



LEADING the CONVERSATION

**Will 'wearables' provide the next big innovation
in the measurement and assessment of people?**

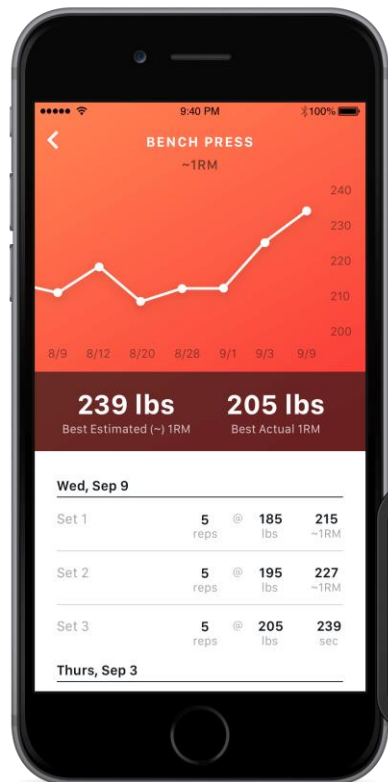
Robert McHenry & Krystyna Zaluski

1. Review available wearables
2. Illustrate how wearables can be used for assessment
3. Data protection and wearables
4. The future of wearables in measurement and assessment

Gymwatch



Track My Fitness – Exercise Tracker



Misfit Shine – Fitness And Sleep Monitor



Jawbone Up Move – Pedometer



BSX Insight



Athos – Electromyography (EMG) Sensor



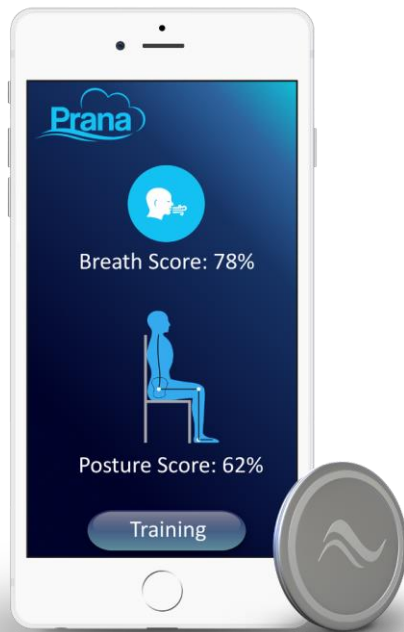
Withings Activite Pop



Lumo Back

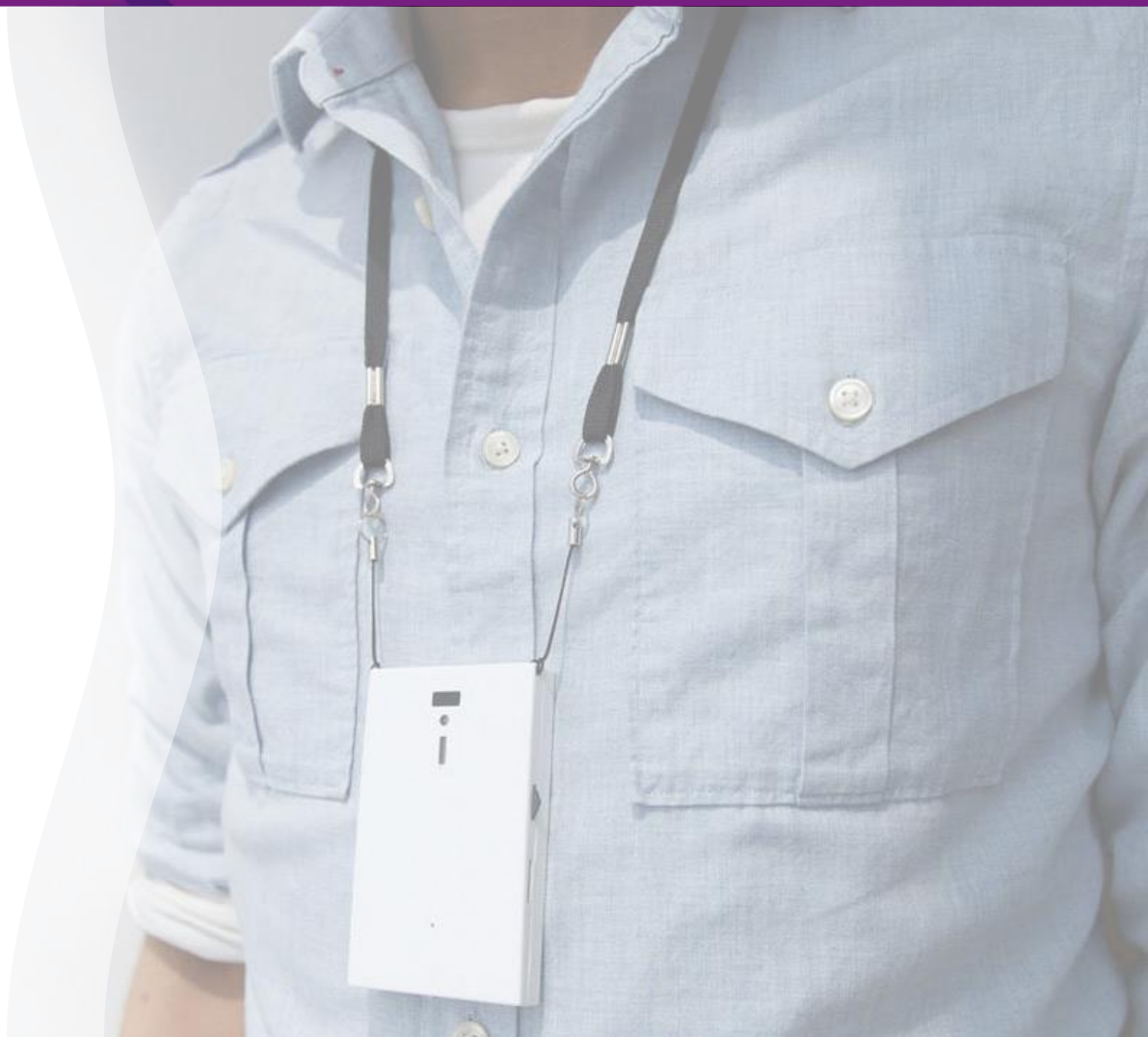


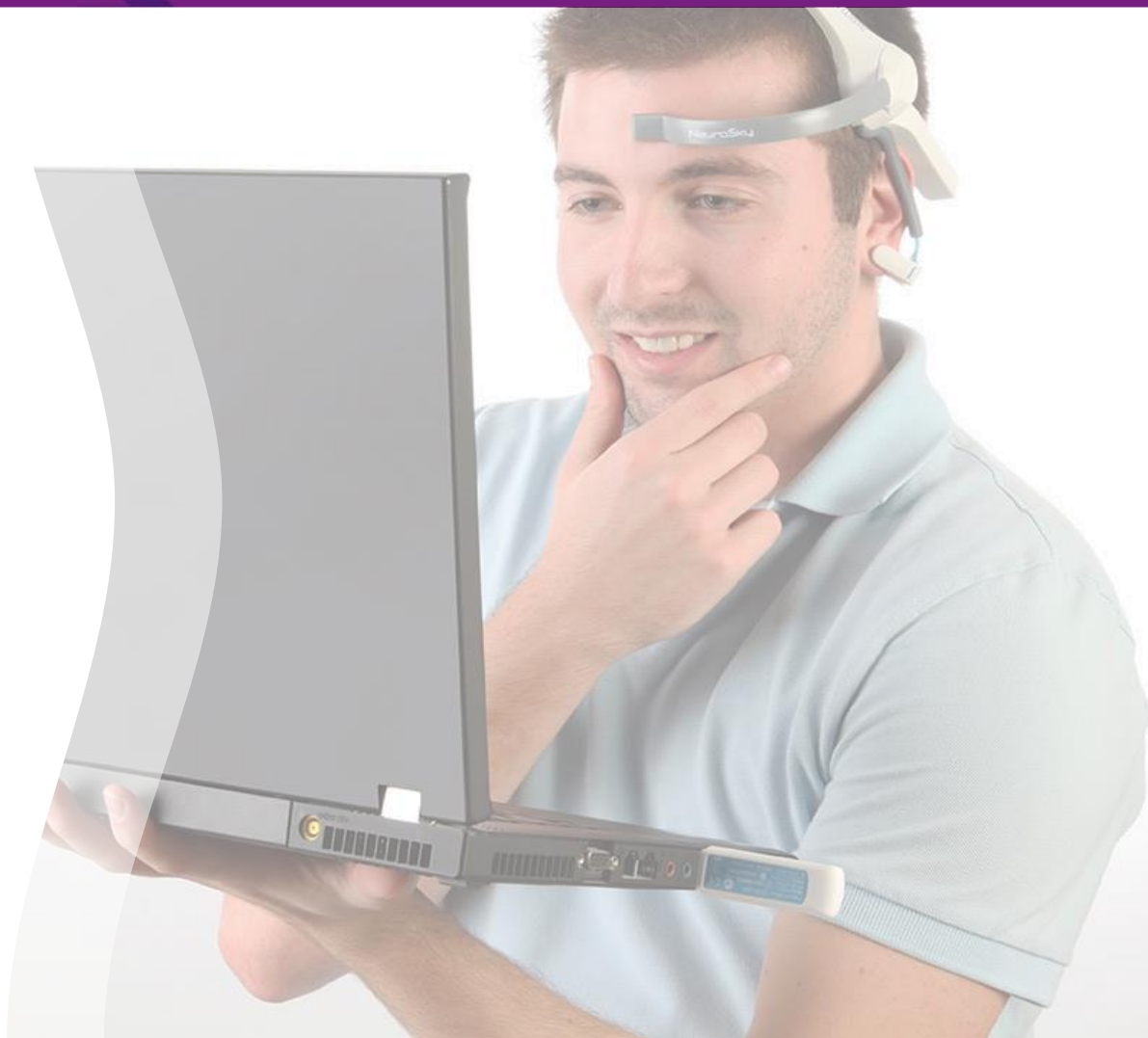
Prana – Breathing And Posture Monitor





Humanize Wearable 'Badge'

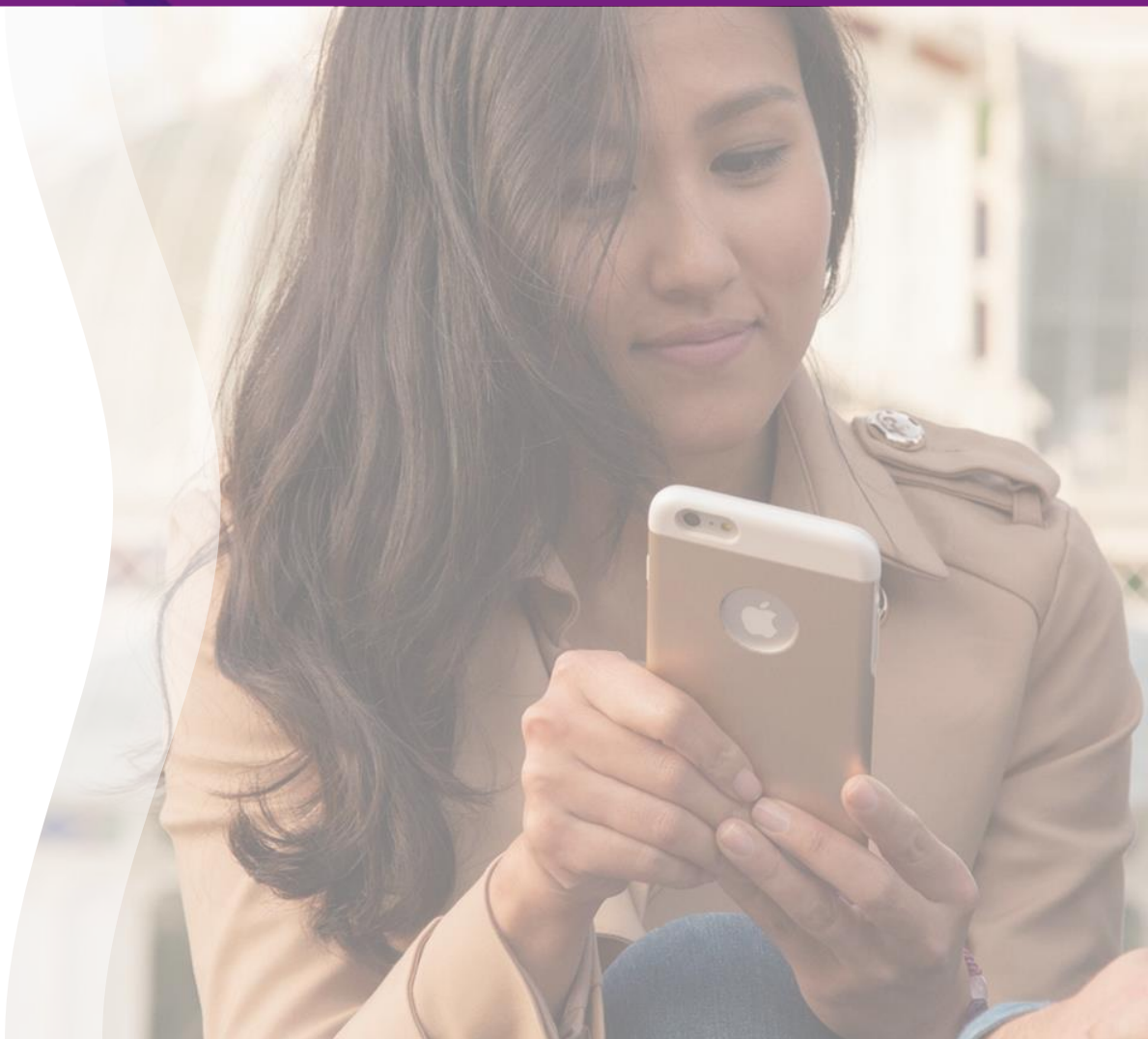




Bio Tech Tattoo



Mobile Phone Is A Wearable



Data Available From Wearables

1. Location
2. Sleep / awake
3. Breathing volume
4. Length and depth of sleep
5. Periods of waking
6. Physical activity / inactivity (Steps)
7. Fine movements of limbs or joints
8. Body temperature
9. Hydration level
10. EMG (Electromyography)
11. Muscle oxygenation
12. Skin glucose levels
13. Skin temperature
14. Galvanic skin response
15. EEG (Electroencephalogram)
16. Tone of voice
17. Volume of speech
18. Posture

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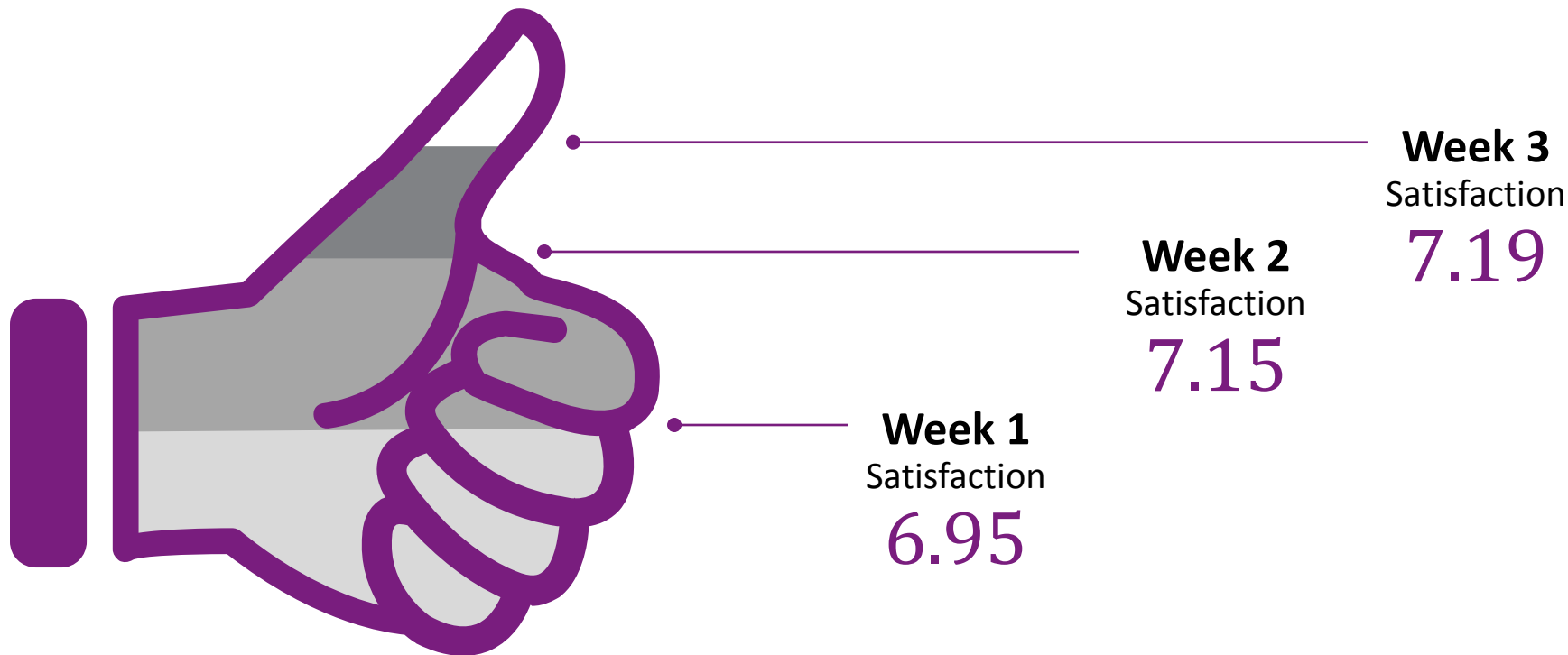
Latest GENEActiv





One of the studies conducted by Mindshare UK, involving the Neurosky MindWave

Satisfaction



SATISFACTION OF THOSE USING WEARABLES

Source: Dr Brauer

Productivity



Week 1
Productivity
7.06



Week 2
Productivity
7.38



Week 3
Productivity
7.66

PRODUCTIVITY OF THOSE USING WEARABLES

Source: Dr Brauer

Distinct Profiles – From Brauer 2014

“

The depth and distinctiveness of profiles that can be built without any directly-identifying personal information is startling.”

“

It is possible to build rich behavioural and lifestyle profiles of individuals.”



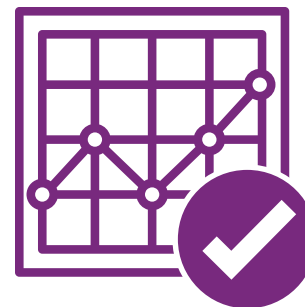
CAMBRIDGE COGNITION COGNITIVE SCIENCE



Validated by 30 years of
global neuroscientific
research



A measure of
cognitive function in
over 100 indications



Trusted by the world's
top pharmaceutical
companies

CAMBRIDGE COGNITION COGNITIVE SCIENCE

CANTAB has been used to assess over

250,000

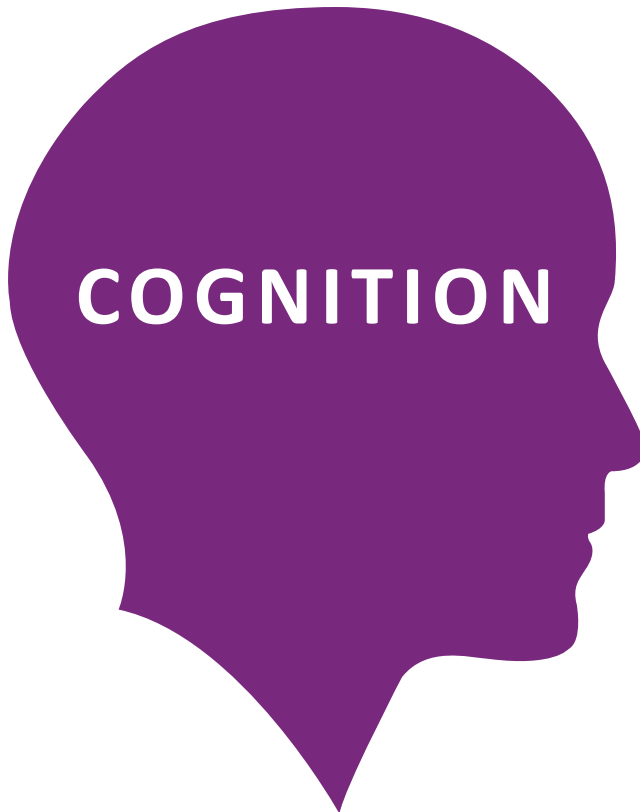
subjects worldwide

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What is Cognition?



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COGNITION

Memory & learning

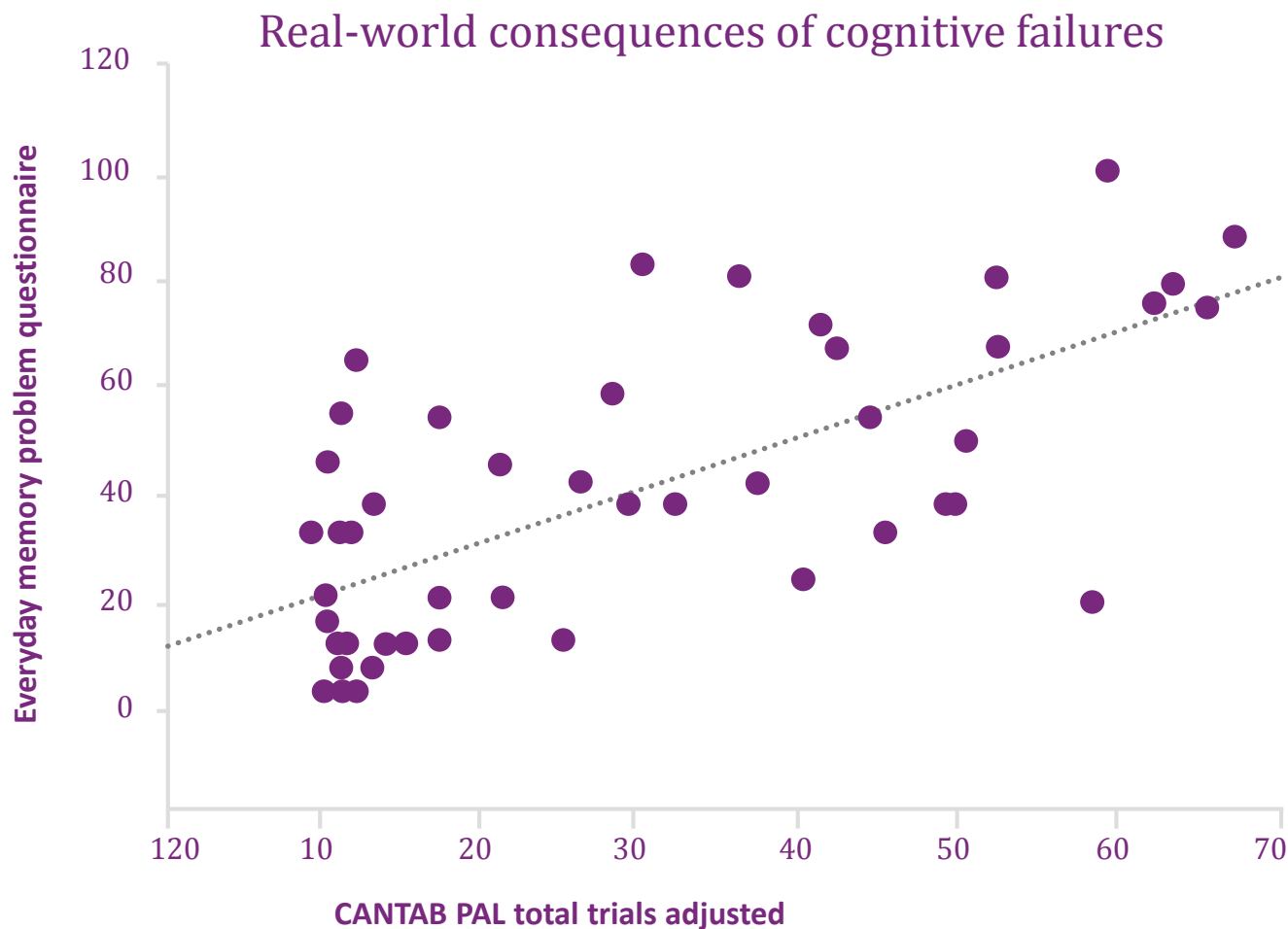
Attention

Processing speed

Decision-making

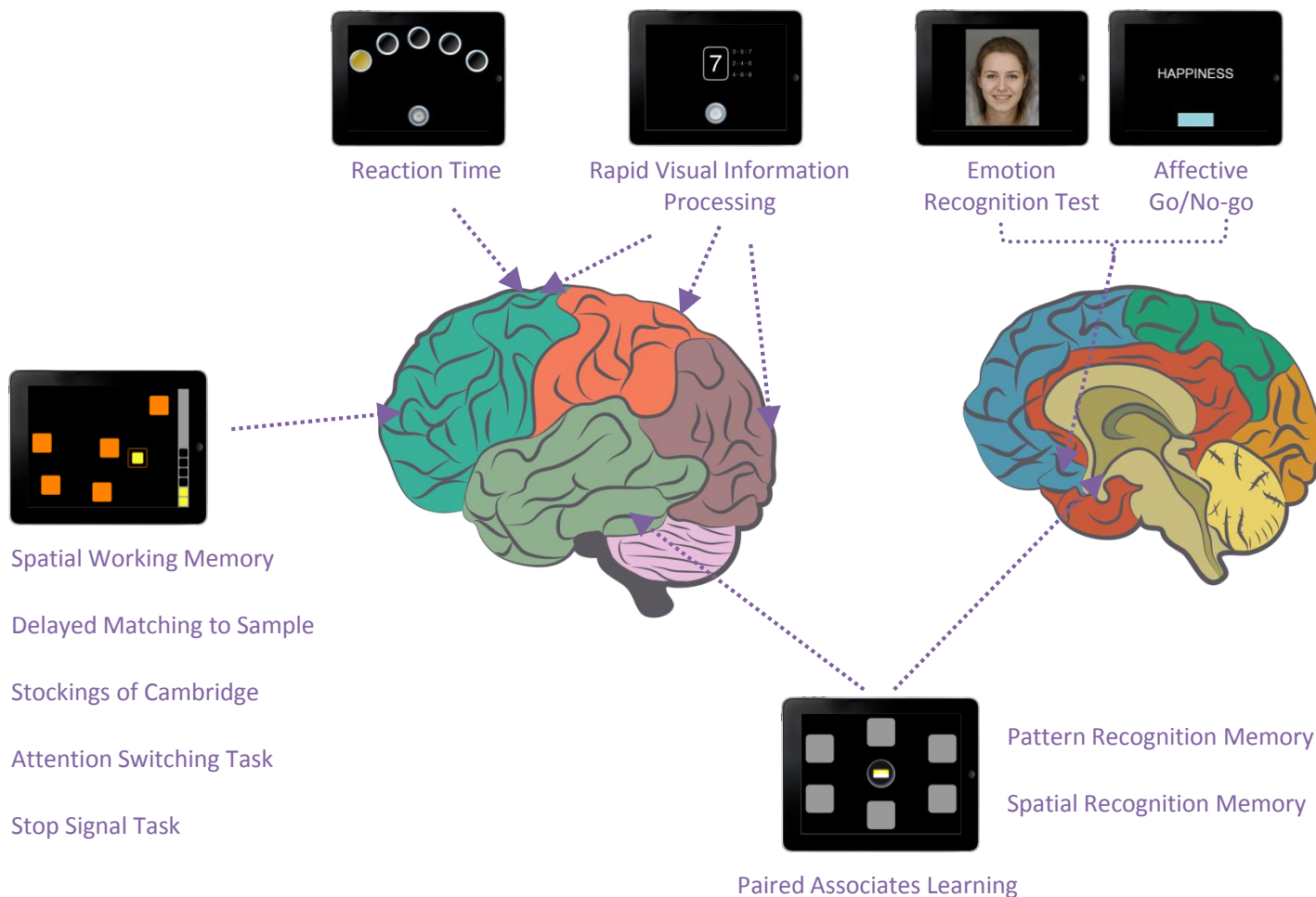
Why Does Cognition Matter In The Workplace?

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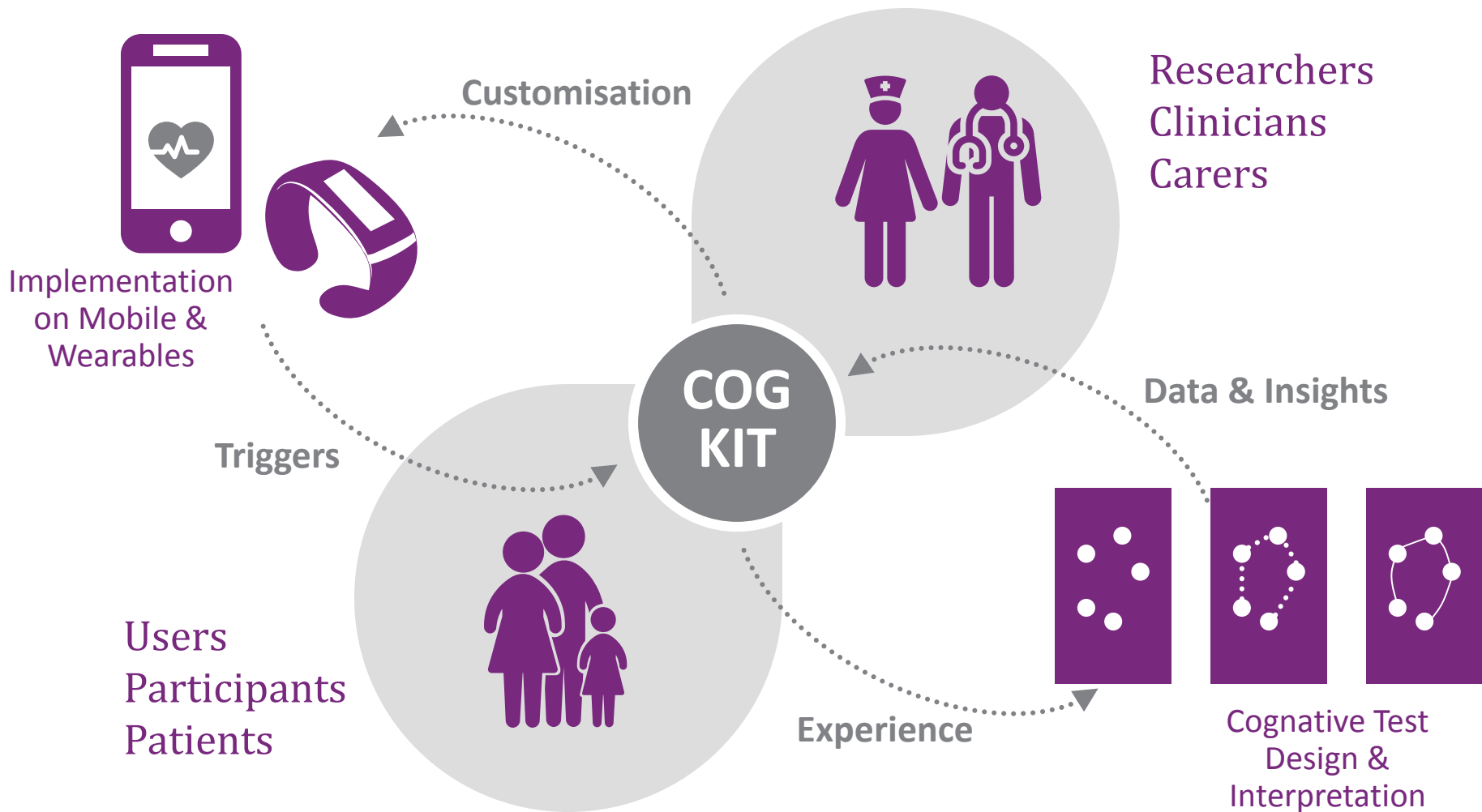


Cognitive Tests – A Marker for Brain Health

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Measuring Meaningful Data



Assessment Across Platforms And Devices

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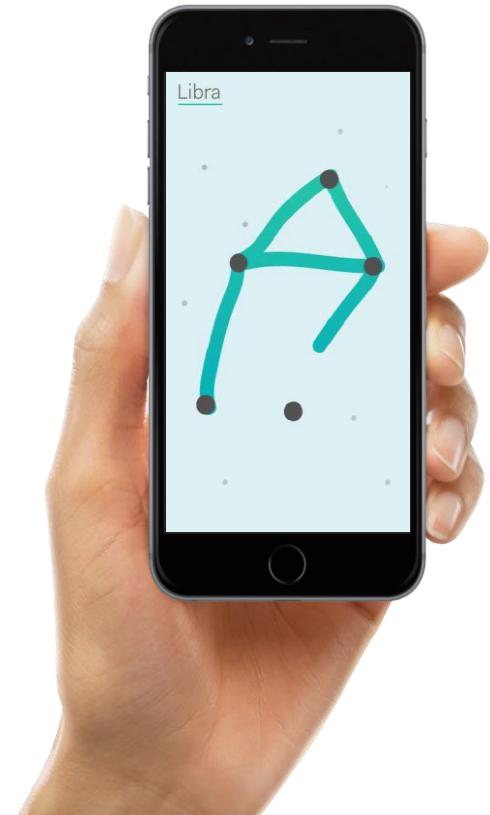
N-back tasks to measure memory and attention.



Emotional recognition tasks to measure social cognition.

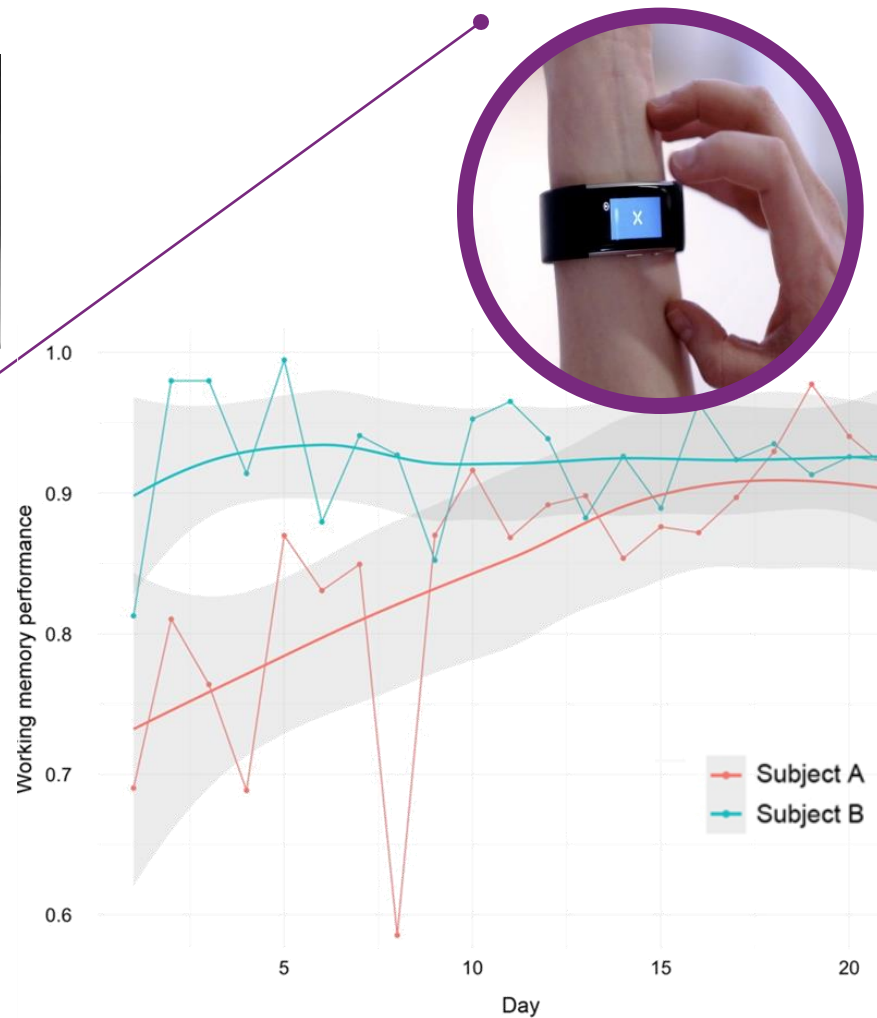


Drawing tasks to measure memory and executive function.



Cognition Can Be Measured Everyday

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A Right To Know



3 out of 4 people would want to know if they were at risk of a neurological disorder

GE Healthcare: The Value of Knowing. Millward Brown, 2014

Practical Benefits Of Early Detection

- Reduces risk to the business and the individual
- Enables proper and effective planning
- Reduces uncertainty and distress
- Lower diagnostic and treatment costs
- Improved effectiveness of treatments
- Timely advice and support

What Is Measured Can Be Managed

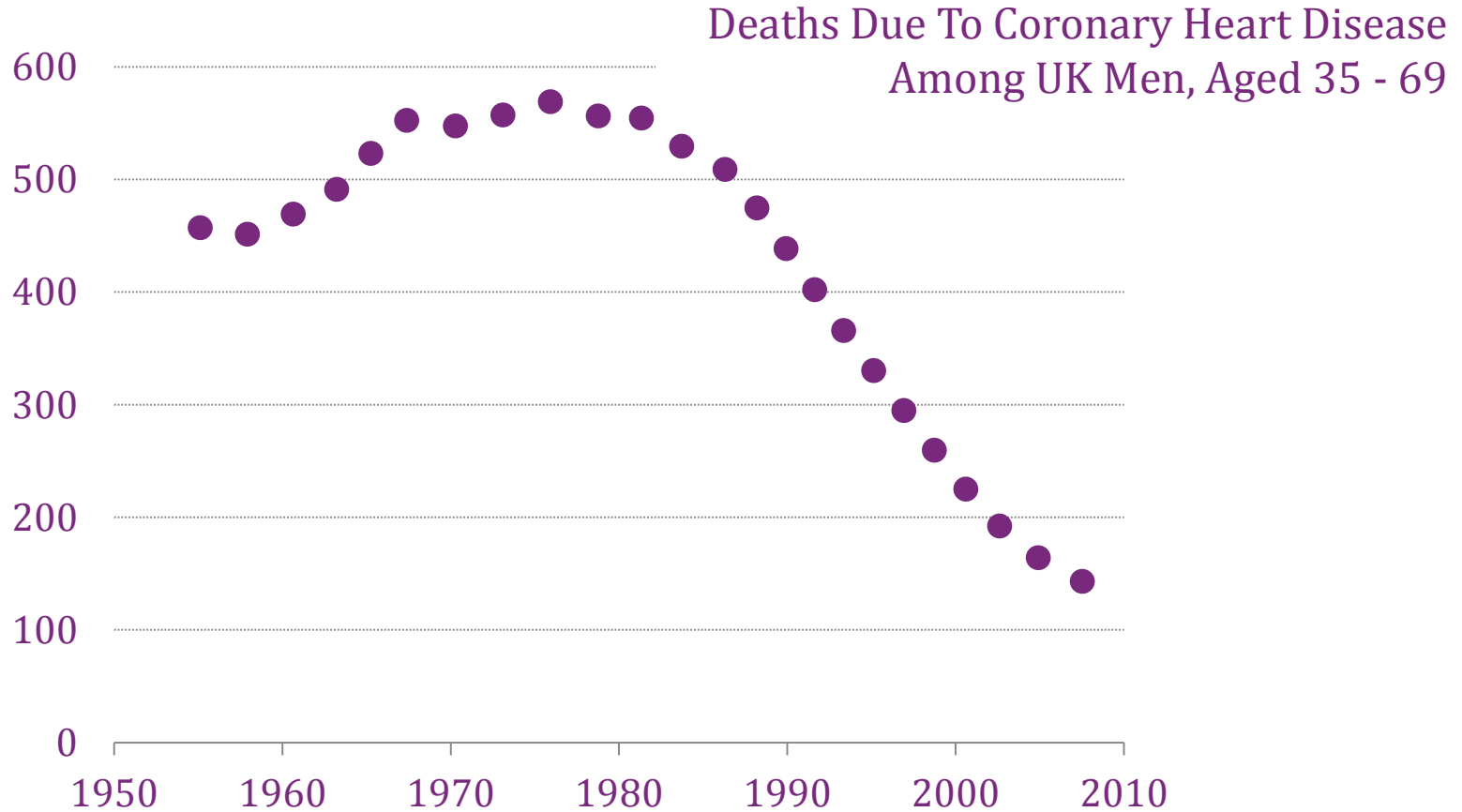
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Physical & Brain Health Are
Inextricably Intertwined

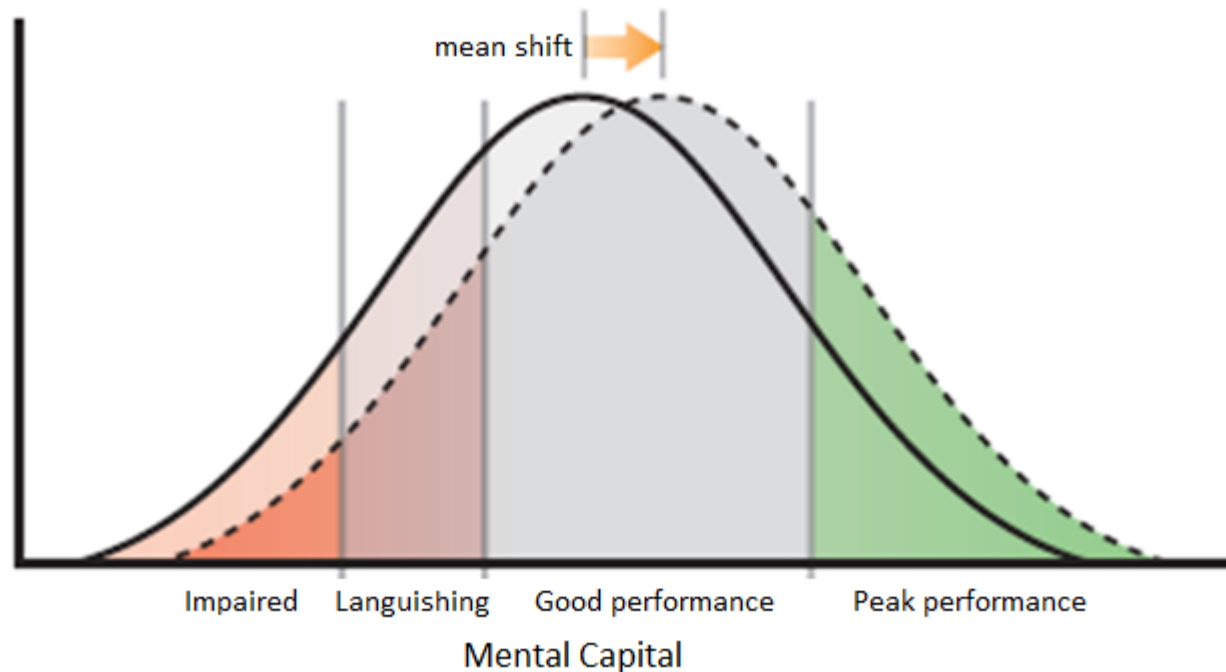
Managing Brain Health Better Would Have A Huge Impact On Our Workforce

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Managing Brain Health Better Would Have A Huge Impact On Our Workforce

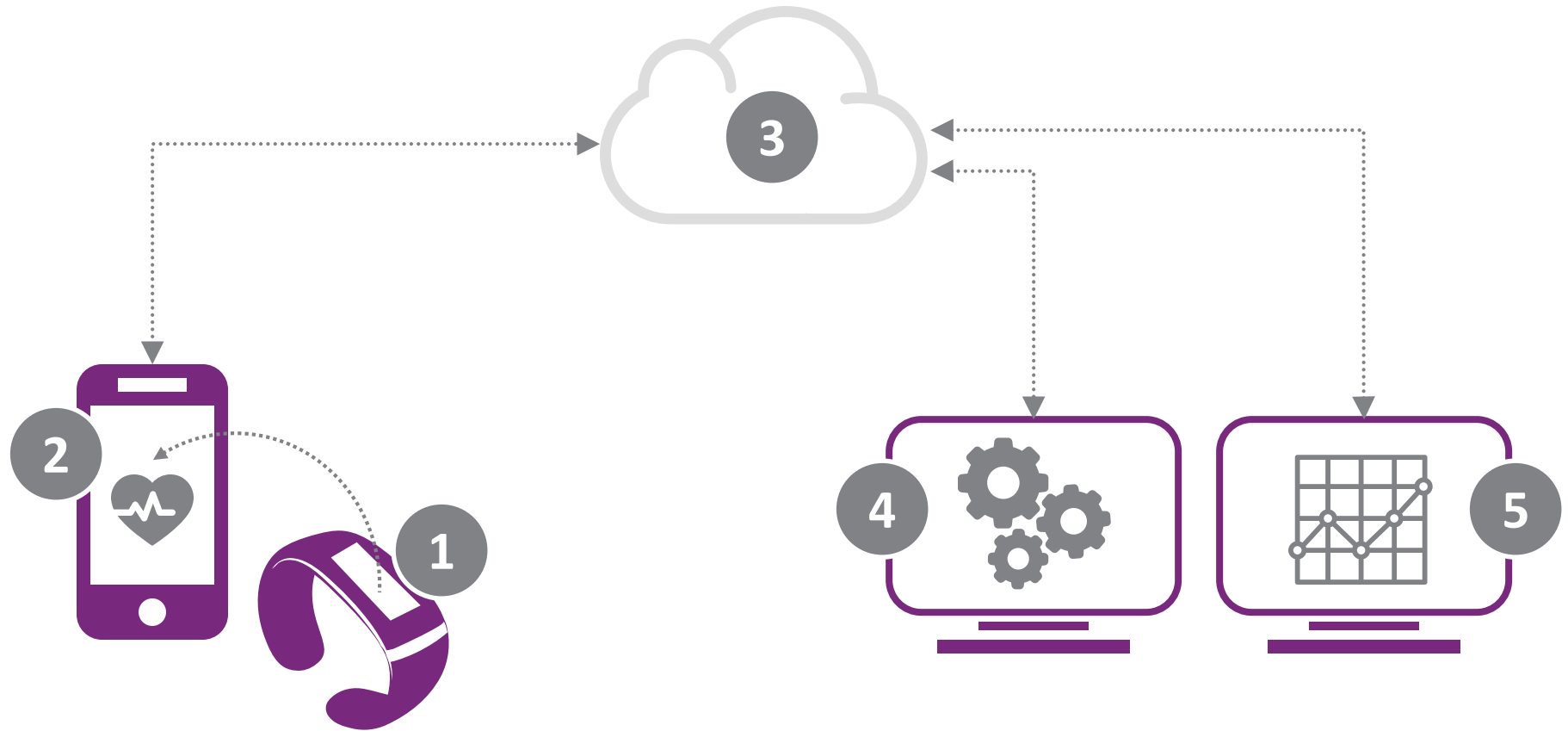
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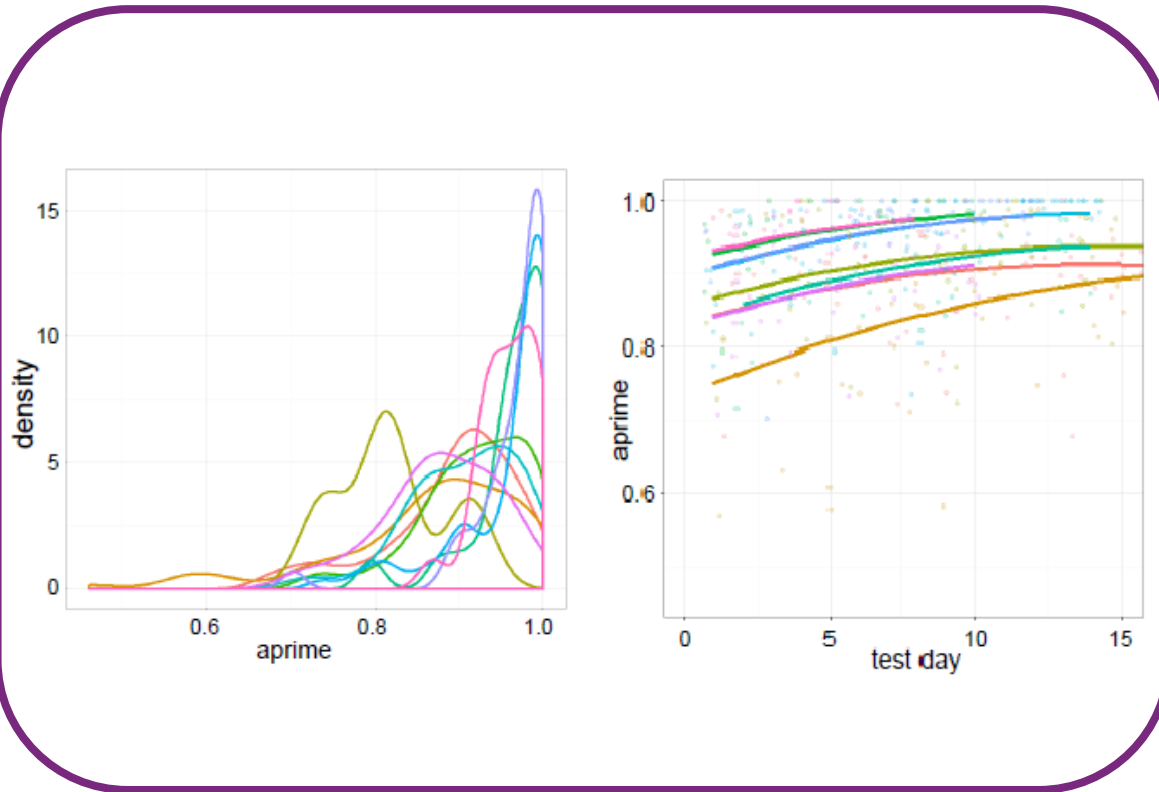
Microsoft Band 2 : Fitness tracker



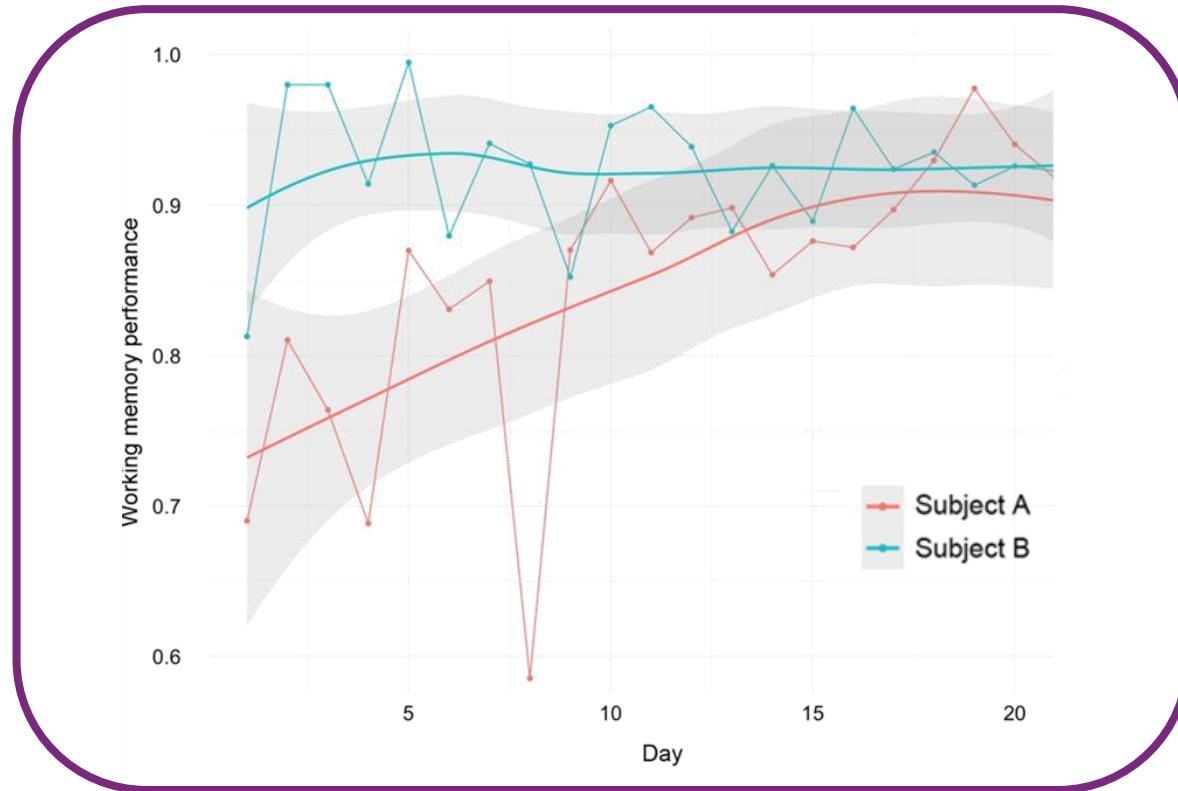
High-Frequency Cognitive Assessment On Wearables



High-Frequency Cognitive Assessment On Wearables



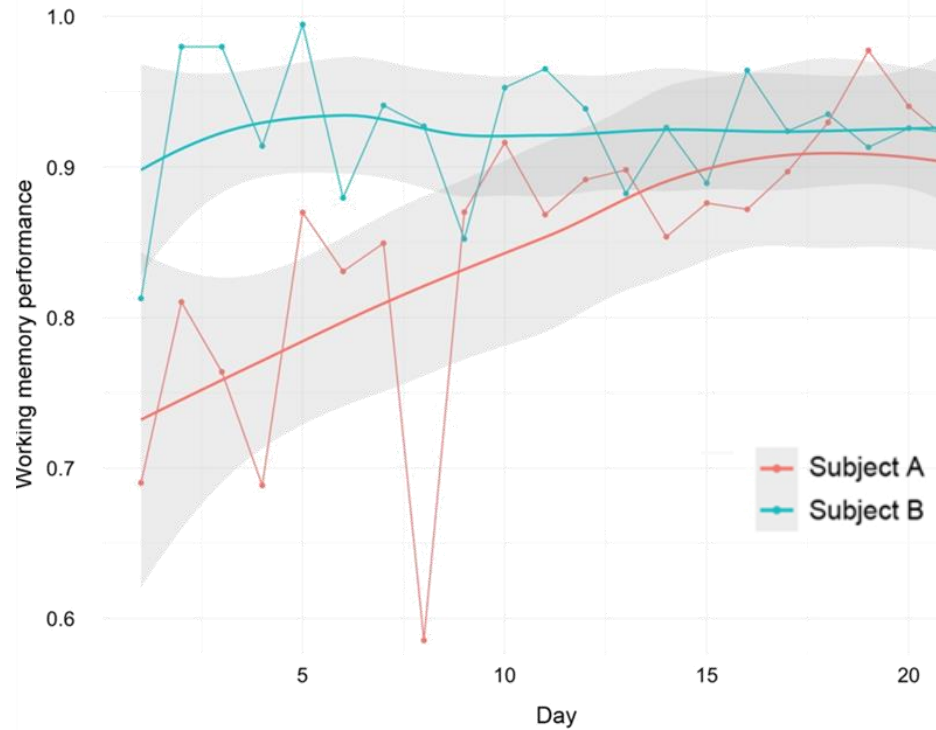
High-Frequency Cognitive Assessment On Wearables



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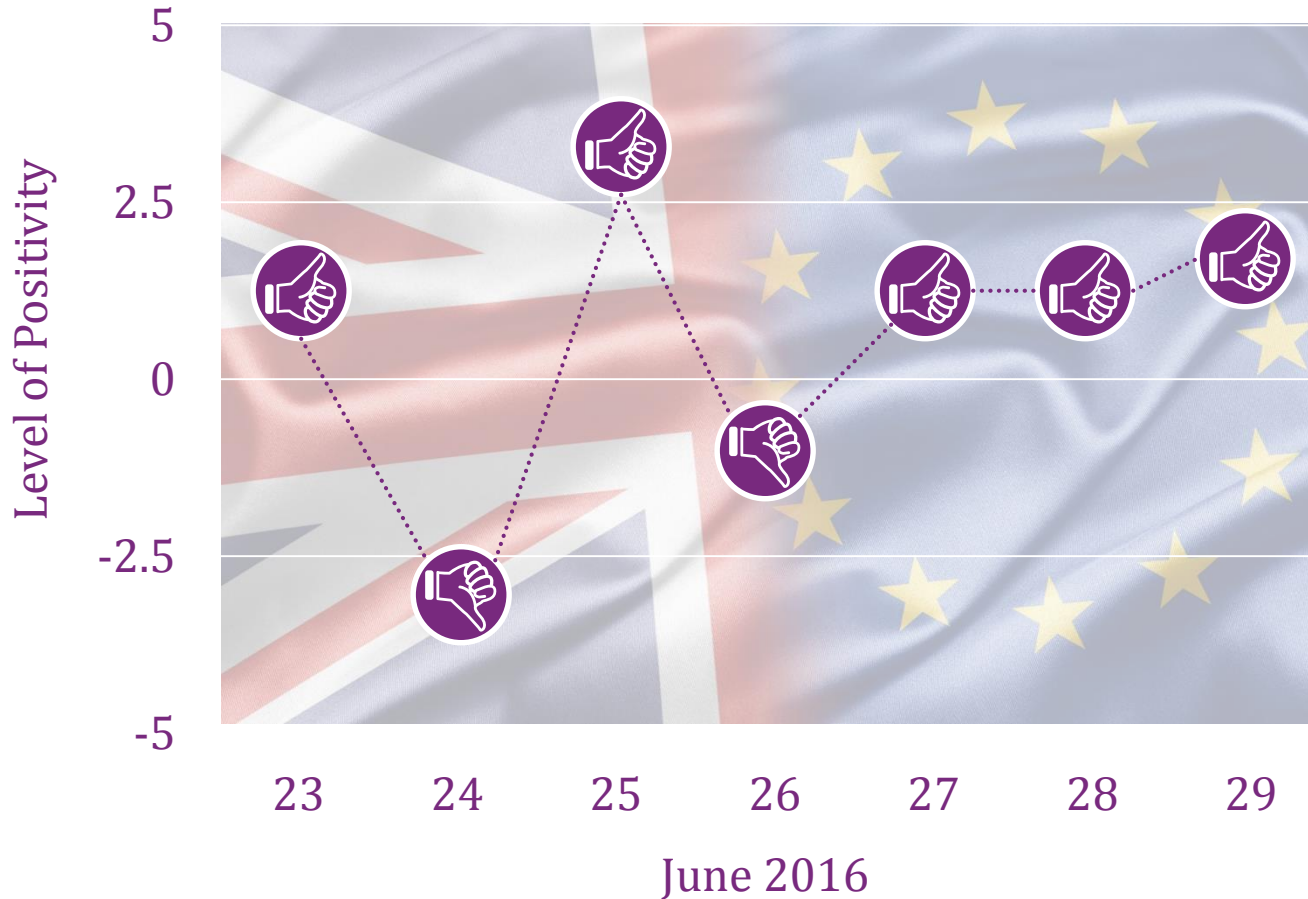


Daily Variance In Cognitive Performance Between Two Individuals



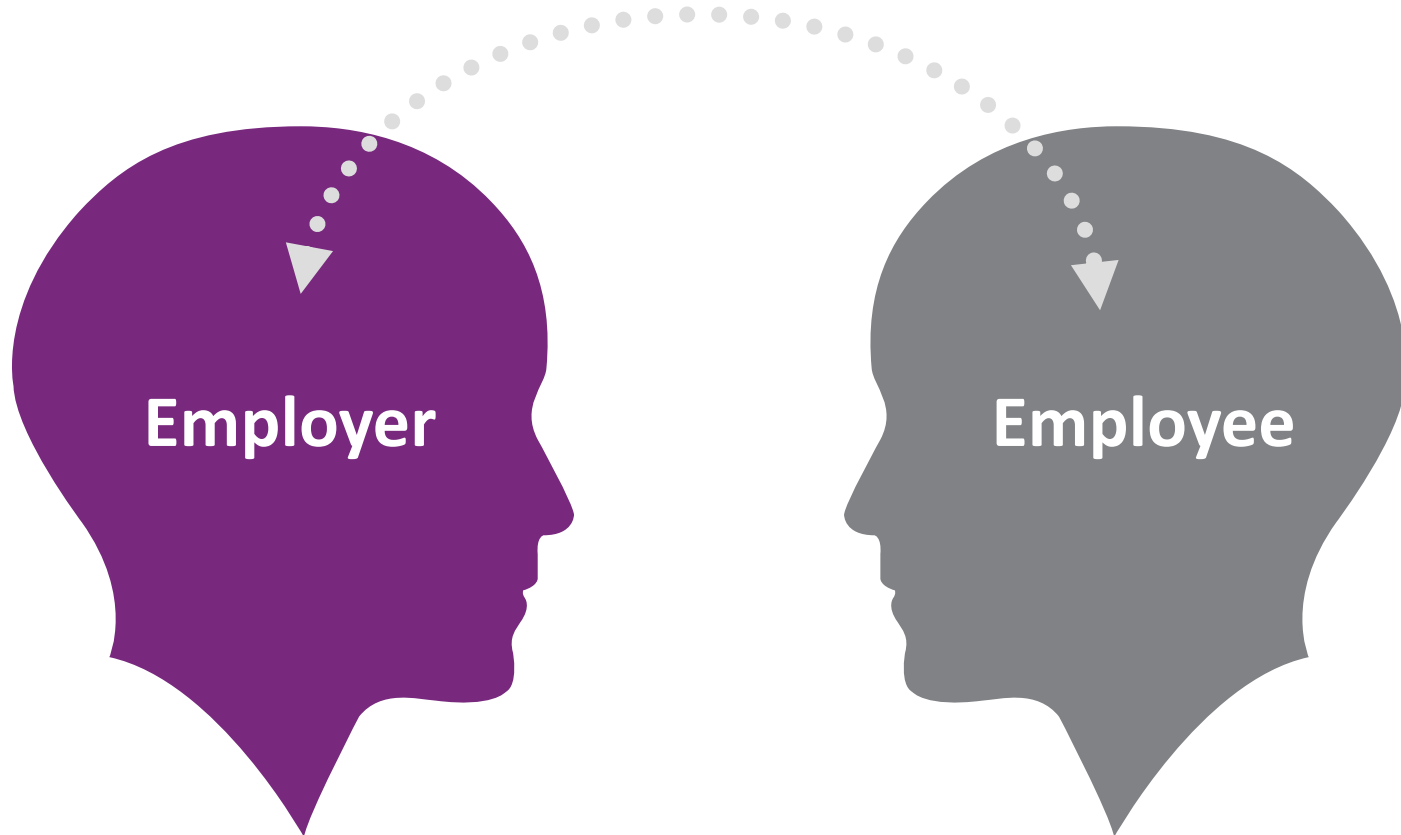


Levels Of Positivity In A Sample Of Individuals During The Brexit Referendum



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Value Exchange



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Sustaining v Disruptive



Sustaining

Disruptive

Eysenck's Model



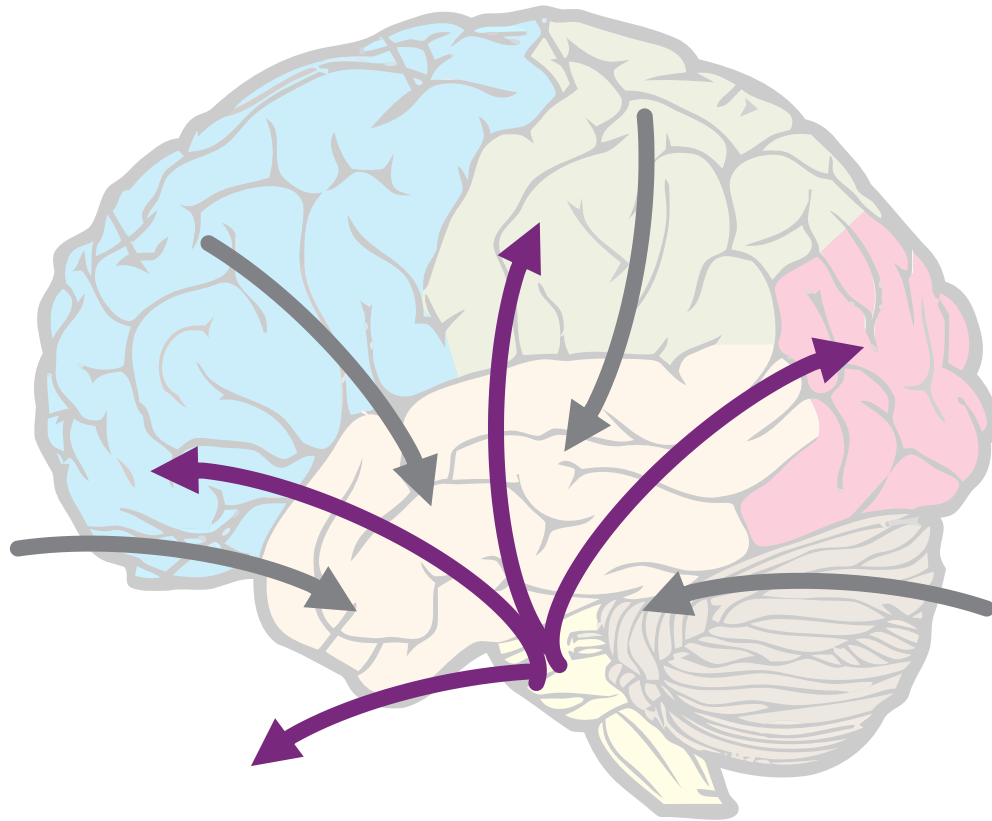
Links the introversions-extroversion
dimension to the underlying nervous system

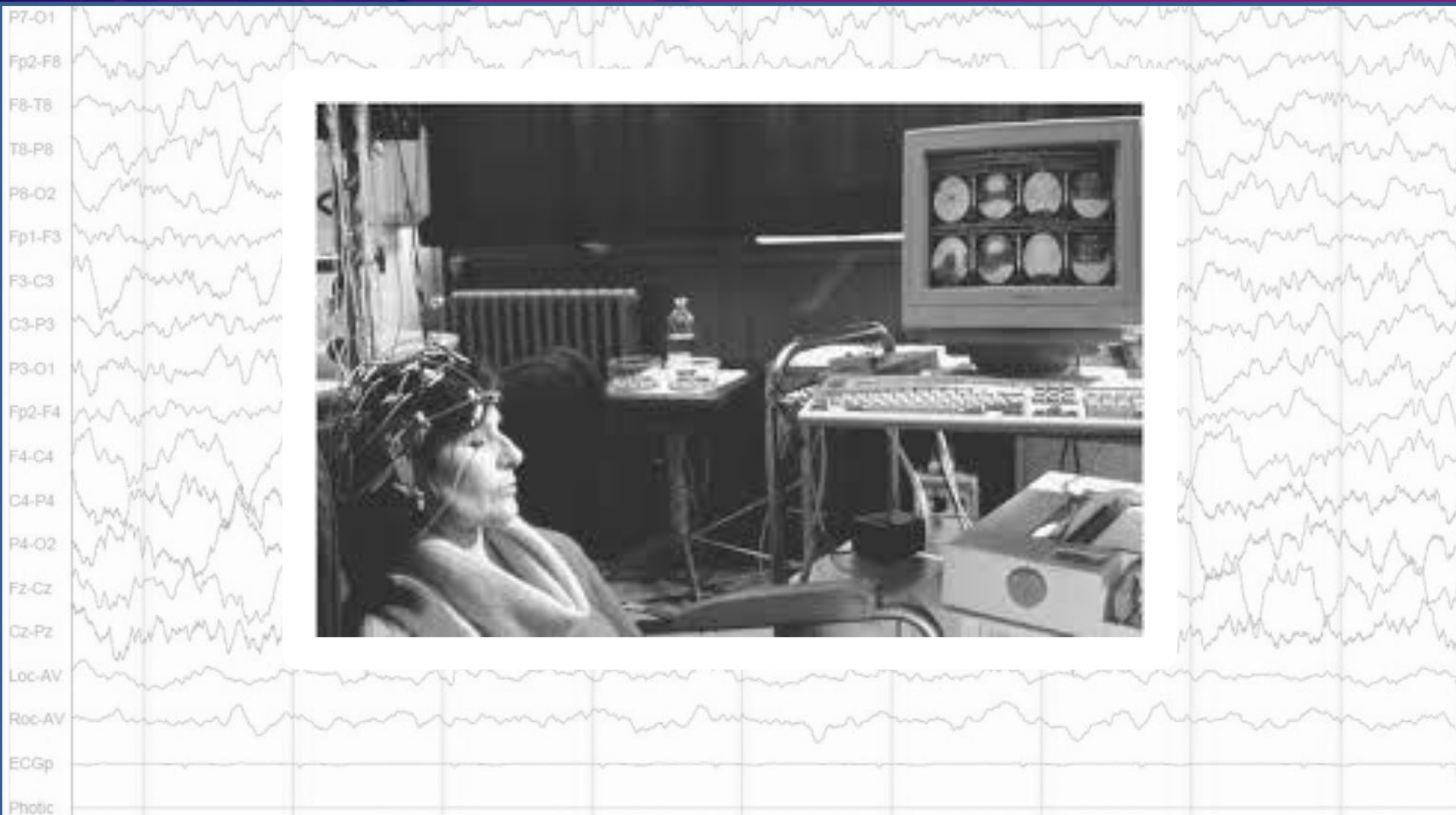


Extroverts have a low
level of brain arousal,
and so seek out
stimulation



Introverts have a higher
level of internal arousal,
and so they tend to shy
away from stimulating
social environments



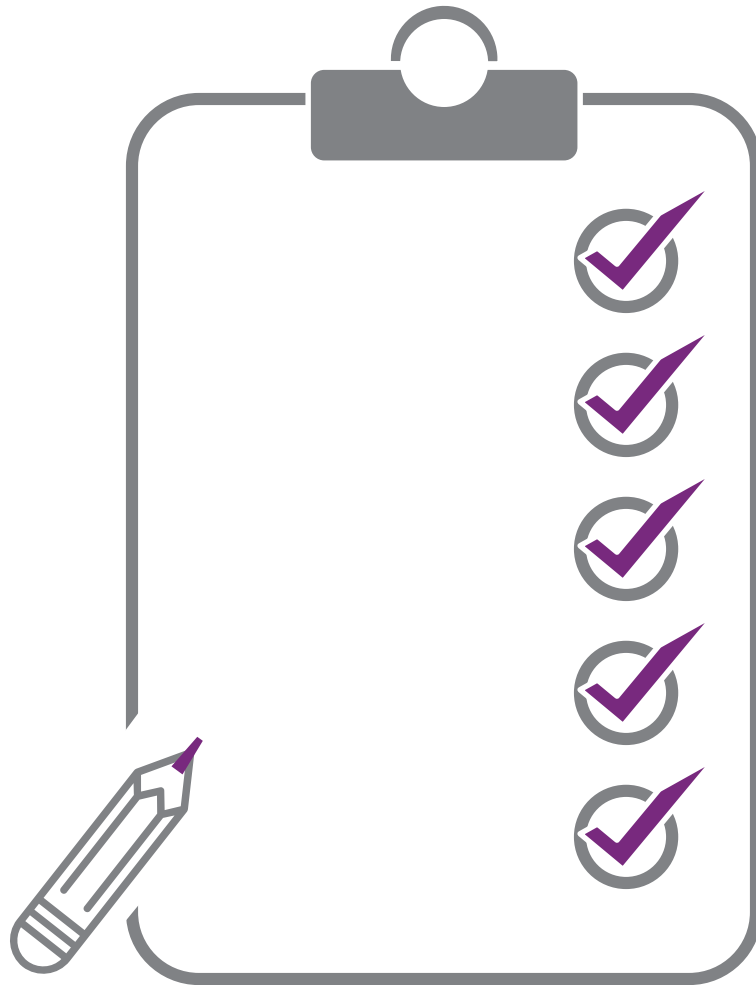




Advantages Of Wearables

- ⊕ Portable and so allow frequent measurements
- ⊕ Capable of giving direct measures of activity and behaviour
- ⊕ Can be used to give instant feedback
- ⊕ Have potential to yield unobtrusive measures of personality

Ticking All The Boxes →



Fosters self motivation

Promotes well-being

Enhances productivity

Increases job satisfaction

Aids organisational commitment

Could Lead To



Lack of autonomy



Feelings of incompetence



Stress



Demotivation



Counterproductive work behaviours

Advantages For Employers

C+NTROL

C++ORDINATION+

C++OPERATION+

The background is a solid purple color. It is decorated with a complex pattern of overlapping geometric shapes, primarily triangles and rectangles, in various shades of purple and blue. Scattered throughout the background are numerous arrows of different sizes and colors, including dark blue, light blue, and pink, all pointing in various directions. The overall effect is a dynamic and modern abstract design.

Thank You For Attending