



INSIGHT

HAPPENS HERE

Are Neuroassessments the Next Disruptive Innovation in the Testing Industry?

An ATP Cross-Functional Brainstorm

#atpconf

Moderator

- Gary Behrens, Director, General Dynamics IT

Participants

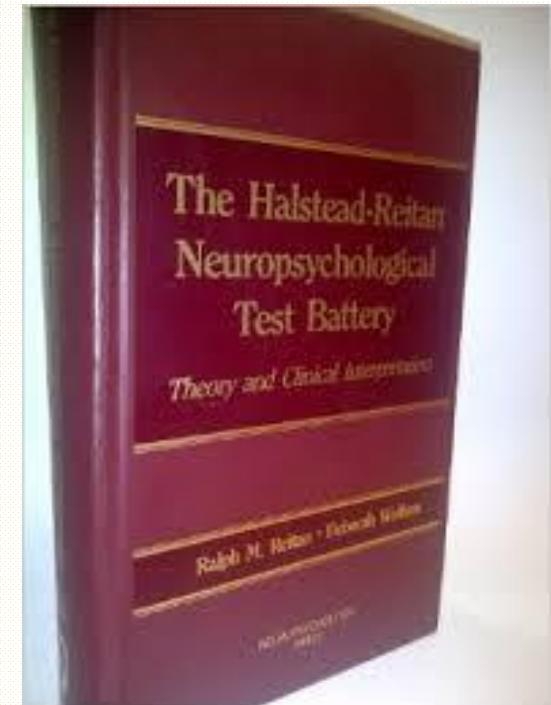
- Manny Straehle, President and Founder,
Assessment, Education, and Research Experts
- Mark Ledbetter, Vice President,
Houghton, Mifflin, Harcourt
- Tim Vansickle, Chief Academic Officer,
Questar Assessment, Inc.
- Gary Behrens, Director, Human Capital
Sciences, *General Dynamics IT, Inc.*

Potential Neuroassessment Disruptions to Competency Testing

Manny Straehle, Assessment, Education & Research Experts

Current Neuroassessments

- Clinical
- Imaging
- Eye Tracking
- Hormonal
- EEG and related devices
- Interviewing
- History Taking
- Standardized testing



Potential Neuroassessment Disruptions

Certification/Licensure

Can we use neuroassessments for competency testing?

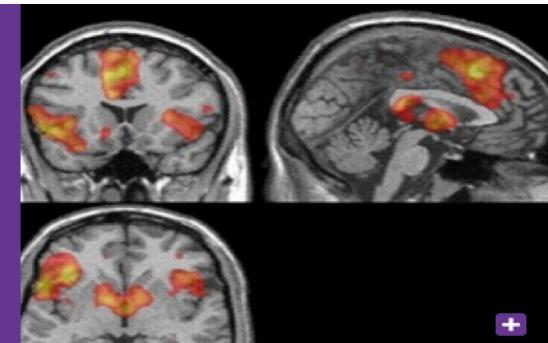
The screenshot shows a news article from Scientific American. At the top, there are links for 'SUBSCRIBE', 'SCIENTIFIC AMERICAN', 'English', 'Cart', 'Sign In', and 'Register'. Below the header, the main title is 'Cache Cab: Taxi Drivers' Brains Grow to Navigate London's Streets'. A subtitle reads, 'Memorizing 25,000 city streets balloons the hippocampus, but cabbies may pay a hidden fare in cognitive skills'. The author is Ferris Jabr, and the date is December 8, 2011. There are three social media sharing icons (Facebook, Twitter, Email) and a photo of a classic London black cab. To the right of the main article, there is an advertisement for Hilton Chicago and a section titled 'READ THIS NEXT' featuring images of Albert Einstein and a female superhero.

Test Security

Deception testing using eye tracking, hormonal, and/or imaging

Spot the liar?

Controversially, certain brain scanning techniques such as fMRI and EEG have been used for lie-detection purposes in high-profile court cases in the US and India since 2008. Although fMRI for lie detection is an as-yet unproven technology, scientist Steve Laken says the basic idea behind using fMRI for lie detection is that when you tell the truth, 'the brain moves relatively fast. You simply don't have to think about things. To lie, however, you have to first understand the question and then come up with an alternative communication.' The differences in how the brain behaves when people lie and tell the truth are visible in fMRI scans.



This fMRI scan shows the areas of the brain active when you tell a lie.

Disruptive Neuroassessments: Issues

- Brain measurements are not always accurate
- Bioethics
- Expensive
 - Tools or “Braingear” are becoming more portable and cheaper



Brain Science and Clinical Assessment

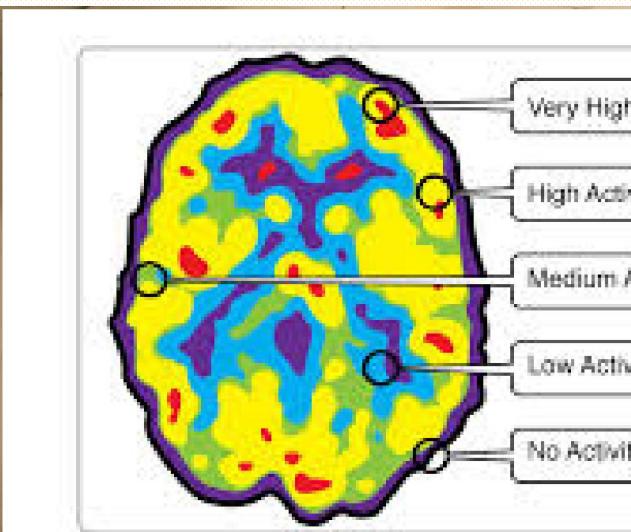
Mark Ledbetter, Houghton, Mifflin, Harcourt

CT SCAN
&

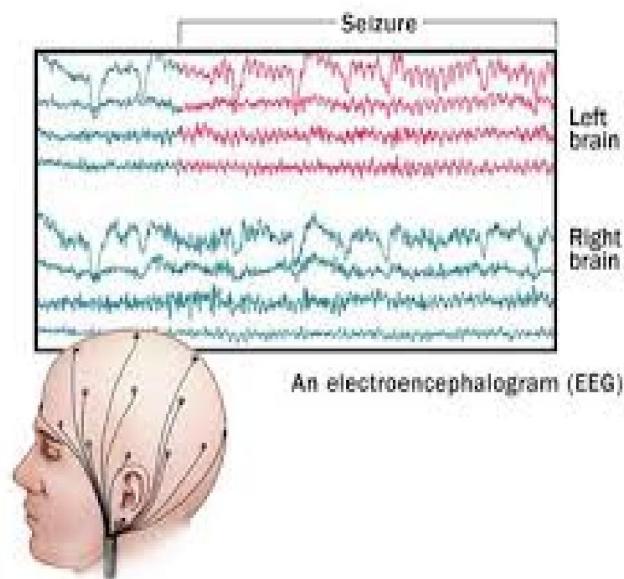
MRI / fMRI



PET SCAN

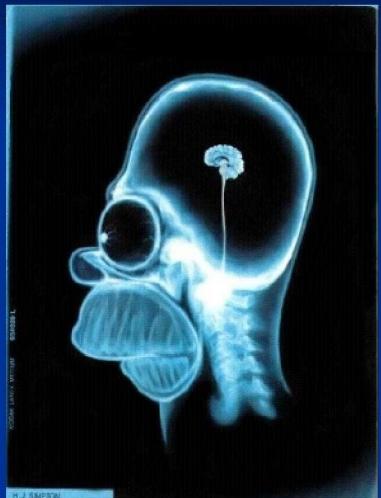


EEG

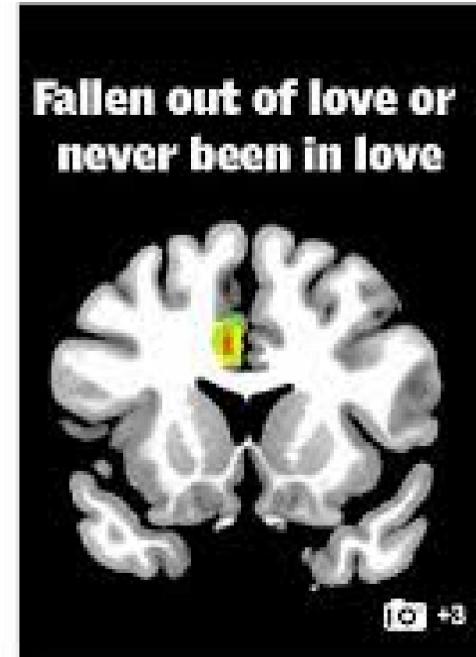
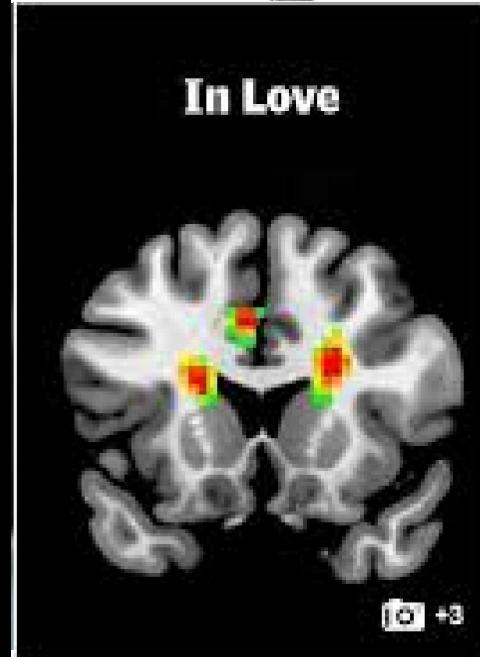
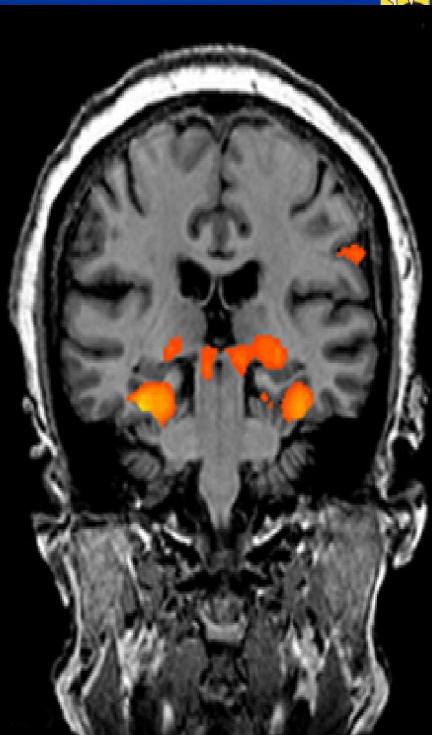
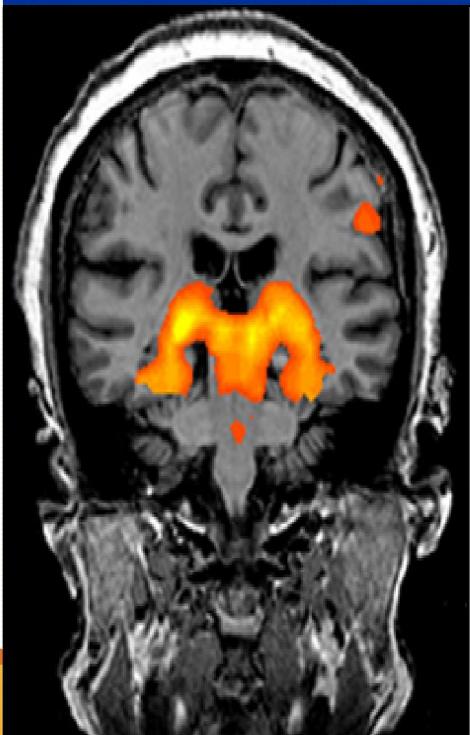
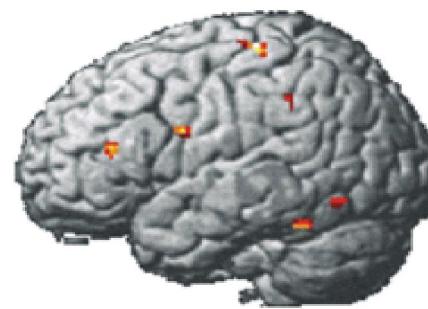
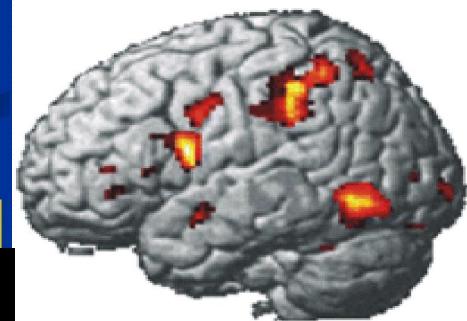
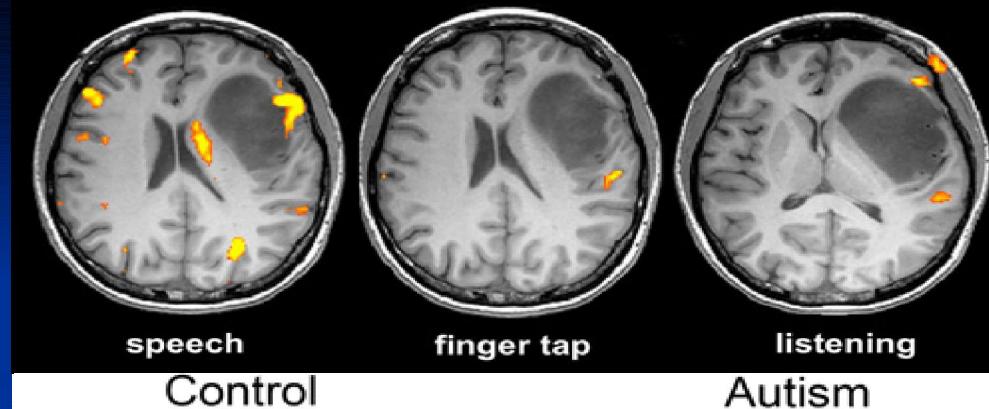
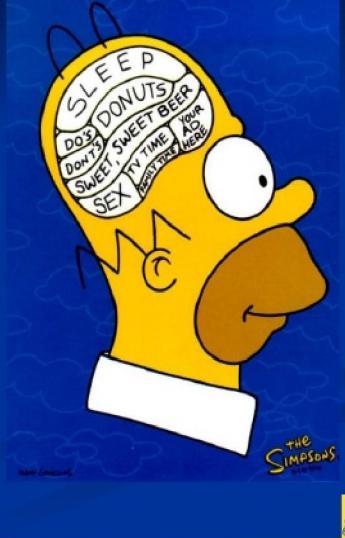


MRI vs. fMRI

MRI studies brain anatomy.



Functional MRI (fMRI) studies
brain function.



EEG IN PSYCHIATRIC DISORDERS



Currently there is no accepted indication of EEG in diagnosing either axis-I or II disorders

Current State of Neuroimaging Scans for Questions Related to Behavior and Mental Health

What Brain Scans Can Do	What Brain Scans Cannot Do
<input type="checkbox"/> Study healthy brain development	<input type="checkbox"/> Diagnose a mental illness condition when used by themselves
<input type="checkbox"/> Study effects of mental illness or mental health treatments on the brain	<input type="checkbox"/> Predict risk of getting a mental illness
<input type="checkbox"/> Confirm a diagnosis of a few disorders (e.g., tumor that is affecting behavior)	<input type="checkbox"/> Determine what medications/ treatments work the best
<input type="checkbox"/> In conjunction with other tests, help establish the right diagnosis for mood & behavior problems	<input type="checkbox"/> Predict individual brain - behavior relationships with accuracy

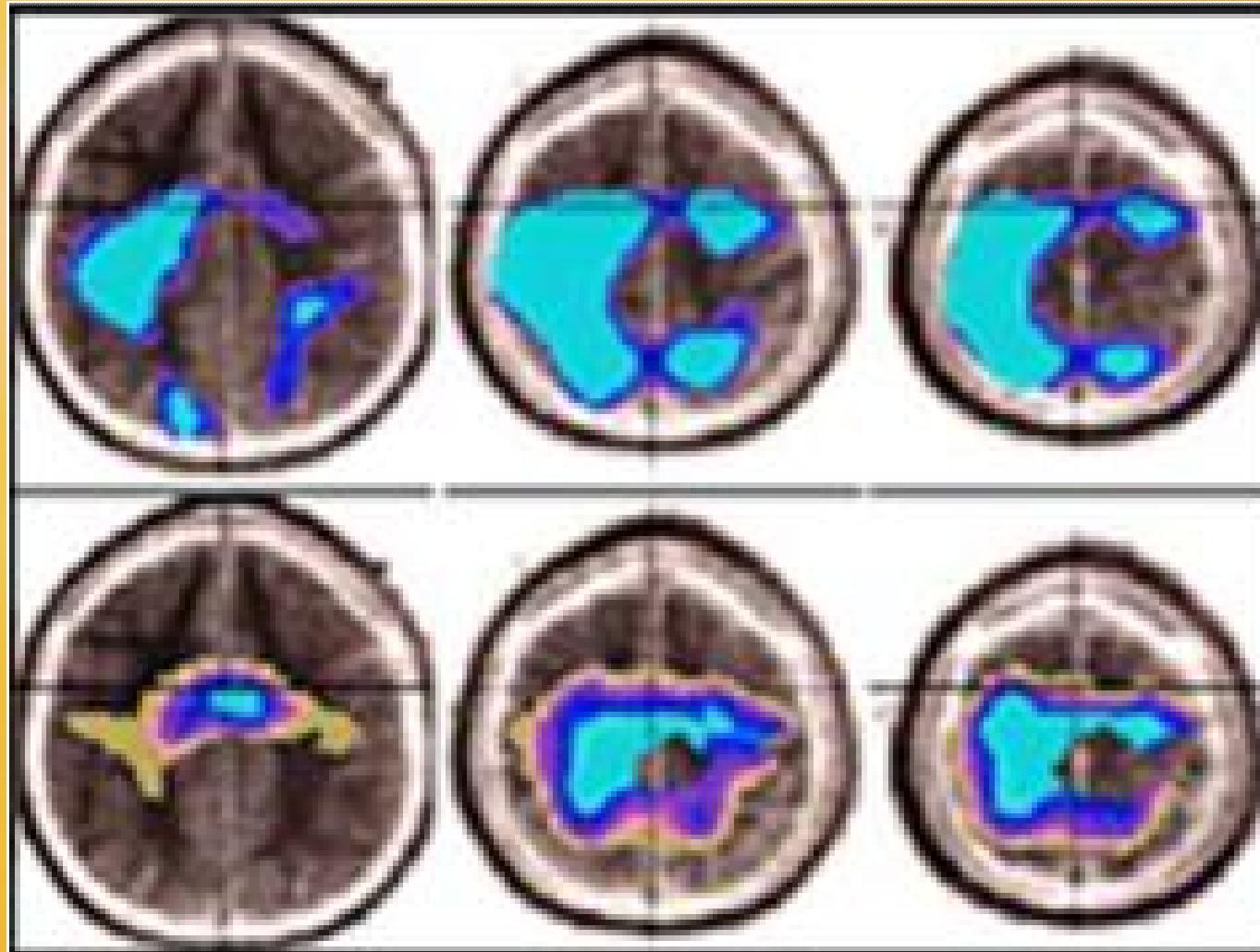
Brain Science and Education

Tim Vansickle, Questar Assessment

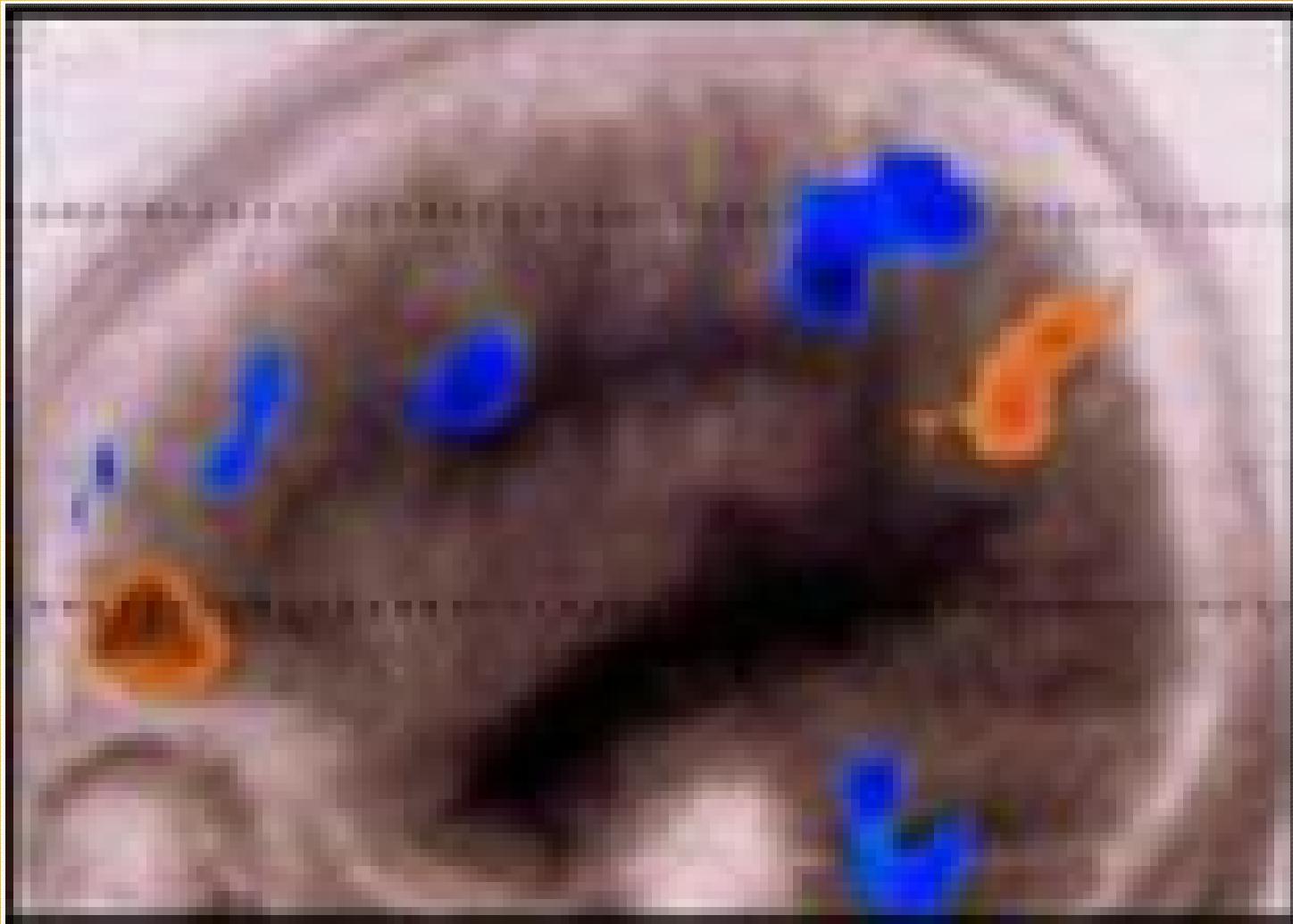
Education, Learning, & Neuroscience

- The brain is static, unchanging, and set before you start school.
- Some people are left-brained and some are right-brained.
- We use only 10 percent of our brains.
- Male and female brains are radically different.

Sleep and Brain Function



Calculation versus Estimation



Innovative Neuroassessments as Disruptors of Employment Testing?

Gary Behrens, General Dynamics IT

Innovative Neuroassessments as Disruptors of Employment Testing?

■ Online gamified measures

- Cognitive abilities, aptitudes & behavior constructs
- Simple tasks and scenario-based simulations

■ Innovative applications

- Brain imaging research and neuroscience based
- Using big data for real-time predictive analytics

■ Disruptive strategies

- Simplify/speed up typical recruitment process
- Displace Multiple Choice Response assessments
- Link to sophisticated job search platforms

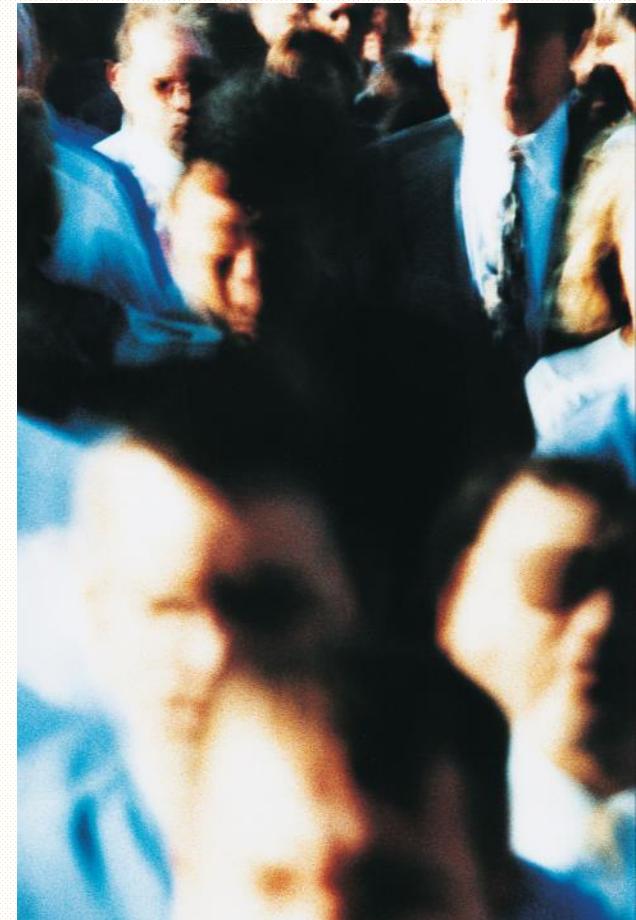
Innovative Neuroassessments as Disruptors of Employment Testing?

■ Marketing savvy

- Targeting Millennials
- Partnering with colleges
- Generating media buzz

■ Compliance with standards

- Test standards
- Legal compliance



Are Neuroassessments the Next Disruptive Innovation in the Testing Industry?

Join the Discussion!

