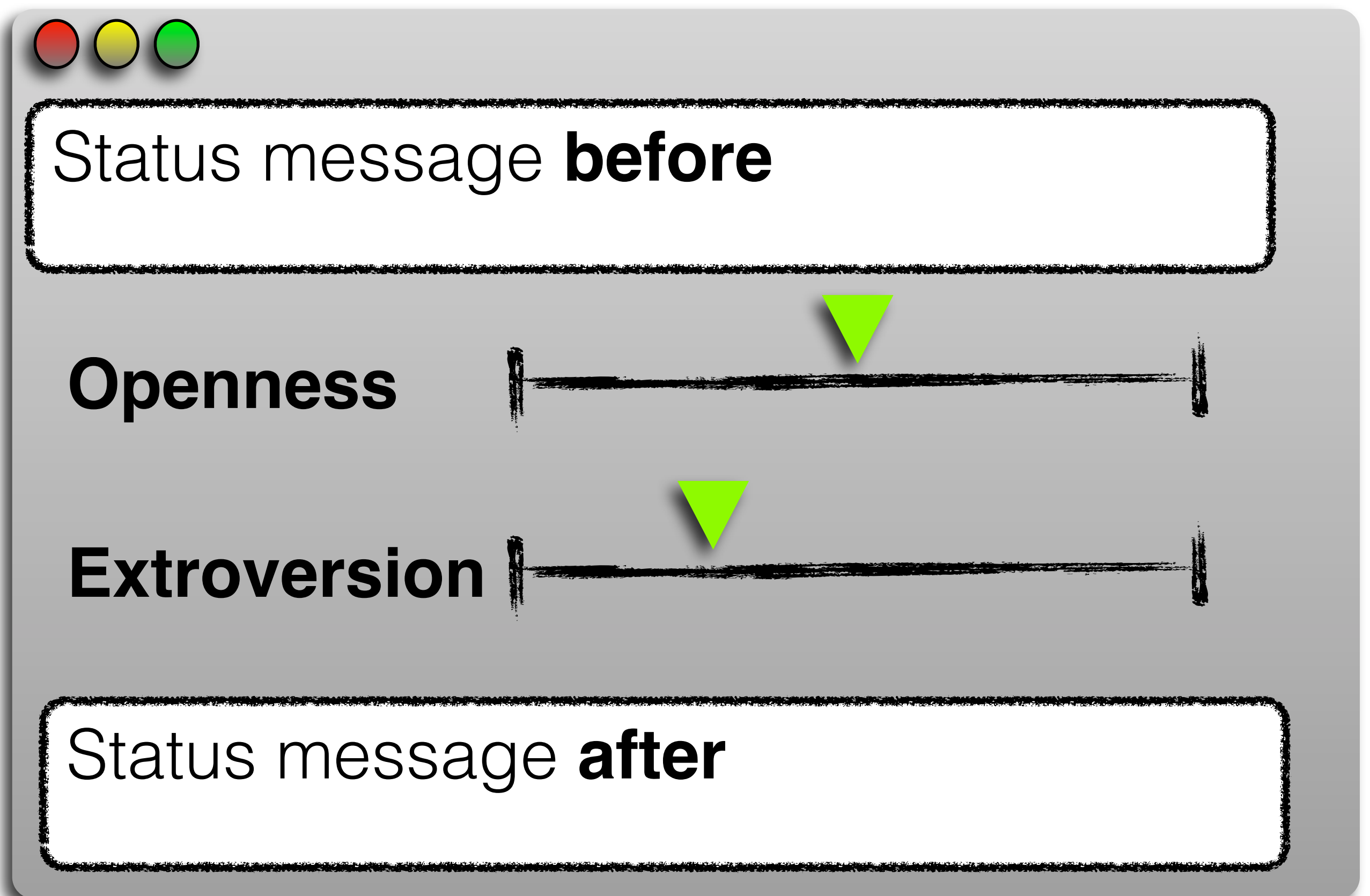
## References

URL's to images and some rough thoughts/Notes  
=====

<http://www.istockphoto.com/stock-photo-4186791-funny-disguise.php?st=ff6e666>



# personality filter



Tuesday, 20 December 11

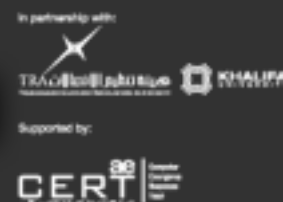
## General Flow of talk

- Here's another idea. It's a bit tongue in cheek, but it should make a point.
- We are working on an app to “guess” your personality based on your facebook activity.
- We've also been discussing implementing a filter to suggest how you might alter how you're perceived.
- This is what it could look like.


## References

# Feedback Forms

**Please complete  
your feedback forms  
Thank you**







# The World Is Not Always Linear

Tuesday, 20 December 11





Tuesday, 20 December 11

General Flow of talk

The key thing to bear in, and since we're in vegas is that results give you an edge.

so if we take 100 people, it may mean that you'll predict correctly 53% of the time. This isn't great for basing critical decisions on, but it means you're going to be right more often than not.

References