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Cognition and Emotion

Lecture 8: Emotion and Disorders I: Attention

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Lecture Overview

- ▶ Importance of emotion when studying cognition
- ▶ Methods of inducing emotion in research studies
- ▶ Evidence from empirical research studies
- ▶ What is Attention?
- ▶ Influence of positive and negative emotions on attention
 - ▶ Theories, empirical research, and evaluation
- ▶ Emotion and motivational intensity

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Background

- ▶ Cognitive research typically involves assessing people while in a neutral state.
- ▶ Important to also understand cognitive processes while experiencing emotion.



▶ Why?



Importance of emotion when studying cognition 4

► Ecological validity

- In our everyday lives we experience emotion while engaging in cognitive activities
- Affect (emotions) influence people's cognitions and behaviour.
- Emotional states influence perception, attention, memory, reasoning, learning, judgement, decision making, etc.

Methods of inducing emotion in cognitive research... 5

► Presenting emotional films



► Autobiographical recall

- Describing or writing about an intense emotional experience.



► Staged emotional situations

► Emotional music

Lench et al. (2011)

Research Evidence... 6

► Pêcher et al. (2009):

3 Conditions	Task	Findings
 Neutral music	Keep speed and in lane while driving in a simulator 	Neutral condition: • Control • Baseline to compare happy & sad
 Sad music		Sad condition: • Slight decrease in speed • No effect on keeping car in lane
 Happy music		Happy condition: • Decrease in speed • Reduced ability to keep car in lane

What is Attention?

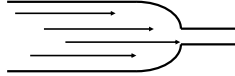
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► Gatekeeper to perception & knowledge.

- A mechanism for continued cognitive processing.

► But, it is a limited capacity information processing system.

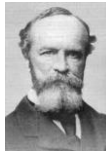
- Many sensations come in from the world, but we cannot process them all.



What is Attention?

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"It is the taking possession by the mind in clear and vivid form of one out of what seem several simultaneous objects or trains of thought...It implies withdrawal from some things in order to deal with others." William James (1890).



"The sustained concentration on a specific stimulus, sensation, idea, thought, or activity." Coleman (2001).

Attention in visual processing

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- Posner: focused visual attention = spotlight
 - Visual attention illuminates part of visual space



- Info in spotlight is processed but info outside does not receive much processing
- Important because what we remember of an event is influenced by what we attend

Attention in visual processing

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- Eriksen and St.James (1986): Zoom lens model.

We can adjust area of focal attention by increasing or decreasing it in same way as zoom lens on a camera

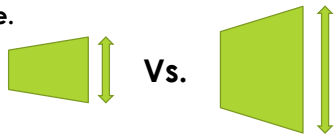


- Multiple Spotlights theory now dominates:
 - Visual attention is more flexible: split attention (Awh & Pashler, 2000; Morawetz et al., 2007)

Influence of emotion on attention

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- Much of the research focuses on how emotion affects the breadth of attention.
 - How much we can attend to at a given time.



- This has real-world practical implications.

Influence of NEGATIVE affect on attention

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- Easterbrook (1959): Breadth of attention decreases as arousal/anxiety increases.
- Positive point = less irrelevant cues included, leading to improved performance on tasks
- Negative point = 'Tunnel vision': relevant cues are missed and proficiency falls.

Practical Implications of negative affect on attention

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- ▶ Lower eyewitness memory accuracy for suspects of a crime due to stress from the event.
 - ▶ Deffenbacher et al. (2004); Valentine & Mesout (2009).
- ▶ Anxious drivers attend less to peripheral info than non-anxious drivers (Janelle et al., 1999).
 
- ▶ Impact on clinical populations (e.g., depression or anxiety) and success of treatments.

Influence of POSITIVE affect on attention

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- ▶ The Broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001, 2004).
 - ▶ Positive emotion broaden a person's 'thought-action repertoire'.
 - ▶ It expands the scope of attention & increase amount of resources available.
 - ▶ This can accumulate to enhance life skills and wellbeing.

Methods to assess the Broaden-and-build theory

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- ▶ Global/local processing task (Navon, 1977)
 - ▶ Measures allocation of attention globally (to whole stimulus) or locally to specific section.
- ▶ Responding to global feature represents broad scope of attention
- ▶ Focusing on local features shows narrowing of attention

EEEEEEEEEE	EEE	EEE
EEEEEEEEEE	EEE	EEE
EEE	EEE	EEE
EEEEEEEEEE	EEE	EEEEEEEE
EEEEEEEEEE	EEE	EEEEEEEE
EEE	EEE	EEE
EEEEEEEEEE	EEE	EEE
EEEEEEEEEE	EEE	EEE

Congruent Incongruent
 Global E Global H
 Local E Local E

Experimental evidence....

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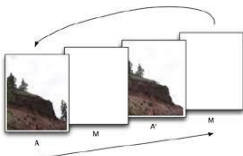
- ▶ Fredrickson and Branigan (2005):
 - ▶ Ps shown positive, negative, or neutral film.
 - ▶ Then shown letter from Navon task, alongside two other letters:
 - ▶ One similar to the original letters global feature and the other similar to the local feature.
 - ▶ When induced into positive mood, Ps would respond to global feature as opposed to local feature of letter

Evaluation of evidence

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- ▶ Bendall and Thompson (2015): question suitability of the task to measure the spread of attention.
- ▶ They argue the task measures processing style and not attentional resources.

They suggest the change detection flicker task (Rensink et al., 1997) is more appropriate, as participants must attend to different areas of each scene.



Bendall and Thompson (2015)

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- ▶ Ps induced into positive, negative, & neutral mood states.
- ▶ Asked to detect changes as fast as possible.
- ▶ Change either to centre or periphery of image
- ▶ Central changes spotted faster than peripheral (robust finding in a change detection task).
- ▶ But emotion had no impact on scope of attention
- ▶ Suggests emotion does not broaden/narrow attention, & does not support broaden-and-build

The potential positive impact of negative affect

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- ▶ Broadening of attention by positive affect not always beneficial.
- ▶ Rowe, et al. (2007): Ps in positive mood more susceptible to distractions in flanker task than those in neutral mood.
- ▶ Thus, positive emotions may not always improve performance - some situations require narrow focus of attention to complete task successfully
- ▶ Rathunde (2000): the building of social and psychological resources are too complex to be credited solely to the experience of positive emotions.

Further evaluation

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- ▶ Harmon-Jones et al. (2011): the negativity narrowing and positivity broadening approaches are limited as they only consider affect as either negative or positive.
- ▶ Research should also consider *motivational intensity*:
 - ▶ How motivated we are to approach or avoid a given situation or stimulus.

Emotion and Motivational Intensity

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- ▶ Pleasant Music = High positive affect/low motivational intensity
- ▶ Seeing attractive person = High positive affect/high motivational intensity to approach
- ▶ Hearing a sad story = High negative affect/low motivational intensity
- ▶ Being in a threatening situation = High negative affect/high motivational intensity to avoid



Emotion and Motivational Intensity

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- ▶ Positive and negative affective states that are **HIGH** in motivational intensity lead to **NARROWING** of attention.
 - ▶ Why? Because it helps people acquire desirable objects and avoid unpleasant ones.
- ▶ Positive and negative affective states that are **LOW** in motivational intensity lead to **BROADENING** of attention.
 - ▶ Why? It enables people to encounter new opportunities

Evaluation of Motivational Intensity theory

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- ▶ Breadth of attention may be more flexible than implied by theory.
- ▶ Huntsinger (2013) also suggests the breadth of attention depends on a persons currently accessible thoughts and response tendencies.
- ▶ This allows us to understand why individuals respond differently to real-life situations when in a given emotional state.



Lecture Summary

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- ▶ Findings have shown conflicting results.
 - ▶ Some evidence to support broaden-and-build theory (Fredrickson & Branigan, 2005), but other studies have found no impact of emotion on attention (Bendall & Thompson, 2015).
 - ▶ Difference between method used could explain differences.
 - ▶ Research on motivational intensity shows complexity involved in different types of emotion has an influence on spread of attention (Gable & Harmon-Jones, 2008; 2010).
 - ▶ Finally, despite clear evidence to show that positive emotion can have a beneficial impact on an individual's cognitive resources, it is important to consider both positive and negative effects of emotion and attention.
