Motivation & Emotion

Lecture 01 and 02 recap

James Neill
Centre for Applied Psychology
University of Canberra
2017

Image source:
https://commons.wikimedia.org/wiki/File:Portrait_gemma_and_mehmet.jpg

Lecture 01 and 02 recap:

Introduction (Ch 1)
History (Ch 2)

(Reeve, 2015)

Key questions

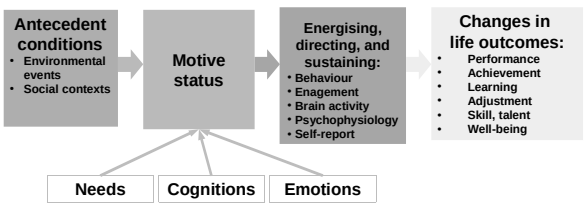
- Why do we do what we do?
- Why do we feel what we feel?
- How can we change what we do and feel?
- What causes behaviour?
  - What starts, maintains, and stops behaviour?
- Why does behaviour vary in its intensity?

The last two questions are based on Reeve (2015)

What is motivation?

- Motivation and emotion have a common etymological root – they derive from *movere* (Latin for "to move")
- Motivation refers to the processes that give behaviour **energy** and **direction** (Reeve, 2015).

Framework for understanding and studying motivation



Based on Reeve (2015, Figure 1.4, p. 16)

History of motivation

1. Will - Ancient philosophers, Descartes
2. Instinct – Darwin, James, McDougall
3. Drive – Freud's Drive Theory, Hull's Drive Theory
4. Incentive, arousal, discrepancy
5. Mini-theories
6. Contemporary era
   1. Active nature of the person
   2. Cognitive revolution
   3. Applied socially relevant research

Based on Reeve (2015, Ch 2)

Next lecture

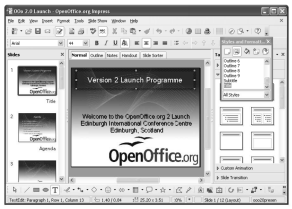
- The motivated and emotional brain (Ch 03)

References

- Reeve, J. (2015). *Understanding motivation and emotion* (6th ed.). Hoboken, NJ: Wiley.

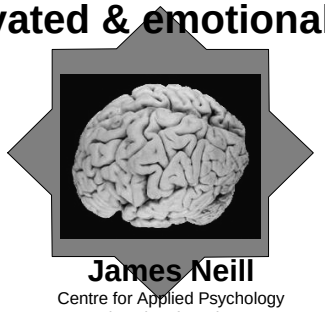
Open Office Impress

- This presentation was made using Open Office Impress.
- Free and open source software.
- http://www.openoffice.org/product/impress.html



Motivation & Emotion

Motivated & emotional brain



James Neill
Centre for Applied Psychology
University of Canberra
2017

Image source:
http://commons.wikimedia.org/wiki/File:Brain_090407.jpg

The motivated & emotional brain

Reading:
Reeve (2015), Ch 3

Outline

- **Motivation, emotion, and neuroscience**
  - Events activate structures
  - Structures generate M&E
- **Neural basis**
  - Cortical
  - Sub-cortical
  - Bidirectional
    - Dual-process
    - Neurotransmitters
- **Brain structures**
  - Reticular formation
  - Amygdala
  - Basal Ganglia
  - Ventral Striatum, Nucleus Accumbens, and Ventral Tegmental Area
  - Hypothalamus
  - Insula
  - Prefrontal cortex
  - Orbitofrontal cortex
  - Ventromedial prefrontal cortex
  - Dorsolateral prefrontal cortex
  - Anterior cingulate cortex
- **Hormones**

Based on Reeve (2015, Ch 3, p. 51)

The motivated & emotional brain

"The brain is not only a thinking brain, it is also the center of motivation and emotion."

Brain

Image source:
http://commons.wikimedia.org/wiki/File:Brain_090407.jpg

Thinking brain
Cognitive & Intellectual Functions
"What task it is doing"

Motivated brain
"Whether you want to do it"

Emotional brain
"What your mood is while doing it"

Based on Reeve (2015, pp. 52-53)

Principles in motivational and emotional brain research

Specific brain structures generate specific motivational states. e.g.,
hypothalamus → hunger

Biochemical agents stimulate these brain structures. e.g.,
ghrelin → bloodstream → hypothalamus

Day-to-day events stir biochemical agents into action. e.g.,
dieting & sleep deprivation → ↑ ghrelin & ↓ leptin

Based on Reeve (2015, Ch 3, pp. 53-55)

The motivated brain: Food deprivation

"Food deprivation activates the ghrelin release that stimulates the hypothalamus to create hunger."

Environ-mental event
Food deprivation
(i.e., dieting)

→

Biochem-ical agent
Ghrelin
(a hormone) produced and circulated in the bloodstream

→

Brain struct-ure
Ghrelin stimulates **hypothalmus**

→

Aroused motivation
Stimulated hypothalamus creates the psychological **experience of hunger**

Based on Reeve (2009), Figure 3.2, p. 51

The emotional brain: Positive affect

Good events activate dopamine release that stimulates positive affect.

Environ-mental event
Unexpected pleasant event occurs

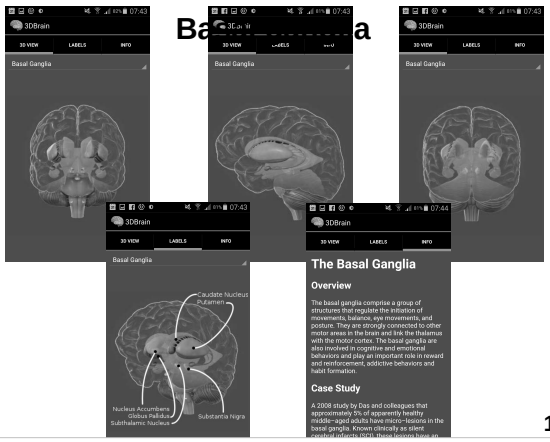
→ **Bioch-emical agent**
Dopamine (neurotransmitter) released and circulated in brain

→ **Brain struct-ure**
Dopamine stimulates limbic structures

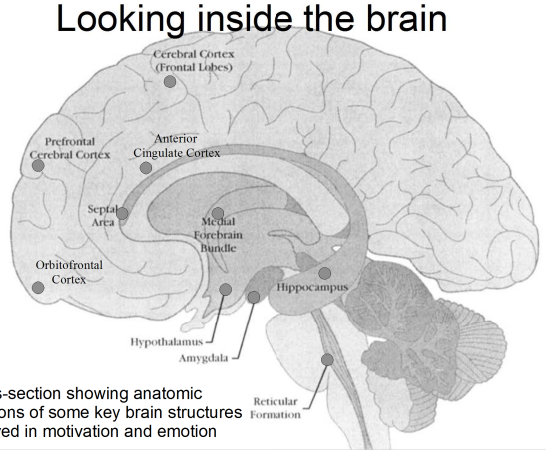
→ **Arous-ed emotion**
Good feeling, pleasure, positive affect

Based on Reeve (2009), Figure 3.3, p. 51

Ba a



Looking inside the brain



Cross-section showing anatomic positions of some key brain structures involved in motivation and emotion

Motivational & emotional states associated with brain structure: Sub-cortical

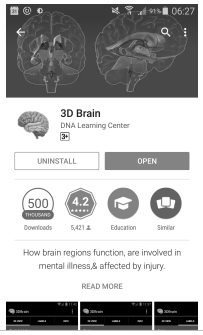
Based on Reeve (2015) Table 3.1

Brain structure	Motivational or emotional experience
Reticular formation	Arousal, alertness, wakefulness
Amygdala	Threat- and reward-eliciting behaviours
Basal ganglia	Motivational modulation of movement and action
Ventral striatum and nucleus accumbens	Brain's reward centre. Responds to signals of reward (dopamine release) to produce pleasure and liking.
Ventral tegmental area	Manufactures and releases dopamine
Hypothalamus	Regulation of eating, drinking, mating, and endocrine system.
Insular cortex (Insula)	Monitors bodily states to produce gut-felt feelings.

3D Brain App

Install to learn about the location & function of brain structures

https://play.google.com/store/apps/details?id=org.dnalc.threedbrain



3 tabs per brain structure:

- 3D view
- Labels
- Info

Motivational & emotional states associated with brain structure: Cortical

Based on Reeve (2015) Table 3.1

Brain structure	Motivational or emotional experience
Prefrontal cortex	Making plans, setting goals, formulating intentions.
Orbitofrontal cortex	Stores and processes reward-related value of objects and events.
Ventromedial prefrontal cortex	Evaluates the unlearned emotional value of sensory rewards and bodily states. Responsible for emotional control.
Dorsolateral prefrontal cortex	Evaluates the learned emotional value of environmental events and possible courses of action. Responsible for control over urges and risks.
Anterior cingulate cortex	Monitors and resolves motivational conflicts.

Motivational & emotional states associated with arousal-oriented brain structure

Brain structure	Associated motivational or emotional experience
Reticular formation	Arousal

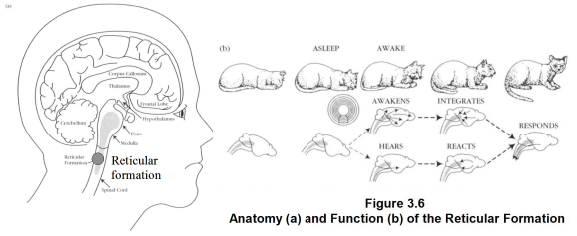


Figure 3.6
Anatomy (a) and Function (b) of the Reticular Formation

Based on Reeve (2009)

Reticular Formation

- Intermeshed neural networks throughout the brain stem
- Play a key role in arousal and awakening
- Ascending (alerts and arouses cortex) and descending parts (regulates muscle tone)

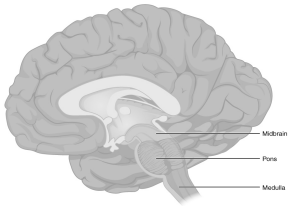


Image source: https://commons.wikimedia.org/wiki/File:1311_Brain_Stem.jpg

Based on Reeve (2015), pp. 58-60

Amygdala

- Interconnected nuclei which respond to threatening and emotionally significant events; each nuclei serves a different function involved in self-preservation e.g., anger, fear, anxiety
- Impairment -> tameness, affective neutrality, lack of emotion responsiveness, preference for social isolation over affiliation, willingness to approach previously frightening stimuli, and impaired ability to learn that a stimulus signals +ve reinforcement
- Involved in perception of others' emotions, facial expression, and our mood, especially negative emotionality
- Stimulation activates neighbouring structures (e.g., hypothalamus and release of neurotransmitters)

Source: https://commons.wikimedia.org/wiki/File:Amygdala_small.gif

Based on Reeve (2015), pp. 61-63

Basal ganglia

- Motivational modulation of movement and action – energises or inhibits implementation of action plans
- Meaning:
  - Basal: At the base (of the cortex)
  - Ganglion: Structure of several nerve cell bodies and synapses, often forming a swelling on a nerve fibre. (plural: ganglia)
- Cluster of small nuclei that work to collectively provide movement and action with motivational and emotional punch
- Closely connected to:
  - cortical areas (to receive action plans)
  - motor areas (to execute plans)

Based on Reeve (2015), p. 63

Basal ganglia

- Includes caudate nucleus, putamen, substantia nigra, and globus pallidus

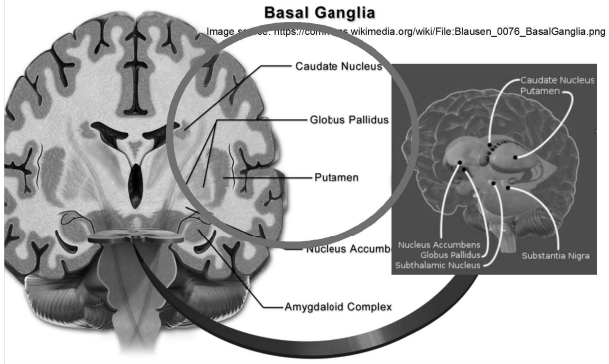


Image source: https://commons.wikimedia.org/wiki/File:Blausen_0076_BasalGanglia.png

Ventral striatum and nucleus accumbens

- Basal ganglia includes the striatum (reward centre), especially ventral (lower) striatum which includes the nucleus accumbens – where we experience hedonic (pleasantness) evaluation of stimuli
- Activation of the reward centre helps us to learn what to like/prefer and what to want
- Reward is fundamental to motivation, survival, learning, and well-being
- Environmental stimuli characteristics are processed in the amygdala and ventral striatum, with experience of pleasurable feelings occurring in the nucleus accumbens (e.g., “I like it”).

Based on Reeve (2015), pp. 63-66

Nucleus accumbens

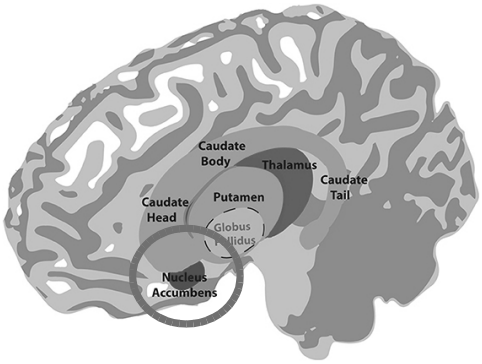


Image source: https://commons.wikimedia.org/wiki/File%3AAnatomy_of_the_basal_ganglia.jpg

Ventral tegmental area

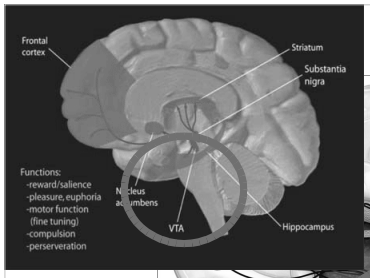


Image source: https://commons.wikimedia.org/wiki/File%3ADopamine_Pathways.png

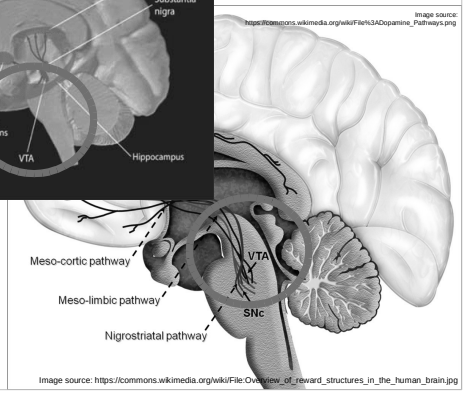


Image source: https://commons.wikimedia.org/wiki/File:Overview_of_reward_structures_in_the_human_brain.jpg

Ventral striatum

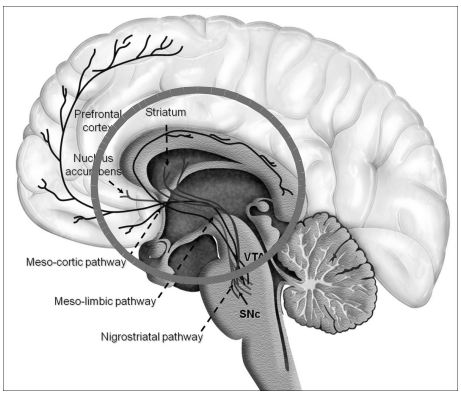


Image source: https://commons.wikimedia.org/wiki/File:Overview_of_reward_structures_in_the_human_brain.jpg

Hypothalamus

Source: https://commons.wikimedia.org/wiki/File:Hypothalamus_small.gif

- Less than 1% of brain volume, but is a 'motivational giant'
- Collection of 20 neighbouring and interconnected nuclei that serve separate and discrete functions
- Regulates the pituitary gland (endocrine system's 'master gland') which regulates hormones
- Regulates the ANS (arousal (sympathetic activation) and relaxation (parasympathetic activation) (e.g., arousal - hypo → pit → stimulates adrenal glands to produce its hormones (epinephrine, norepinephrine) → fight or flight)
- Regulates a range of important biological functions including eating, drinking, and mating

Based on Reeve (2015), pp. 66-67

Ventral tegmental area

- Neurologically, reward is dopamine release within the nucleus accumbens
- The VTA manufactures brain dopamine (a neurotransmitter)
- VTA projects fibres into the NA
- The VTA and NA form the neural basis for the dopamine-based reward centre
- VTA/NA also project into the:
  - prefrontal cortex - conscious experience of pleasure
  - orbitofrontal cortex - store learned value of environmental objects
  - basal ganglia - initiates motivated action
- Unexpected good news and anticipation of reward also trigger the dopamine-based reward pathway

Hypothalamus

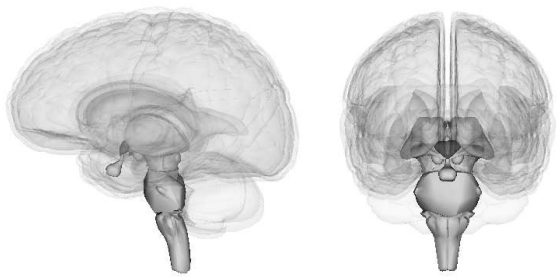


Image source: https://commons.wikimedia.org/wiki/File%3AHypothalamus_image.png

Insula (insular cortex)

- Large and highly interconnected structure deep within the brain
- Fold between posterior frontal lobe and anterior temporal lobe, above the sub-cortical brain
- Anterior part
  - Monitors “gut” (body-based) feelings e.g., disgust
  - Largely unconscious, but generates feeling-based info
- Informs sense of anxiety and risk perception about whether to trust
- Involved in perceptions of “self as cause” - self-agency

Based on Reeve (2015), pp. 67-69 **25**

Prefrontal cortex

- Cerebral cortex sends sends information to the limbic system to influence emotion
- Prefrontal cortex houses a person's conscious goals which compete against one another
- Right prefrontal cortex:
  - generates negative and avoidance-oriented feelings (BIS)
- Left prefrontal cortex
  - generates positive and approach-oriented feelings (BAS)
- Personality differences indicate greater right or left prefrontal cortex sensitivity/stability

Based on Reeve (2015), pp. 69-72 **26**

Prefrontal cortex

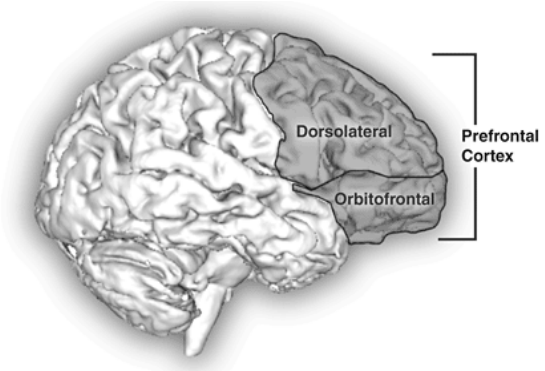
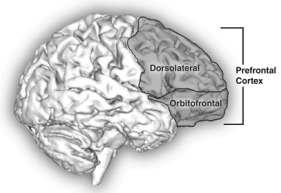


Image source: https://commons.wikimedia.org/wiki/File%3APrefrontal_cortex_(left)_animation.gif

27

Orbitofrontal cortex



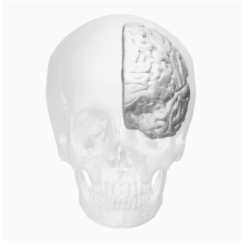
Source:https://commons.wikimedia.org/wiki/File:Prefrontal_cortex.png

- Processes incentive-related information
- Helps with making choices between options e.g., which product to buy

Based on Reeve (2015), pp. 72 **28**

Anterior cingulate cortex

- Control of day-to-day mood, volition, and making choices
- Primarily, organises cognitive resources to deal with conflicting choice options
- Decreased activity associated with sadness and depression
- Important to volition and making choices (based on PET scans)



Source: https://commons.wikimedia.org/wiki/File:Anterior_cingulate_gyrus_animation.gif

Based on Reeve (2015), p. 74 **29**

Neurotransmitter pathways in the brain

- Neurotransmitter pathway:
  Cluster of neurons that communicate with other neurons by using one particular neurotransmitter (chemical messenger)
- Motivationally relevant neurotransmitter pathways
  - Dopamine
  - Serotonin
  - Norepinephrine
  - Endorphin

Based on Reeve (2015) **30**

Neurotransmitter pathways in the brain

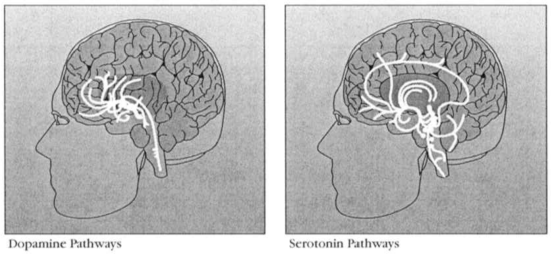


Figure 3.9 Two Neurotransmitter Pathways

Source: Mapping the Mind, by R. Carter, 1998, Berkeley: University of California Press.

Dopamine

"Dopamine release stimulates good feelings."

Dopa-mine release → **Emotional positivity** → **Enhanced functioning** Creativity and Insightful problem solving

Based on Reeve (2015), pp. 64-66

Dopamine

Release and incentives:
Incentives (stimuli that foreshadow the imminent delivery of rewards) triggers dopamine release.

Release and reward:
Dopamine release teaches us which events in the environments are rewarding.

Motivated action:
Dopamine release activates voluntary goal-directed approach responses.

Addictions:
Addictive drugs are potent reinforcers because their repeated usage produces hypersensitivity to dopamine stimulation.

Liking and wanting:
For the full experience of reward, wanting and liking need to occur together.

Based on Reeve (2015), pp. 64-66

Serotonin

Function:
Inhibitory neurotransmitter that helps in regulation of mood, feelings of relaxation, sleep, and appetite

High levels:
Tend to feel happy, calm, and mentally balanced

Low levels:
Anxious thoughts, irritable moods, and restlessness; chronic low levels are linked to mood disorders including anxiety and depression

Ways to boost:
Cognitive reframing, bright light, exercise, diet (dairy products, red meat, chicken, turkey, eggs, tofu, and other protein-rich foods)

Pharmacotherapy:
SSRIs (Selective Serotonin Reuptake Inhibitors) such as Prozac, Paxil, and Zoloft are serotoninergic anti-depressant medications.

Norepinephrine

Function:
Brain structure communication, regulates arousal and alertness, attentiveness, concentration, learning, and sleep. Mobilises the brain and body for action.

High levels:
Stress, anxiety, panic, hyperactivity, mania, insomnia

Low levels:
Lethargy, lack of zest, headaches, chronic fatigue, Parkinson's disease, Alzheimer's disease

Ways to boost:
Exercise, diet (similar to dopamine-enhancing foods – i.e., animal products and and other protein-rich foods)

Pharmacotherapy:
Tricyclic antidepressants and ADHD drugs work by stimulating the release of dopamine and norepinephrine and slow their rate of reabsorption allowing more to properly bind to receptors.

Endorphin

Function:
Communication between brain structures involved in the inhibition of pain, anxiety, and fear and in generating counteracting good feelings.

High levels:
Less stress and pain, more confidence, euphoria or runner's high

Low levels:
More pain, lower confidence, less good feeling

Ways to boost:
Stress, pain, high intensity exercise, laughter, meditation, childbirth, light to medium but not heavy alcohol consumption, ultraviolet light

Pharmacotherapy:
Opiods, but they can be highly addictive. Pain killers such as morphine, methadone, oxycodone, codeine. Heroin.

Hormones

Essential hormones underlying motivation, emotion, and behaviour

Cortisol	Testosterone	Oxytocin
•"Stress hormone" •Associated with poor intellectual functioning, negative affect, and poor health outcomes	• Associated with high sexual motivation • Underlies the mating effort	• Bonding hormone "Tend and befriend stress response" • Motivates seeking the counsel, support, and nurturance of others during times of stress

Based on Reeve (2015), pp. 74-76

Your brain is more than a bag of chemicals: David Anderson

TED Talk (16 mins)

http://www.ted.com/talks/david_anderson_your_brain_is_more_than_a_bag_of_chemicals.html

The world in which brain lives

Motivation cannot be separated from the social context in which it is embedded

- Environmental events act as the natural stimulators of the brain's basic motivational process.

We are not always consciously aware of the motivational basis of our behaviour

- A person is not consciously aware of why he or she committed the social or antisocial act.

Based on Reeve (2009), Ch 3

Summary:

Neural & physiological sources of motivation and emotion

- **Brain structures**
  (limbic (emotion) vs. cortex (goals); left and right prefrontal cortex = approach and avoid respectively)
- **Hormones**
  (hrelin/leptin for hunger/satiation, oxytocin for bonding, cortisol for stress, testosterone for mating and dominance)
- **Neurotransmitters**
  (dopamine for reward, serotonin for mood, norepinephrine for arousal, endorphin for pain)

Next lecture

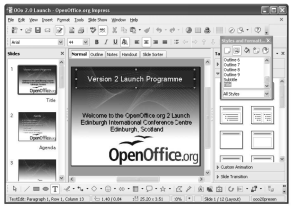
- Psychological needs (Ch 6)
- Implicit motives (Ch 7)

References

- Gerrig, R. J., Zimbardo, P. G., Campbell, A. J., Cumming, S. R., & Wilkes, F. J. (2008). *Psychology and life* (Australian edition). Sydney: Pearson Education Australia.
- Reeve, J. (2009). *Understanding motivation and emotion* (5th ed.). Hoboken, NJ: Wiley.
- Reeve, J. (2015). *Understanding motivation and emotion* (6th ed.). Hoboken, NJ: Wiley.

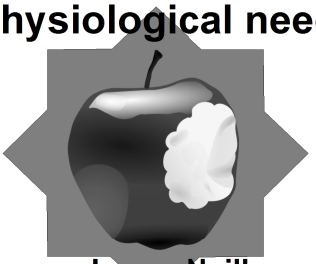
Open Office Impress

- This presentation was made using Open Office Impress.
- Free and open source software.
- http://www.openoffice.org/product/impress.html



Motivation & Emotion

Physiological needs



James Neill
Centre for Applied Psychology
University of Canberra
2017

Image source: https://commons.wikimedia.org/wiki/File:Apple_bitten.svg

Physiological needs

Reading:
Reeve (2015), Ch 4

Outline

- **Need**
- **Regulation**
  - Physiological need
  - Psychological drive
  - Homeostasis
  - Negative feedback
  - Multiple inputs/Multiple outputs
  - Intraorganismic mechanisms
  - Extraorganismic mechanisms
  - Homeostatic mechanism
- **Thirst**
  - Physiological regulations
  - Environmental influences
- **Hunger**
  - Short-term appetite
  - Long-term energy balance
  - Environmental influences
  - Self-regulatory influences
  - Weight gain and obesity
  - Comprehensive model of hunger
- **Sex**
  - **Physiological regulation**
  - **Facial metrics**
  - **Sexual scripts**
  - **Sexual orientation**
  - **Evolutionary basis of sexual motivation**

Based on Reeve (2015, Ch 3, p. 51)

Need: Any condition within a person that is essential and necessary for life, growth, and well-being.

When needs are nurtured and satisfied, well-being is maintained and enhanced.

If neglected or frustrated, the need's thwarting will produce damage that disrupts biological or psychological well-being.

Motivational states provide the impetus to act before damage occurs to psychological and bodily well-being.

Based on Reeve (2015, p.85)

Need structure: Types of needs

Needs

Physiological needs (Chapter 4)	Psychological needs (Chapter 6)	Implicit motives (Chapter 7)
• Thirst • Hunger • Sex	• Autonomy • Competence • Relatedness	• Achievement • Affiliation • Power
inherent within the workings of biological systems	inherent within the strivings of human nature and healthy development	internalised or learned from our emotional and socialisation histories

Based on Reeve (2015, p. 86)

Maslow's hierarchy of needs

Image source: http://en.wikipedia.org/wiki/File:Abraham_Maslow.jpg

- Abraham Maslow (1970) suggested that human needs can be organised hierarchically.
- **Physiological needs** (e.g., breathing, hunger) come first
- Then **psychological needs** (e.g., self-esteem) are pursued.

Maslow's hierarchy of needs

This exact order and essentiality of needs are not well supported by research.

However, simplified models e.g., Alderfer's ERG: Existence, Relatedness, Growth, are better supported.

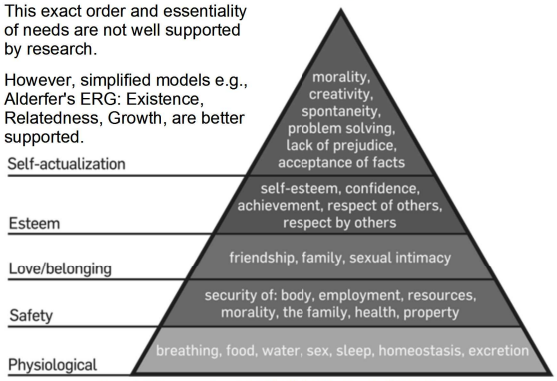


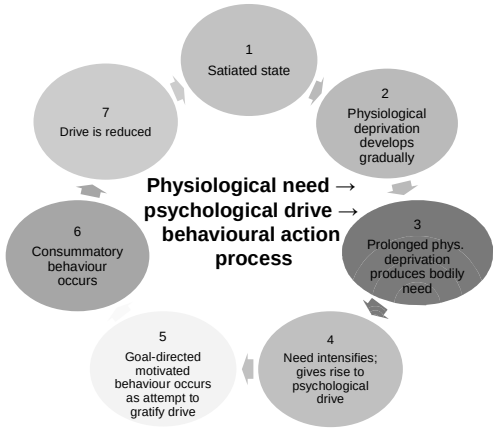
Image source: http://commons.wikimedia.org/wiki/File:Maslow%27s_Hierarchy_of_Needs.svg

Physiological needs

Inherent within the workings of biological systems.

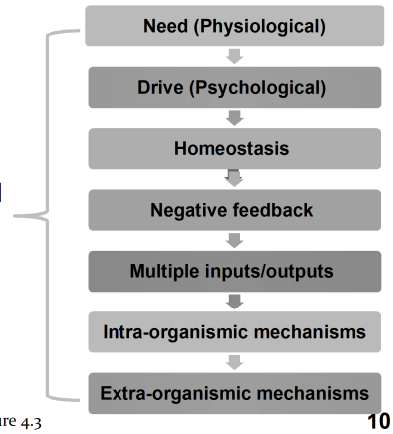
Thirst	Hunger	Sex
Consciously experienced motivational state that readies the person to perform behaviours necessary to replenish a water deficit.	Involves a complex regulatory system of short-term (glucostatic hypothesis) & long-term (lipostatic hypothesis, including set-point theory) regulation.	Sexual motivation rises and falls in response to hormones, external stimulation, external cues (facial metrics), cognitive scripts, sexual schemas, and evolutionary process.

Based on Reeve (2015, Ch 4)



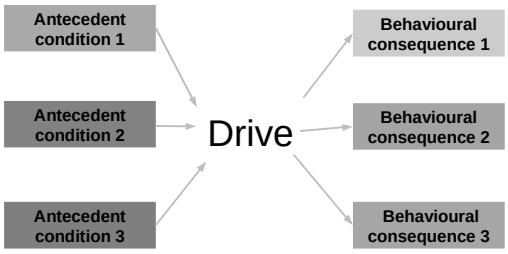
Based on Reeve (2015, Figure 4.3 Model of Need-Drive-Behaviour Sequence

Processes involved in the cyclical rise and fall of psychological drives



Based on Reeve (2009), Figure 4.3

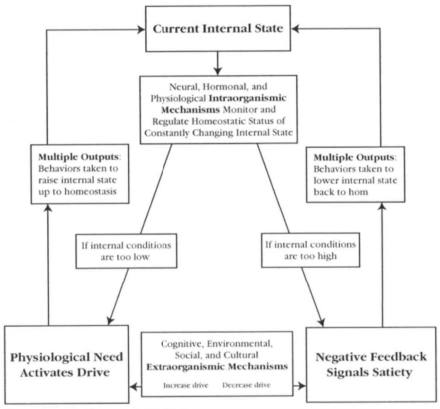
Drive as an intervening variable



Based on Reeve (2015), Figure 4.4

The homeostatic mechanism

Overview of the homeostatic mechanism and interrelationships between the seven core processes that constitute the fundamentals of regulation.



Based on Reeve (2015), Figure 4.5

Thirst

Thirst

Processes
- Physiological regulation
- Thirst activation
- Thirst satiety
- Hypothalamus and kidneys
- Environmental influences

Based on Reeve (2015, pp. 92-94)

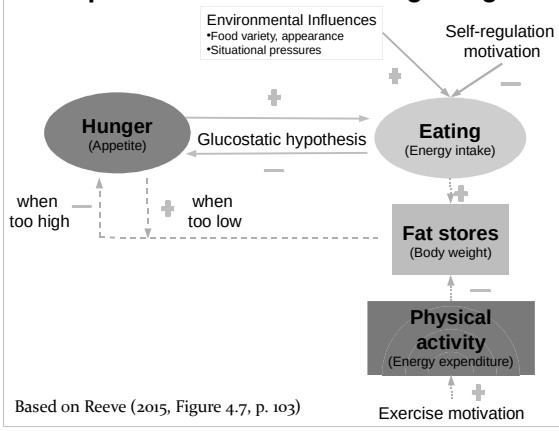
Hunger

Hunger

Processes
- Short-term appetite
- Long-term energy balance
- Comprehensive model of hunger regulation
- Environmental influences
- Restraint-release situations
- Cognitively-regulated eating style
- Weight gain & obesity
- Set point or settling points?

Based on Reeve (2015, pp. 96-103)

Comprehensive model of hunger regulation

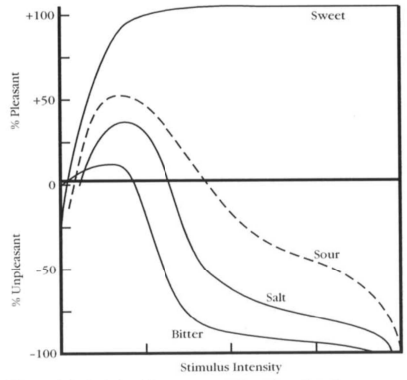


Based on Reeve (2015, Figure 4.7, p. 103)

Relative pleasantness of four taste solutions

The incentive values for four tastes:
- sweet,
- sour,
- salty,
- bitter,

represented at various stimulus intensities.



Based on Reeve (2015), Figure 4.6, p

Environmental influences

Environmental influences that affect eating behaviour: time of day, stress, and the sight, smell, appearance, and taste of food. e.g., eating behaviour increases when an individual confronts a variety of foods, a variety of nutrients, and a variety of tastes.

Ice-Cream Intake (grams) for Students Alone vs. in Group and with One vs. Three Flavours by Gender

	Social setting			
	Alone		Three-person group	
	Number of flavors		Number of flavors	
	1	3	1	3
Males	113.8	211.1	245.6	215.6
Females	76.9	137.7	128.5	170.8

Source: From "Sensory and social influences on ice cream consumption by/males and females in a laboratory setting," by S. L. Berry, W. W. Beatty, and R. C. Klesges, 1985, *Appetite*, 6, pp. 41–45.

Based on Reeve (2015, Table 4.2)

Overweight and obesity prevalence

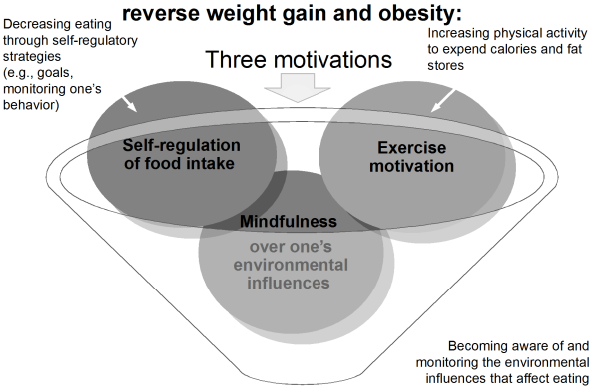
Australian Bureau of Statistics based on BMI (w/h^2):
- Underweight: 2%
- Normal: 35%
- Overweight (25-30): 35%
- Obese (> 30): 28%

} 63%

Overweight/obesity increases with age but drops off in elderly

http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4338.0~2011-13~Main%20Features~Overweight%20and%20obesity~10007

Other than surgery, three ways people can prevent or reverse weight gain and obesity:



Based on Reeve (2015, p. 102)

Sex

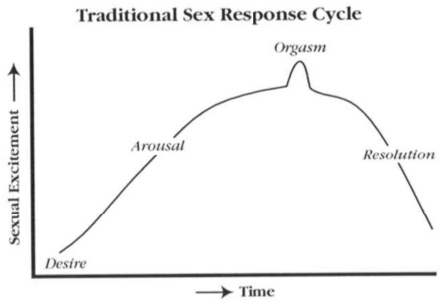
Processes

- Physiological regulation
- Facial metrics
- Sexual scripts
- Sexual orientation
- Evolutionary basis of sexual motivation

Based on Reeve (2015, Ch 4)

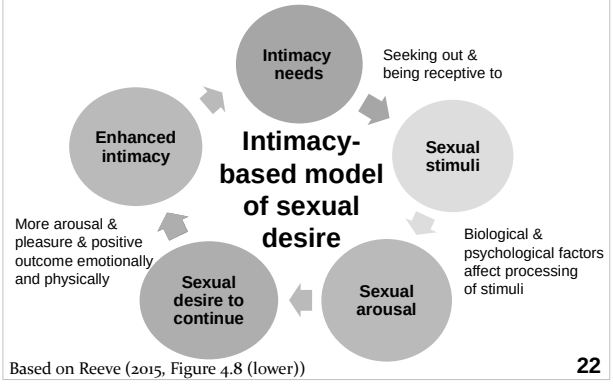
Traditional sex response cycle

Based on Reeve (2015, Figure 4.8 (upper))



The triphasic sexual response cycle describes **men's sexual motivation**.

Alternative sex response cycle



Based on Reeve (2015, Figure 4.8 (lower))

Gender differences in mate preferences

Variable	Men	Women	Gender Difference?
Physical Appearance			
Is good-looking	3.59	2.58	Yes, greater preference for men
Age			
Is younger than me by 5 years	4.54	2.80	Yes, greater preference for men
Is older than me by 5 years	4.15	5.29	Yes, greater preference for women
Earning Potential			
Holds a steady job	4.27	5.38	Yes, greater preference for women
Earns more than me	5.19	5.93	Yes, greater preference for women
Has more education than me	5.22	5.82	Yes, greater preference for women
Other Variables			
Has been married before	3.35	3.44	No significant gender difference
Has children	2.84	3.11	Yes, greater preference for women
Is of a different religion than me	4.24	4.31	No significant gender difference
Is of a different race than me	3.08	2.84	Yes, greater preference for men

Note. The possible range for each score was 1 (not at all) to 7 (very willing to marry someone who. . .).

Source: From "Mate selection preferences: Gender differences examined in a national sample," by S. Sprecher, Q. Sullivan, and E. Hatfield, 1994, Journal of Personality and Social Psychology, 66, pp. 1074–1080. Copyright 1994 by the American Psychological Association. Adapted with permission.

Based on Reeve (2015, Table 4.3)

Failures to self-regulate physiological needs

People fail at self-regulation for three primary reasons

1. People routinely underestimate how powerful a motivational force biological urges can be when they are not currently experiencing them.
2. People can lack standards, or they have inconsistent, conflicting, unrealistic, or inappropriate standards.
3. People fail to monitor what they are doing as they become distracted, preoccupied, overwhelmed, or intoxicated.

Based on Reeve (2009, p. 105)

Compatabilism: Crash Course Philosophy #25

Youtube (~11 mins)
https://www.youtube.com/watch?v=KETTtiprINU&t=10

Summary

- Satisfaction of needs is required to prevent harm and enhance well-being.
- Needs can be hierarchically arranged as existence, relatedness, and growth.
- Example physiological needs: thirst, hunger, sex, sleep, oxygen, and excretion.

Summary

- Physiological needs → psychological drive →
  behavioural action
- Comprehensive model of hunger and eating considers short-term (glucostatic) and long-term (lipostatic) regulation.
- Sexual motivation has multiple mechanisms but key models are based on evolution and intimacy

Summary

- We tend to underestimate the power of biological forces and our consumptory behaviours are particularly difficult to regulate when we were are under physiological and/or psychological stress

Next lecture

- Extrinsic motivation (Ch 05)
- Psychological needs (Ch 06)

References

- Gerrig, R. J., Zimbardo, P. G., Campbell, A. J., Cumming, S. R., & Wilkes, F. J. (2008). *Psychology and life* (Australian edition). Sydney: Pearson Education Australia.
- Reeve, J. (2009). *Understanding motivation and emotion* (5th ed.). Hoboken, NJ: Wiley.
- Reeve, J. (2015). *Understanding motivation and emotion* (6th ed.). Hoboken, NJ: Wiley.

Open Office Impress

- This presentation was made using Open Office Impress.
- Free and open source software.
- http://www.openoffice.org/product/impress.html