

1 INTRODUCTION TO NEUROMARKETING

Managing Marketing Investment Risk

- Marketing activities can involve \$ multi-million investments
e.g. US super-bowl advertising approx. \$3 mil/30 sec spot in 2011
- Varying success rates, often low or unknown
e.g. > 50% of new product launches fail

Marketing Research Methods

Qualitative Research	Quantitative Research
<ul style="list-style-type: none"> • Low N >> focus group • Lower reliability >> ethnography • Greater depth >> personal interview • Low projectability 	<ul style="list-style-type: none"> • High N >> phone survey • Higher reliability >> mail survey • Lower depth >> online survey • High projectability >> secondary data; sales

Behavioural Methods

Implicit Decision-Making Influences

How well can individuals report the influences on their decisions?

- German & French wine brands given equal shelf presence in liquor section of supermarket.
- German or French music played on alternate days over 2 weeks.
- Consumers who bought either wine interviewed at checkout for reasons underlying purchase.

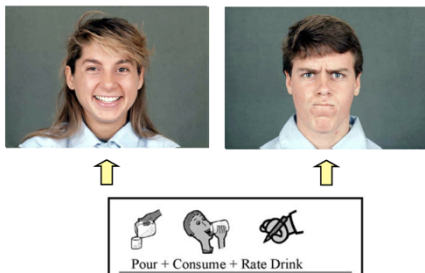
Then results,

- French music days – French wine outsold German 3 to 1
- German music days – German wine outsold French 3 to 1
- 1 of 44 consumers spontaneously nominated music as a purchase factor.
- 86% of consumers specifically said *music did not affect purchase decision*.

Decision-making influences may operate below the level of awareness

Hidden Decision-Making Influences

Testing new orange juice in the real experiment, people changed their face (emotional expression). So quickly. You couldn't see the change at all.



subliminal smiles impact on pouring, evaluation and willingness to pay.

Self-report decision-making influences

- Clinical neuropsychology studies suggest that we generate explanations for our own behavior
- The left brain interprets (a built-in neural system) generates conscious thought process in response to largely automatic trains of thought that run through mental life
 - Our conscious thought processes can be an *interpretation* of conscious thoughts and behavior driven by subconscious processes
- Memory loss acquired through alcohol abuse results in confabulation: imagination in place of memory
- Thought processes that occur largely 'beneath the surface' influence decisions

- Awareness and ability to reflect on thought processes that influence behavior is limited
- Self-reported influences on decisions may not reflect actual decision factors

How can we gain consumer insights without being exposed to self-reflection biases?

NEUROMARKETING DATA is an alternative approach for gaining consumer insights

- Data collected using biometrics or neuroimaging technology may predict consumer response more accurately than conscious/explicit measures such as interview, surveys

Benefits of Neuromarketing Metrics

- May provide a **direct** measure of consumer response to a stimulus
- Provide an **objective** viewpoint on consumer responses
- Are acquired **at the time of exposure** to the stimulus rather than post-hoc as in traditional measures
- Regard explicit consumer viewpoints as additional/secondary response

Important Caveat: must be a robust link between observed responses and the psychological process proposed to be driving the observed response.

Marketing Mix Black Holes (4P+brand)

- Promotion – 50% of my ads work
- Product - > 50% of my new product fail
- Pricing – how do consumers value our product?
- Distribution – what impact do psychological processes have on channel choices?
- Brand equity – how do we measure the influence of the brand on the consumer?

Contemporary Media Issues

Driving even stronger emphasis on engaging consumers and measuring effectiveness

- Media control – consumer control exposure
- Clutter – message attention is low cos so many messages
- Media fragmentation – mass audience is gone cos so many channels
- Ad avoidance – savvy consumers avoid ads

Why neuromarketing now?

Contemporary media challenges driving marketers to seek greater connection with more specific target audiences, with greater efficiency and greater accountability

- New measures required to match demands of the new media landscape; engagement
- Lackluster performance of traditional metrics in commercial research
- Technology availability

Neuromarketing (consumer neuroscience) is the use of theory and tools from the cognitive neurosciences to inform marketing theory, planning and activities

- Theory: Cognitive Psychology + Neural Science + Economic & Marketing Theory
- Tools: Psychophysiological Measures + Neuroimaging Technologies

Neuromarketing Toolkit

1. **Cognitive Neuroscience** (internal processing): biological foundations of mental processes

Cognitive Psychology

- Sensation & Perception
- works)


+

Neural Science

- Neurophysiology (how the nervous system

- Attention system)
- Learning & Memory
- Affect (emotion)
- Neuroanatomy (structure of the nervous system)

2. Neuromarketing/Neuroeconomic Theories

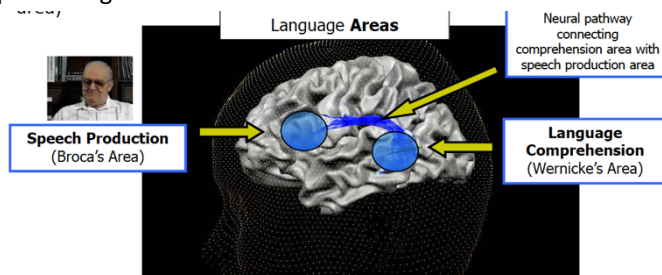
- Reward - Consumer decision-making
- Value  - Neuromarketing applied to the marketing planning process
- Risk - Brand management
- Framing - Advertising, promotion & media
- Neuromarketing ethics

3. Psychophysiology: measurement of physiological processes that reflect internal states (measurement of internal states)

- Heart Rate/Respiration Rate
- Muscle Tension
- Pupil Dilation
- Eye-Tracking
- Electroencephalogram (EEG)
- Magnetoencephalogram (MEG)
- Position Emission Tomography (PET)
- Functional Magnetic Resonance Imaging (fMRI)

2a CORE NEURO CONCEPTS

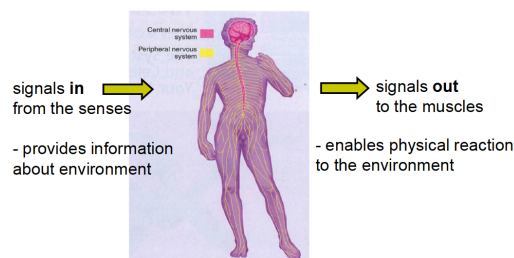
- Tono tono example shows a specific type of **Aphasia**
 - A deficit in language production or comprehension (ability to communicate in language)
 - **Broca's aphasia**: language production impaired
 - **Wernicke's aphasia**: language comprehension impaired (specific disorder) can produce word but can't string them together to make sense.
- The brain is modular (different parts do different jobs)
- Aphasias demonstrate that brain regions tend to be specialized working together for particular kinds of processing.



- When we are engaging conversation with somebody
- 2 areas work together

Nervous System Components

- **Central Nervous System (CNS)** – brain and spinal cord, try to survive and thrive (ultimate goal)
- **Peripheral Nervous System** includes somatic & autonomic nervous systems
 - **Somatic nervous system** (body system react): connects the brain and spinal cord with the environment



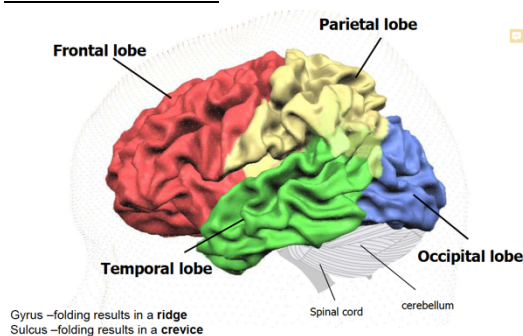
- E.g. when dinosaur comes: sight tells you 'dinosaur' comes → nervous tells 'don't keep sitting, get away' → output to react 'muscles (motor system)'

What makes up the nervous system?

- **Neurons (Nerve):**
 - Cells that are specialized for sending, receiving and converting signals.
 - They are the basic information-processing and conduction unit of the nervous system
 - Generate 'brain activity' system
- 3 parts of neurons process
 1. Dendrites: collect and compile signal from other neurons in one place
 2. The cell body: generate an 'all or none' electric signal (the action potential)
 3. The axon: sends the signal to other neurons
- Signals travelling on neurons are electrical
- Neurons are not directly connected, there is a gap between neurons (the synapse) and the signal passing across is a chemical signal (neurotransmitters)
- **Neurotransmitters:**
 - Chemicals that carry neural impulses from one neuron to another

- Travel across the gap between neurons
- Support core behaviours including consumer decision-making
- E.g. reward value & dopamine – the value of rewarding stimuli is signaled by an increase in the neurotransmitter dopamine in brain regions linked with motivation. More dopamine, the greater influence of a stimulus on impulsive behavior
- **Cerebral Cortex:** a layer of gray matter folded around the outside of the brain
 - Gray = due to heavy concentration of neuron cell bodies that generate the signal brain activity
- **White Matter:**
 - Layer under the cortex made up mostly of axons
 - Connections between different brain regions

4 lobes of the brain



Many other brain regions perform specialized functions e.g. she has damaged in a part of her brain. She can't even her face

- Subcortical brain regions: beneath the outer cortex, critical roles in regulating behavior
 - Limbic system: emotional experience >> deep inside our brain (4F's: feeling, feeding, fighting and .. sexual behavior)
 - Basal ganglia: reward processing

Left & Right Brain

- Left hemisphere: high spatial frequency – best suited for detail
- Right hemisphere: low spatial frequency – best suited for holistic (big picture)
- Phrenology: predict personality characteristics from features on the skull
- Growing application of functional brain networks
 - Connections are dynamically activated between specialized brain regions when cooperation required to perform particular types of processing
- Particular patterns of activation are associated with specific mental states

Implications for Marketing

Understanding the role of regional brain specialization and functional networks in specific cognitive processes provides:

1. Theoretical Insight: understand what's going on inside people's head that leads them to do different things (theory of decision-making & consumer behavior)
2. Marketing Research Insight: provide measures for company and brand that tell them how customer react to particular offer