Rainy Brain,

Sunny Brain
“Blooming, buzzing confusion”

...making sense of it all
Our brain…

‘TUNES-IN’

FEAR

PLEASURE
Amygdala at work
Ancient Influence

Prefrontal Cortex

Rainy Brain

Outlook - Pessimistic
Nucleus Accumbens at work

Ancient Influence

Prefrontal Cortex

Sunny Brain

Outlook - Optimistic
It’s the difference between…

Eating lunch…

...or being lunch!!
The panic attack!
Attentional probe task
Typical results

[Graph showing the comparison between Threat Location and Neutral Location for High Anxiety and Low Anxiety.]
Voodoo and lizards from illnes...
The placebo effect...
...to good health
So what is your outlook on life?
**Time for a test!**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1.</td>
<td>Disagree a lot</td>
</tr>
<tr>
<td>2.</td>
<td>Disagree</td>
</tr>
<tr>
<td>3.</td>
<td>Neither Agree nor Disagree</td>
</tr>
<tr>
<td>4.</td>
<td>Agree</td>
</tr>
<tr>
<td>5.</td>
<td>Agree a lot</td>
</tr>
</tbody>
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**In uncertain times**

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>I usually expect the best</td>
</tr>
<tr>
<td>2.</td>
<td>I enjoy my friends a lot</td>
</tr>
<tr>
<td>3.</td>
<td>I would take off on a trip with no pre-planned routes or timetables</td>
</tr>
<tr>
<td>4.</td>
<td>I don't get upset too easily</td>
</tr>
<tr>
<td>5.</td>
<td>I get restless when I spend too much time at home</td>
</tr>
</tbody>
</table>
What is... OPTIMISM

...and is it good for you?
The tale of 180 nuns

Upbeat Diaries
Lifespan

1930

22 years old

1990+

95 years old

= 10 years
Longer Life

Life events recorded

Optimism Rules!
So what are the triggers?
But most importantly…

…it’s how they interact together
"We all have a unique set of genes - our DNA. Many genes have natural variations - SINGLE NUCLEOTIDE POLYMORPHISMS, or SNPs - that can have subtle effects on brain chemistry"
Serotonin Transporter: A vulnerability gene?

- **genotype**
  - **chromosome 17**
    - Two variations of the 5-HTT gene
      - TRC short allele
      - TRC long allele

- **endophenotype**
  - **attention bias**
    - POSITIVE
    - NEGATIVE
The long and short of it!

**THE STUDY**
- **847 volunteers**
- **23 years**

Genotype vs Environment

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serotonin Transporter</td>
<td>Stress Events</td>
</tr>
<tr>
<td>SS Version</td>
<td>Death</td>
</tr>
<tr>
<td>SL Version</td>
<td>Illness</td>
</tr>
<tr>
<td>LL Version</td>
<td>Relationship</td>
</tr>
</tbody>
</table>

147 diagnosed with clinical depression

**THE RESULTS**

<table>
<thead>
<tr>
<th></th>
<th>Genotype</th>
<th>Environment</th>
<th>SS Version</th>
<th>LL Version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No difference</strong></td>
<td></td>
<td>4 or more stressful events</td>
<td></td>
<td>Chances of depression halved</td>
</tr>
<tr>
<td>43% more change of depression</td>
<td></td>
<td></td>
<td>SS Version</td>
<td>LL Version</td>
</tr>
</tbody>
</table>

Why?
The experiment of Gene D4 (SNP)

SOFT DRINKS TABLE
MIXED DRINKS TABLE
ALCOHOLIC DRINKS TABLE

confederates

100 students
Typical results

- Control
- Light Drinking
- Heavy Drinking

- D4 Short
- D4 Long
The malleable mind

“The human brain has a startling capacity to change”
The story of 16 Cab Drivers

Cab drivers in London have larger hippocampus resulting in better...

...memory & spatial navigation
Brain Training:
Moving towards the positive

Orientation towards the NEGATIVE

Cognitive bias modification

Orientation towards the POSITIVE

Two Groups
Brain Training:
Moving towards the positive

Cognitive bias modification

Two Groups
Orientation towards the
NEGATIVE
Orientation towards the
POSITIVE

Positive
Negative
Brain Training: Moving towards the positive

Orientation towards the NEGATIVE
Cognitive bias modification
Two Groups
Orientation towards the POSITIVE
The practice of meditation

An ancient system

Dissolving negative influence

Stillness

Freedom

...from a stressful world
Do you look on the bright side?