COMP 47230 Introduction to Cognitive Science (Graduate)

Notes for 2017/2018

Topics

- History of Cognitive Science
- Language and Languaging
- Learning and Development
- Perception
- Movement
- Brains
- Social Cognition

24 lecture hours

Mandatory reading assigned for each topic: see course website

http://cogsci.ucd.ie/GraduateIntroToCogSci/

Optional reading provides entry points for discretionary reading beyond course requirements.

Evaluation

2 essays. Each 3000 words.

Essay 1: Identify a *theoretical* disagreement among 2 or 3 articles. Discuss the disagreement. Submit your essay + the source articles

Due Nov 24th

Essay 2: Discuss a variety of *empirical methods* used to investigate a specific topic.

Due Dec 15th

Poor topic choices:

language
nature vs nurture
development

These are too *general*

Likewise, don't be too specific
Don't focus on the work of one or two people

More promising topic choices

Episodic memory and age
Earworms
Change blindness
Phonological learning in second language
Auditory illusions
Time perception and physical activity
Body language in conversation
Inner speech
Lateralisation in diverse behaviours
Psychophysics of taste
Methods in studying mental imagery
Cross-species vocal communication

Plagiarism & UCD Computer Science

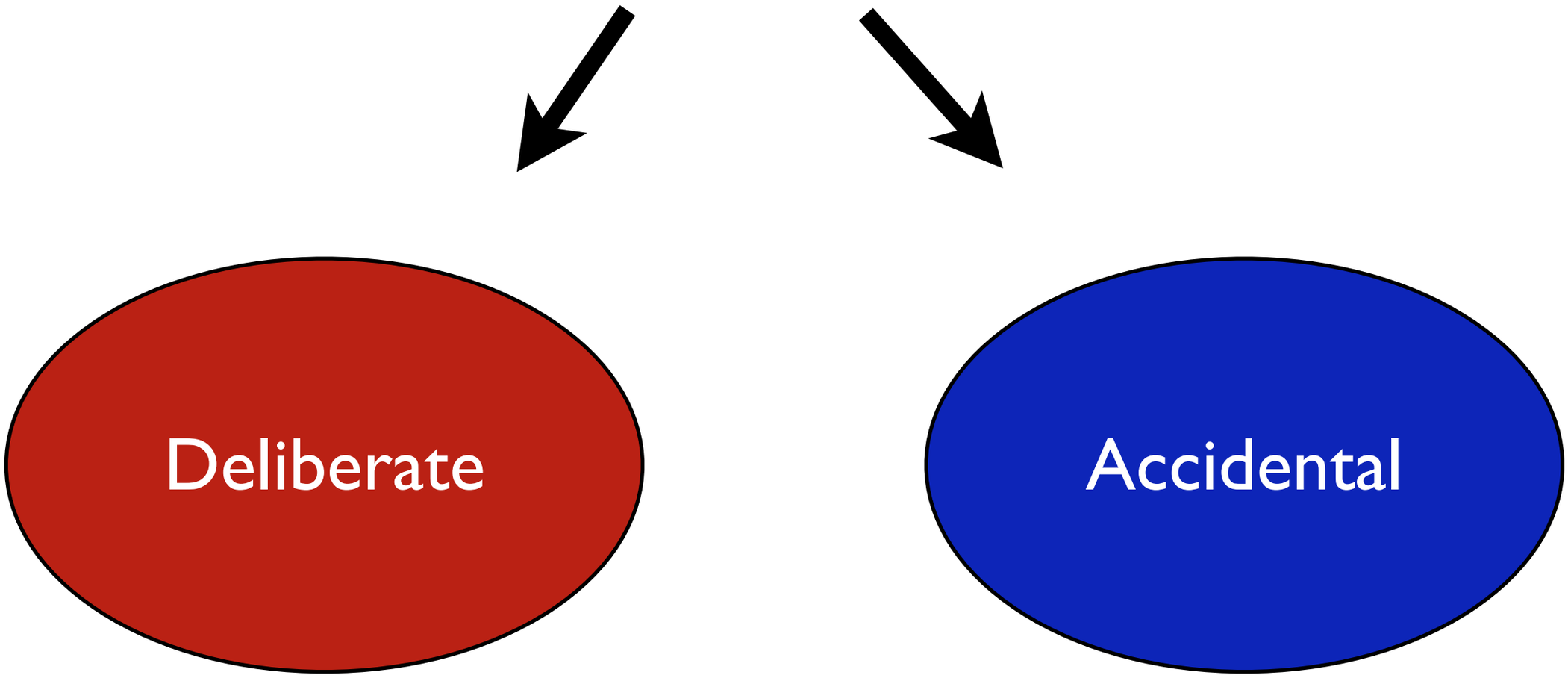
- **Plagiarism is a serious academic offence**
  - [Student Code, section 6.2] or [UCD Registry Plagiarism Policy] or [CS Plagiarism policy and procedures]
- Our staff and demonstrators are **proactive** in looking for possible plagiarism in all submitted work
- Suspected plagiarism is reported to the CS Plagiarism subcommittee for investigation
  - Usually includes an interview with student(s) involved
  - 1st offence: **usually** 0 or NG in the affected components
  - 2nd offence: referred to the **University disciplinary committee**
- Student who enables plagiarism is equally responsible

http://www.ucd.ie/registry/academicsecretariat/docs/plagiarism_po.pdf

http://www.ucd.ie/registry/academicsecretariat/docs/student_code.pdf

http://libguides.ucd.ie/academicintegrity

Plagiarism



While plagiarism may be easy to commit unintentionally, it is defined by the act not the intention. (UCD regs)

"It was a mistake", or "I didn't know" will not be considered as excuses

How Does Accidental Plagiarism Arise?

- Borrowing ideas without acknowledgment
- Failure to paraphrase
- Failure to mark quotations
- Failure to cite sources

This concise style is found in many engineering publications

1. Introduction

It is widely recognized that music in different forms takes a very important role in all cultures, and even in animals [1]. Appreciation of music is a universal phenomenon [2], which is even claimed to begin prenatally [3]. The enormous power of music, in generating complex emotions and abstract moods, has made it a suitable window to understand the higher cognitive functioning of the human brain [4,5]. Further, the investigation of functional and anatomical reorganizations in the musicians' brain due to their unique aspects of skill learning and acquisitions over many years of time is potentially considered as a role model for studying neuroplasticity [6].

References

[1] P.M. Gray, B. Krause, J. Atema, R. Payne, C. Krumhansl, L. Baptista, Biology and music—the music of nature and the nature of music, Science 291 (2001) 52–54.

[2] J.A. Sloboda, Musical Perceptions, Oxford University Press, New York, 1994.

[3] J. Hykin, R. Moore, K. Duncan, S. Clare, P. Baker, I. Johnson, R. Bowtell, P. Mansfield, P. Gowland, Fetal brain activity demonstrated by functional magnetic resonance imaging, Lancet 354 (1999) 645–646.

[4] P.E. Andrade, J. Bhattacharya, Brain tuned to music, J. Roy. Soc. Med. 96 (2003) 284–287.

[5] I. Peretz, S. Hebert, Toward a biological account of music experience, Brain Cognition 42 (2000) 131–134.

[6] T.F. Munte, E. Altenmuller, L. Jancke, The musician's brain as a model of neuroplasticity, Nature Rev. Neurosci. 3 (2002) 473–478.

More verbose styles (Harvard, APA) are common in the humanities and biological sciences

1. Introduction

Previous studies using electroencephalographic (EEG), magnetoencephalographic (MEG), and functional magnetic resonance imaging (fMRI) techniques have investigated cortical responses to the execution, imagination, and perception of music events (Elbert et al., 1995; Petsche et al., 1996; Maess et al., 2001; Nirkko et al., 2001; Koelsch et al., 2001, 2002; Langheim et al., 2002; Kristeva et al., 2003). In the study of these responses, EEG and MEG techniques provide a high temporal resolution (msec) but a low (cm) and medium (bit more than a cm) spatial resolution, respectively. On the contrary, fMRI provides a high spatial resolution (mm) but a low temporal resolution (more than a sec). On the whole, these techniques have shown that primary and premotor sensorimotor cortical areas are active during both preparation (time preceding the execution) and execution of a music performance (Kristeva et al., 2003; Koelsch et al., 2001, 2002; Maess et al., 2001). Furthermore EEG and MEG techniques have shown that the imagination, observation, and learning of music performances are characterized by peculiar patterns of cortical activity (Kristeva et al., 2003; Elbert et al., 1995; Petsche et al., 1996; Langheim et al., 2002; Nirkko et al., 2001).

REFERENCES

Altenmüller E, Schürmann K, Lim VK, and Parlitz D. Hits to the left, flops to the right: Different emotions during listening to music are reflected in cortical lateralisation patterns. *Neuropsychologia*, 40: 2242–2256, 2002.

Babiloni C, Del Percio C, Rossini PM, Marzano N, Iacoboni M, Infarinato F, et al. Judgment of actions in experts: A high-resolution EEG study in elite athletes. *NeuroImage*, 45(2): 512–521, 2009.

Berkowitz AL and Ansari D. Generation of novel motor sequences: The neural correlates of musical improvisation. *NeuroImage*, 41(2): 535–543, 2008.

Berkowitz AL and Ansari D. Expertise-related deactivation of the right temporoparietal junction during musical improvisation. *NeuroImage*, 49(1): 712–719, 2010.

Blair C and Smith A. EMG recording in human lip muscles: Can single muscles be isolated? *Journal of Speech and Hearing Research*, 29(2): 256–266, Jun 1986.

British Standard BS EN 60601-1-1. *Medical Electrical Equipment. General Requirements for Safety. Collateral Standard. Safety Requirements for Medical Electrical Systems*. London, UK: British Standards Institution, 2001.