rage against the weaponized A.I. propaganda machine

Suggy (AKA Chris Sumner), Online Privacy Foundation, DEF CON 25
The Rise of the Weaponized AI Propaganda Machine

BERIT ANDERSON AND BRETT HORVATH
ILLUSTRATION BY CODY FITZGERALD

Share on Facebook  Share on Twitter
Does Trump's 'Weaponized AI Propaganda Machine' Hold Water?

Jason Bloomberg, CONTRIBUTOR

I write and consult on digital transformation in the enterprise. FULL BIO

Opinions expressed by Forbes Contributors are their own.
The Rise of the Weaponized AI Propaganda Machine

CONNECT THE DOTS

You're running a political campaign in 2018. What tactics do you use to either take advantage of AI propaganda techniques or circumvent their use against you?
1. Why are people so divided?
1. Why are people so divided?

2. What Influences Their Views?
1. Why are people so divided?

2. What Influences Their Views?

3. How Effective is Psychographic Targeting?

4. Persuasion.
1. Why are people so divided?

2. What Influences Their Views?

3. How Effective is Psychographic Targeting?

4. Persuasion.

5. Debunking Propaganda
Weaponizing Cyberpsychology & Subverting Cybervetting

For Fun, Profit & Subterfuge

Chris Sumner
Alison Byers
Adrian M

Slides will be available directly after DEF CON.
A formal paper will be released later in 2011.
Please check http://www.onlineprivacyfoundation.org/research/ for updates.
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Can Twitter really help expose psychopath killers' traits!
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2013
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Chris Sumner & Dr. Randall Wald

2016
Psychological Biases and Personality Differences in the EU Referendum
"With regards to Internet privacy, if you've done nothing wrong, you've got nothing to fear"

by Age, Sex, and Voting Intention (1,804 females; 3,303 males)

Will replace with a clearer graph.
1. Why are people so divided?
Nothing to Hide, Nothing to Fear
BREAKING POINT
The EU has failed us all

We must break free of the EU and take back control of our borders.

Leave the European Union
ON 23rd JUNE

vote4leave.eu.co.uk
The Authoritarian Personality

T. W. ADORNO
ELSE FRENKEL-BRUNSWIK
DANIEL J. LEVINSON
R. NEVITT SANFORD

"It is impossible to give any adequate idea of the richness of content... A monumental study which blazes new trails in the investigation of prejudice."
—Richard A. Schermerhorn, Western Reserve University, in Social Forces

Authoritarianism & Polarization in American Politics

Marc J. Hetherington
Jonathan D. Weiler

CAMBRIDGE
DEATH PENALTY

Vs

Are you freakin' serious?
Are you freakin’ serious?
“Nature provides a first draft, which experience then revises”

(Marcus, 2004)
The F-Scale and RWA Scale
The F-Scale and RWA Scale

“Homosexuals and feminists should be praised for being brave enough to defy “traditional family values.”
Most important for a child to have?

- obedience
- good manners
- respect for elders
- to be well-behaved
Most important for a child to have?

- obedience vs self-reliance
- good manners vs curiosity
- respect for elders vs independence
- to be well-behaved vs to be considerate
Surveys over time

March

A1: 175
B1: 998

A2: 663

April

B2: 576

May

N = 2,412
“You have nothing to fear, if you have nothing to hide”
“It is acceptable that immigrants and visitors from potentially dangerous countries should have to reveal their social media accounts passwords to UK border agents.”
“The dark net should be shut down”
“Companies should be not be allowed to develop technologies that prevent law enforcement from accessing your online conversations.”
Surveys over time

March
A1: 175  B1: 998

April
A2: 663

May
B2: 576
Effect of attacks

Figure 1: Public Attitudes toward the Death Penalty and Having a Strong Leader Before and After the January Attacks

Source: Baromètre confiance en politique, waves 6 and 6b

Survey A1 v A2

<table>
<thead>
<tr>
<th></th>
<th>Pre attack</th>
<th>Post attack</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td><strong>50%</strong></td>
<td><strong>60%</strong></td>
</tr>
<tr>
<td>Agree with &quot;nothing to hide&quot;</td>
<td><strong>40%</strong></td>
<td><strong>45%</strong></td>
</tr>
<tr>
<td>Support wiretapping</td>
<td><strong>30%</strong></td>
<td><strong>35%</strong></td>
</tr>
<tr>
<td>Ban encryption</td>
<td><strong>20%</strong></td>
<td><strong>25%</strong></td>
</tr>
<tr>
<td>Close dark net</td>
<td><strong>10%</strong></td>
<td><strong>15%</strong></td>
</tr>
</tbody>
</table>

* Significant differences
** Highly significant differences
Survey B1 v B2
(B2 conducted 41 days after attack)
Opinions

Nothing to hide, nothing to fear
Access communications without a warrant
Shut down dark net
Ban counter-surveillance tech
Disclose social media account passwords to border agents
<table>
<thead>
<tr>
<th>Policy Description</th>
<th>Study A1</th>
<th>Study A2</th>
<th>Study B1</th>
<th>Study B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing to hide, nothing to fear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access communications without a warrant</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Shut down dark net</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ban counter-surveillance tech</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disclose social media account passwords to border agents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nothing to hide, nothing to fear.
Insert slide showing difference by age and sex
2. What Influences Their Views?
“Ten steps closer to the panic button” (Altemeyer, 1996)
Support for anti-terrorist policies vs. Authoritarianism

Low Threat
threat increases [support] among those HIGHER in authoritarianism
threat increases support among those LOWER in authoritarianism
Both are right

Support for anti-terrorist policies

Authoritarianism

Anxiety

High Threat

Anger

Low Threat
“what good are high-minded principles if you are dead?”
Study 2

How worried are you that you personally might become a victim of a terrorist attack?
Nothing to hide, nothing to fear.
Wiretapping
Ban Anti-Surveillance Tech

The diagram illustrates the relationship between Probability and Authoritarianism. The y-axis represents Probability, and the x-axis represents Authoritarianism. The lines indicate different levels of authoritarianism, with 'Very High', 'High', 'Medium', and 'Low' categories. The graph suggests an increasing trend in probability as authoritarianism increases.
Extreme Vetting

Probability

Authoritarianism

V high
High
Medium
Low
Shut Down the Dark Net

The graph shows the probability of various levels of authoritarianism (V high, High, Medium, Low) against authoritarianism levels (0 to 4) on a linear scale. The probability increases as authoritarianism increases for all levels.
“Like reading a book by a fool”
3. How Effective is Psychographic Targeting?
Interests, Age, Sex, Geography

FUNCTION $f$:

Personality
Professor Sam Gosling  
Author of Snoop  

Photo Credit: Shannon Kintner | Daily Texan Staff
Big 5

O C E A N
Big 5 & Authoritarianism

High

Low

O C E A N
Big 5 & Authoritarianism

High

Low

O C E A N

O C E A N
Facebook Interests

PreferenceTool.com
Facebook Interests

<table>
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<th>picture</th>
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<th>closeness value</th>
<th>popularity rank</th>
<th>popularity value</th>
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<td>13031</td>
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</tr>
<tr>
<td></td>
<td>the italian job</td>
<td>8</td>
<td>838</td>
<td>3983</td>
<td>574</td>
<td>add to your keywords</td>
</tr>
<tr>
<td></td>
<td>facebook security</td>
<td>9</td>
<td>848</td>
<td>648</td>
<td>3335</td>
<td>add to your keywords</td>
</tr>
</tbody>
</table>
Conservatism, Mail Online

Vs

Liberalism, The Guardian
Age and Sex

Overall Openness

Overall Conscientiousness

Mean Score

Age

Openness - M  Openness - F

Conscientiousness - M  Conscientiousness - F
Age and Sex

Openness

Conscientiousness

[Graphs showing the relationship between age group and openness/conscientiousness for different intended votes (Leave, Remain)]
Age and Sex

Openness

Males of any age
Females over 35

Conscientiousness

Males of any age
Females under 35

Based on our findings in Brexit
Heat maps of the geographical distribution of personality in Great Britain by LAD

https://doi.org/10.1371/journal.pone.0122245
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0122245
Conscientiousness

Openness (R)

High Auth

Low Auth

Conscientiousness
Conscientiousness

- High Openness (R)
- Low Authenticity (Auth)

High Auth

Low Auth

Conscientiousness

Openness (R)
Conscientiousness

Openness (R)

High

Auth

Low

Auth

Cambridge, Hackney, Liverpool, Manchester, Edinburgh

Based on Rentrow’s data

Basildon, Chelmsford, Dudley, Thurrock, Mansfield, Market Weighton, Rotherham, Swindon
Correctly classified 78.16%
% people who agree with “Nothing to Hide, Nothing to Fear”
% people who agree with “Nothing to Hide, Nothing to Fear”

Level of Agreement

Target Group

All LA-A-S HA-A-S

38% 32% 46%

All Low Auth High Auth
% people who agree with “Nothing to Hide, Nothing to Fear”

Level of Agreement

Target Group


38% | 32% | 25% | 46% | 61%

All | Low Auth | High Auth
% people who agree with “Nothing to Hide, Nothing to Fear”
4. How Persuasive Are Targeted Ads?

Image with permission from: Oscar Bolton Green
“Certain words **ARE** loaded”
“If you know the personality of the people you’re targeting, you can nuance your messaging to resonate more effectively with those key audience groups”

—Alexander Nix, Cambridge Analytica
With XPhone, you’ll always be where the excitement is
Hirsh, Kang & Bodenhausen:
Phone study (2012)

Stay safe and secure with the Xphone
Results of factorial ANOVA:

1) H1: Non-sig. interaction effect of target group $\times$ advertisement style on CTR ($F(1,16) = 0.03, p = .861, \omega = .04$)

2) H2: Sig. interaction effect of target group $\times$ advertisement style on ROI ($F(1,16) = 5.67, p = .029, \omega = .20$)
HILTON: TARGETED ADS / CLICKTHROUGH RATES

Travel Industry CTR Benchmark for Facebook Advertising - 0.08%

CTR for the Extraverted target group was 340% higher than the benchmark.

CTR for Agreeableness (lowest performing target) was still 200% higher.

*Average clickthrough rates for personality-based target groups over a 2 week campaign.

https://marketingexperiments.com/digital-advertising/hilton-worldwide-personality-matched-ads
Study 4

Image with permission from: Oscar Bolton Green
Maslow

- Safety & Security
- Survival (food, shelter etc)
High Authoritarian

TERRORISTS.
DON’T LET THEM HIDE ONLINE!

SAY YES
TO STATE SURVEILLANCE!

Pro surveillance
High Authoritarian

THEY FOUGHT FOR YOUR FREEDOM.
DON’T GIVE IT AWAY!

SAY NO TO MASS STATE SURVEILLANCE!

Anti surveillance
Low Authoritarian

Pro surveillance

Crime doesn’t stop where the internet starts
Say YES to state surveillance

- Terrorism
- Child exploitation and abuse
- Cyber crime
- Firearms
- Human trafficking
- Identity crime
- Kidnap and extortion
- Money laundering
- Organised crime
- People smuggling
Low Authoritarian

DO YOU REALLY HAVE NOTHING TO FEAR, IF YOU HAVE NOTHING TO HIDE?

Anti surveillance

SAY NO TO STATE SURVEILLANCE!
1. This advertisement reflects my opinions.

2. I find this advertisement to be persuasive. i.e. you are more likely to agree with this opinion than before seeing the advertisement.

3. Overall, I like this advertisement.

4. I would probably like or share this on Facebook.
Say YES to Surveillance

Terrorists. Don't let them hide online!
LIKE or SHARE if you agree.

SAY YES TO STATE SURVEILLANCE!
Say NO to Surveillance
They fought for your freedom. Don't give it away!
LIKE or SHARE if you agree.

SAY NO TO MASS STATE SURVEILLANCE!
Does persuasion work?

“Those who have received a postal letter from the interest group which argued for the benefits of TTIP have considerably more favourable attitudes towards this trade deal.”
5. Debunking Propaganda
Science confirms: Politics wrecks your ability to do math
By Chris Mooney on Sep 8, 2013
Yale law school professor Dan Kahane’s new research paper is called “Motivated Numeracy and Enlightened Self-Government,” but for me a better title is the headline on science writer Chris Mooney’s piece about it in Grist: “Science Confirms: Politics Wrecks Your Ability to Do Math.”
# Control Questions

<table>
<thead>
<tr>
<th>A – Control Condition #1</th>
<th>Group B – Control Condition #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rash Got Better</td>
</tr>
<tr>
<td><strong>Patients who did use the new skin cream</strong></td>
<td>223</td>
</tr>
<tr>
<td><strong>Patients who did NOT use the new skin cream</strong></td>
<td>107</td>
</tr>
</tbody>
</table>

A – People who used the skin cream were more likely to get **BETTER** than those didn’t

B – People who used the skin cream were more likely to get **WORSE** than those didn’t
EU Referendum Voters
Skin Cream

Experiments
Brexit Vote □ Leave □ Remain
# Immigration

<table>
<thead>
<tr>
<th>A – Immigration Condition #1</th>
<th>Group B – Immigration Condition #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Crime</td>
<td>Decrease in Crime</td>
</tr>
<tr>
<td>Decrease in Crime</td>
<td>Decrease in Crime</td>
</tr>
</tbody>
</table>

Cities with the highest levels of immigration

<table>
<thead>
<tr>
<th>Increase in Crime</th>
<th>Decrease in Crime</th>
</tr>
</thead>
<tbody>
<tr>
<td>223</td>
<td>75</td>
</tr>
<tr>
<td>223</td>
<td>75</td>
</tr>
</tbody>
</table>

Cities with the lowest levels of immigration

<table>
<thead>
<tr>
<th>Increase in Crime</th>
<th>Decrease in Crime</th>
</tr>
</thead>
<tbody>
<tr>
<td>107</td>
<td>21</td>
</tr>
<tr>
<td>107</td>
<td>21</td>
</tr>
</tbody>
</table>

A - Cities with the highest immigration were more likely to have **LESS** crime than those didn’t

B – Cities with the highest immigration were more likely to have **MORE** crime than those didn’t

A – Cities with the highest immigration were more likely to have **LESS** crime than those didn’t

B – Cities with the highest immigration were more likely to have **MORE** crime than those didn’t
EU Referendum Voters

Immigration

Experiments

Brexit Vote □ Leave □ Remain
EU Referendum Voters
Immigration

Experiments

Brexit Vote □ Leave □ Remain
Skin Cream

“Nothing to Hide, Nothing to Fear”

Agree | Disagree
Skin Cream

“Nothing to Hide, Nothing to Fear”  □ Agree □ Disagree
Indicate whether the research shows that online surveillance is likely to increase the terrorist threat or decrease it.

<table>
<thead>
<tr>
<th>C – Threat Condition #1</th>
<th>Group D – Threat Condition #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase in Threat</td>
</tr>
<tr>
<td>Countries with LEAST pervasive online surveillance</td>
<td>223</td>
</tr>
<tr>
<td>Countries with MOST pervasive online surveillance</td>
<td>107</td>
</tr>
</tbody>
</table>

A – Countries with the LEAST pervasive online surveillance were more likely to see a DECREASE in the terrorist threat

B – Countries with the LEAST pervasive online surveillance were more likely to see an INCREASE in the terrorist threat
Countries with the LEAST pervasive online surveillance

“Nothing to Hide, Nothing to Fear”  □ Agree □ Disagree
Countries with the LEAST pervasive online surveillance

“Nothing to Hide, Nothing to Fear”
Countries with the LEAST pervasive online surveillance

Skin Cream

Surveillance

“Nothing to Hide, Nothing to Fear”  Agree  Disagree
Countries with the LEAST pervasive online surveillance

“Nothing to Hide, Nothing to Fear”

Skin Cream

Surveillance

Decrease
Increase
Decrease
Increase

20%
40%
60%
0%
“The Reasoning Process Is More Like a Lawyer Defending a Client Than a Judge or Scientist Seeking Truth”

(Haidt, 2001)
Conclusions & Discussion
1. Why are people so divided?
1. Why are people so divided?

2. What Influences Their Views?

3. How Effective is Psychographic Targeting?
1. Why are people so divided?

2. What Influences Their Views?
   - Teen Pregnancy
   - Global War
   - Church vs. State
   - Immigration
   - Terror
   - Nuclear
   - Gay Marriage
   - Peak
   - Civil Rights
   - Starvation
   - High Fructose Corn Syrup
   - Information Overload

3. How Effective is Psychographic Targeting?

4. Persuasion

5. Debunking Propaganda
\[ \frac{\partial}{\partial a} \ln f_{a,\sigma^2}(\xi_1) = \frac{(\xi_1 - a)}{\sigma^2} \]

\[ f_{a,\sigma^2}(\xi_1) = \frac{1}{\sqrt{2\pi} \sigma} \exp\left(\frac{(\xi_1 - a)^2}{2\sigma^2}\right) \]

\[ \int T(x) \cdot \frac{\partial}{\partial \theta} f(x, \theta) \, dx = M \left( T(\xi) \cdot \frac{\partial}{\partial \theta} \ln L(\xi, \theta) \right) \]

\[ \int T(x) \cdot \left( \frac{\partial}{\partial \theta} \ln L(x, \theta) \right) \cdot f(x, \theta) \, dx = \int T(x) \cdot \left( \frac{\partial}{\partial \theta} \frac{f(x, \theta)}{f(x, \theta)} \right) \, dx \]
RULES AND REGULATIONS

Adapted by the Local United States Food Administration for the season of 1918, pertaining to the harvesting and threshing of grain.

RULE I.
That the local United States Food Administration designate the man in charge of each threshing machine operating to act as its agent, to see that all ways and means be observed, so as to prevent the waste of grain in any manner.

RULE II.
It shall be the duty of all men who are working on the machine or on the job of threshing, and see that they give efficient service, and in any event any one in disregard be reported to the United States Food Administration and deal with according to the rules laid down by the Government.

RULE III.
It shall be the imperative duty of every man in charge of a threshing machine to see that his machine is in proper running order before he shall attempt to do any work at threshing; and in case he is unable to correct the defects he is allowed the privilege of seeking aid of the United States Food Administrator who will report his troubles to the manufacturer and get his troubles adjusted.

RULE IV.
As it is the order to save grain, the man in charge of the machine and farmer are to arrange to have a man to attend to the cleaning up around the machine, and help where needed, to keep the machines running correctly and not allow bundles to be run over by teams and wagons; and it is recommended that they should arrange to have a sufficient number of rakes to load bundles on, which will be built with a handle and a 2 x 4 around edge for the express purpose to save grain.

RULE V.
It is also demanded of the manager of threshing machines to provide conveyors, else not less than 10 x 14, to be put under the feeders of the machine and to avoid all loss, and that the man who is pitching to the machine must observe these rules:

1. That bundles must be pitched head first into the machine which is the correct way of feeding a machine.
2. All the bundles must be pitched at uniform speed, and in no case pile them upon the feeder.
3. It is demanded by the Government that the full wheat and rye shall be threshed first. Spring wheat to be threshed at time of threshing eats.
4. In regard to time for a day's work, we recommend that at the government side we save all the grain possible, we think it advisable to use the day time that is available and it shall be expected that the people will be loyal and work the best hours of the day, owing to the morning's dampness and the difficulty in doing good work in the early morning, we would recommend that the hour of quitting shall not be before 7 p.m., new time.

RULE VI.
It shall be the duty of the man to keep the machine to avoid all waste for the following reasons:

A. Threshing taken when it is tough (dump and unripe).
B. Loose from mending in bundle waves.
C. Loose in keeping the threshing cylinder up to speed, and in adjustment of blower, etc., dull and heat teeth.
D. Carelessness in feeding bundles or loose grain into the machine.
E. Carelessness in allowing grain to hang on the ground around and under the machine and huts in cleaning up at close of operation.
F. Improper adjustment of conveyors and other parts of machine.

RULE VII.
Pertaining to Farmers.

It shall be the duty of the farmer to see that all wagon boxes are tight. Also to see that there is no waste at the bins due to spoofing and at the machines while changing the conveyor from one wagon to another. We will also recommend that if it is impossible to make the wheat field before the finish of the wheat threshing it be taken after, and threshed on the return of the machine for the late threshing; also to see that no grain is left by the man who pitches on the machine.

Every effort should be given the object of getting the grain into proper channels of trade and not permit so great a percentage to be distributed upon the ground, or into the straw piles to be fed later to the stock on the farm. The practice of overlooking the leaks with the excuse that the stock will get the benefit when turned in, should be discouraged this year, when no wheat should be fed to animals.

Suggestions and mention of instances where waste during threshing has occurred in the past will be appreciated.

We are all soldiers of the Home Guard fighting to win the war, and the first duty of a soldier is to obey orders.

A. F. Paden  F. H. Faulkner  W. H. Machin

Threshing Committee of the U. S. Food Administration for Knox Co.
The End

chris@onlineprivacyfoundation.org
Slides I didn’t use...
Cambridge analytica 8% uplift in voter intent (for Trump)
“Regardless of its other uses, some are worried by politicians using psychological profiling. Peter Kinderman, professor of clinical psychology at the University of Liverpool, notes that politicians have used psychological tricks throughout history. But if they want to use psychological profiling they should obtain informed consent, as scientific researchers and clinicians are required to do. ‘They should be honest and we should be aware.’”
For top 10% 75% of the predicted individuals were really in the top 10%

The science behind Receptiviti

Receptiviti - Enabling AI platforms with emotional intelligence

Research's state of the art, the Linguistic Inquiry and Word Count (LIWC2015), is the gold standard in language psychology-based text analysis. LIWC2015 has been developed and validated through more than 20 years of academic and applied research by Renaissance founder, James W Pennebaker, one of the world's foremost experts in language and social psychology.

Receptiviti captures people's social and psychological states by applying NLP techniques to quantitatively determine people's psychology, emotions, thinking styles, social concerns, and even parts of speech.

Read about the science and psychometric properties of Receptiviti.

Trait Prediction Engine

Digital footprints

Facebook Likes
Facebook statuses
Tweets
Browsing data
Open text
And more...

Individual profiles

Psychographics
Happiness
Intelligence
Life satisfaction
Political views
Religious views
Sexuality
Profession

Demographics
Age
Gender
Relationship status

DATA SELFIE

Trait Prediction Engine

Digital footprints

Facebook Likes
Facebook statuses
Tweets
Browsing data
Open text
And more...

Individual profiles

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Profession

Demographics
Age
Gender
Relationship status
What you type and the Facebook pages you see in your feed result in this prediction of your Big 5.
E.g. 20th percentile means 20% of the general population has lower and 80% has higher score.

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