Partnering Neuroscience with Organisational Behaviour and Leadership: the promises and pitfalls of an emerging discipline

Presenters:

Ingra du Buisson-Narsai
Ingra.Narsai@gmail.com
www.neurocapital.co.za

Dr Anton Verwey
antony@engageleadership.biz
1. Is Neuro Science Business Relevant?
2. Brain Models
3. Interpretive Frameworks
4. Theoretical, technical and methodological challenges for research that attempts to link neuroscience and leadership.
5. Pitfalls and Promises
6. Relevance of Neuroscience to Organisational Behavior
7. Reviewing leadership theory and research to date that has considered or examined neuroscience phenomena.
To provide evidence of how neuroscientific research findings can provide additional perspectives of organisational behaviour at individual, team, and organisational level in formal organisations.
1. To summarize mature areas of neuroscientific research and the relevance thereof to contemporary organisational behavior, theory and approaches.

2. To provide an overview of current research topics and themes in the Organisational Behaviour field that incorporate a neuroscientific research perspective.

3. To consider if neuroscientific based methods and measures can complement contemporary organisational behavior methods and measures.

4. To highlight current practical applications of Neuroscience in Leadership Development interventions.
IS NEUROBIOLOGY BUSINESS RELEVANT?
1. Brain-based leadership development has grown exponentially in recent years and raises the question of legitimization and validation. Neuroscientists and Organisational psychologists are being challenged to translate key findings into solid practice and validation (Becker et al, 2011).

3. Neuroscience can be seen as a reductionist approach. (Edwards, 2012; Oppenheim & Putnam, 1958), and thus the possibility of dealing with higher order social phenomena (organisations or individuals) on a lower analytical level brain or neurons).
1. Neurobiology: the science that investigates the relationship between mental processes and the pattern of electrical activity in the neurons of the brain.

2. Modern neuroscience has leveraged technological breakthroughs in brain imaging and computational modeling to illuminate the inner workings of the human brain.

3. Neuroscience suggests that many brain processes have evolved over millennia for specific evolutionary aims, and is frequently automatic (Lieberman, 2007)

4. Neuroscience explains how the brain produces cognition, attitudes and behavior referred to as “neural-constituents, -substrates, -correlates, -footprint, -associations)
1. Models are the only way to capture the essence of the mass of details, determine their possible interactions in an explicit manner, identify possible mechanisms and compare this theory with real data.

2. New findings are of little value if they lead recursively back to validating our preconceptions.

3. In a brain with 10 billion neurons highly interconnected, only models can realistically be expected to winnow out the significant network interactions in the brain.

4. Useful Brain models:

- Brain Lateralization or 2 Hemispheric Brain (Sperry, 1960)

- Triune/Three Brain hypothesis. (MacLean, 1990) – information filtering is bottom up unconscious processing is responsible for 95% of decision making (Renvoise & Morin, 2007)
Adaptation: Brain function is self-organized to adapt continuously to its current environment.

Dynamics: A limitation of many current models is that the temporal dynamics is omitted. *Timing is the key to adapting to a continually changing environment*

Anticipation: Feedforward processing is integral to harm avoidance.

Dimensional: A myriad models either focus on ‘specialized’ networks or on distributed ‘holistic’ models. In reality they readily coexist along a continuum, which is differently activated according to specific situations and task demands. For example, sensory-motor

INTERPRETIVE FRAMEWORKS
1. **Neuroscience** is an **interdisciplinary field** of study which seeks to understand behavioral phenomenon in terms of the **brain mechanisms** and interactions that produce cognitive processes and behavior (Ochsner and Lieberman, 2001)

2. The Brain has gone mainstream...
Social cognitive neuroscience examines social phenomena and processes using cognitive neuroscience research tools such as neuroimaging and neuropsychology.

The broad areas of research within social cognitive neuroscience:

(a) understanding others,
(b) understanding oneself
(c) controlling oneself, and
(d) the processes that occur at the interface of self and others.

(e) Two core-processing distinctions that can be neurocognitively identified across all of these domains. The distinction between automatic versus controlled processes has long been important to social psychological theory and can be dissociated in the neural regions contributing to social cognition.

(f) The differentiation between internally-focused processes that focus on one's own or another's mental interior and externally-focused processes that focus on one's own or another's visible features and actions is a new distinction. This latter distinction emerges from social cognitive neuroscience investigations rather than from existing psychological theories demonstrating that social cognitive neuroscience can both draw on and contribute to social psychological theory.
Neural correlates of automatic controlled processes form multiple domains of social cognition overlaid on to the X-system and C-system regions.

Controlled /reflective processes are represented by small circles with white text on a black background.

Automatic/reflexive processes are represented by small circles with black text on a white background. Small circles are placed schematically within a region and are not meant to indicate a precise location within a region.
Neuroleadership is an emerging frontier that seeks to determine critical aspects of leadership and followership, including executive thought processes, emotional intelligence and team dynamics. (Ringleb & Rock, 2008)
Organizational cognitive neuroscience (OCN) is the cognitive neuroscientific study of organizational behavior and uses FMRI and EEG technology.

OCN lets us start to understand the relationship between our organizational behavior and our brains and allows us to dissect specific social processes at the neurobiological level and apply a wider range of analysis to specific organizational research questions. (Senior & Butler, 2010.)

Butler and Senior (2007) noted that "organizational cognitive neuroscience" could be viewed as an applied form of social cognitive neuroscience that seeks to analyze and understand human behavior within organizational settings.

Focus:

METHODS AND TECHNIQUES
An Overview of the Possible Techniques Available in Organizational Cognitive Neuroscience

NEUROSCIENCE’S RELEVANCE TO ORGANISATIONAL BEHAVIOUR
Organisations create the settings in which most of us spend our lives – they have a profound influence on our organisational behavior.

Organisational Behavior (Ivancevich, 2009):
- Has a specific **level of analysis** – (individual, team, organisations) – a way of thinking
- Has a **humanistic orientation** – peoples’ attitudes, capabilities, feelings and goals
- Relies on the **“scientific method”** - to study variables and relationships
- **Applications orientated** – provides useful answers in the contents of managing organisations
- Is **multidisciplinary** – uses methods, theories, models from other disciplines...Neuroscience?

<table>
<thead>
<tr>
<th>IO Psychology Theory</th>
<th>Neuroscience Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Holistic</td>
<td>Mechanistic</td>
</tr>
<tr>
<td>2 Longitudinal – real world investigation</td>
<td>Short term - lab investigations</td>
</tr>
<tr>
<td>3 Behavior outcome orientated</td>
<td>Process Specific</td>
</tr>
</tbody>
</table>
The field of **positive psychology** was introduced by **Martin Seligman** which deal with concepts such as happiness, satisfaction, hope and flourishing.
Positivity serves as a catalyst in transcending from a preoccupation with repairing (what has being diagnosed as “broken”), to building and nurturing the best qualities in life.
<table>
<thead>
<tr>
<th><strong>PERMA</strong></th>
<th><strong>5 Ingredients to a Flourishing Life</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P</strong></td>
<td>Positive Emotions&lt;br&gt;- experience happiness, joy, hope, love, gratitude, etc.</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>Engagement&lt;br&gt;- use your strengths to meet challenges; be in the moment.</td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>Relationships&lt;br&gt;- connect with others; love and be loved.</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>Meaning&lt;br&gt;- connect to meaning; find your purpose.</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td>Accomplishment&lt;br&gt;- pursue and accomplish goals; strive for greatness.</td>
</tr>
</tbody>
</table>

POB has been defined as the “study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement” Luthans (2002:698).

Although at first it appears as a construct, it is more a philosophy or method of looking at phenomena.

"Research has shown that positive emotions and interventions can bolster health, achievement, and resilience, and can buffer against depression and anxiety. While considerable research in neuroscience has focused on disease, dysfunction, and the harmful effects of stress and trauma, very little is known about the neural mechanisms of human flourishing. Creating this network of future leaders in positive neuroscience will change that."

--Martin E.P. Seligman
**Neuro Capital drives Psychological Capital**

- **Virtue, strength, and positive emotion**: What are the neural bases of the cognitive and affective capacities that enable virtues such as discipline, persistence, honesty, compassion, love, curiosity, social and practical intelligence, courage, creativity, and optimism?
- **Exceptional abilities**: What is special about the brains of exceptional individuals and what can we learn from them?
- **Meaning and positive purpose**: How does the brain enable individuals and groups to find meaning and achieve larger goals?
- **Decisions, values, and free will**: How does the brain enable decisions based on values and how can decision-making be improved? What can neuroscience reveal about the nature of human freedom?
- **Religious belief, prayer, and meditation**: How do religious and spiritual practices affect neural function and behavior?
The application of neuroscience in formal organisations which are typically organised around specific goals, usually consisting of several interrelated groups/subsystems and governed by clearly stated and enforced norms has seen the emergence of various research applications.

These research applications include but are not limited to:

1. The Neuroscience of Emotional Intelligence (Ochsner & Gross, 2005);
2. The Neuroscience of Leadership (Goleman et al 2002; Rock & Schwartz, 2006; Ringlebb & Rock, 2008);
3. The Neuroscience of Change Management (Masicampo & Baumeister, 2011; Falck et al, 2010; McFarlan, 2012);
5. The Neuroscience of Personality (deYoung etal, 2010; Eysenck et al, 1985).
NEUROSCIENCE’S RELEVANCE TO LEADERSHIP DEVELOPMENT
<table>
<thead>
<tr>
<th>Leadership Approach</th>
<th>Research Article</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentic Leadership</td>
<td>Walumba et al (2008)</td>
<td>Positive Correlation with Mindfulness via MAAS scale and associated with (MPFC) activation,</td>
</tr>
<tr>
<td>Resonant vs Dissonant Leadership</td>
<td>Boyatzis et al (2011)</td>
<td>Recalling Experiences with leaders: Resonance associated with reward centres (insula) and positive affect. Dissonance associated with regions associated with avoidance/decreased compassion/negative emotions</td>
</tr>
<tr>
<td>Inspirational/Visionary Leadership</td>
<td>Waldman et al (2010)</td>
<td>qEEG greater coherence in Inspirational Leaders</td>
</tr>
<tr>
<td>Neuro Leadership</td>
<td>(Gordon et al, 2008)</td>
<td>Online brain training tool resulted in increase in productivity</td>
</tr>
</tbody>
</table>
Collaboration is Key

Formal research findings, practice and debate is a logical step to draw this emergent synergy into an intelligible whole and to make theoretical progress.


