

Module:
Psychological Foundations of Mental Health

Week 1:
Introduction to Cognitive Psychology



Professor Richard Brown

Topic 3:
The cognitive (r)evolution
Part 3 of 3

Schemas (Schemata)



Immanuel Kant
(1724 – 1804)



Jean Piaget
(1896-1980)



Ulric Neisser
(1928 – 2012)

Neisser (1967)

Cognitive schema

What is a schema?

A schema is an organised abstract representation of knowledge about a particular situation or thing

Built up over a lifetime → direct experience
→ indirect knowledge

Ambiguity → 'Cognitive Dissonance' → Adjust perception or interpretation

Why should we have schemas?

Schemas are culturally relative → words
Triggers activate schemas → sights
sounds
smells

Quickly pattern match
Stored template
Use past experience
How to behave
How to perceive world, what to believe

The baby face or 'cuteness' schema

Innate structures?

Physical appearance

Baby face schemas

Automatic age-orientation

Behaviour rewards baby faces

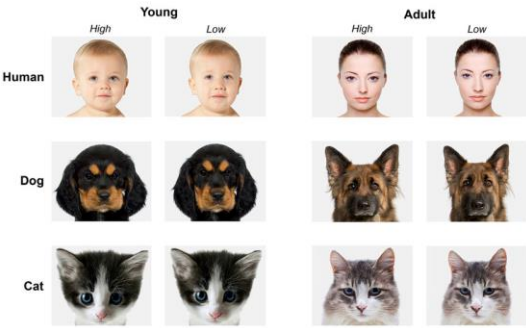
Cute!

Corresponding brain activity



Sprenkelmeyer et al (2009), Glocker et al (2008)

The baby schema and the ‘ahh – cute’ response



Average cuteness ratings by adults and children given to images of adult and young faces of three species (human, dog, and cat).

	Human adult		Human infant		Dog		Puppy		Cat		Kitten	
	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Children (n = 32)	2.7 (1.3)	2.5 (1.0)	3.5 (1.1)	3.2 (1.2)	3.7 (1.2)	3.7 (1.1)	3.8 (1.1)	3.5 (1.2)	3.6 (1.2)	3.5 (1.1)	3.9 (1.0)	3.6 (1.1)
Adults (n = 58)	2.4 (0.9)	2.2 (0.7)	3.6 (1.1)	3.0 (1.1)	3.6 (0.9)	3.5 (0.9)	4.1 (0.9)	4.0 (0.9)	3.0 (1.0)	2.7 (1.0)	3.8 (0.8)	3.9 (0.9)

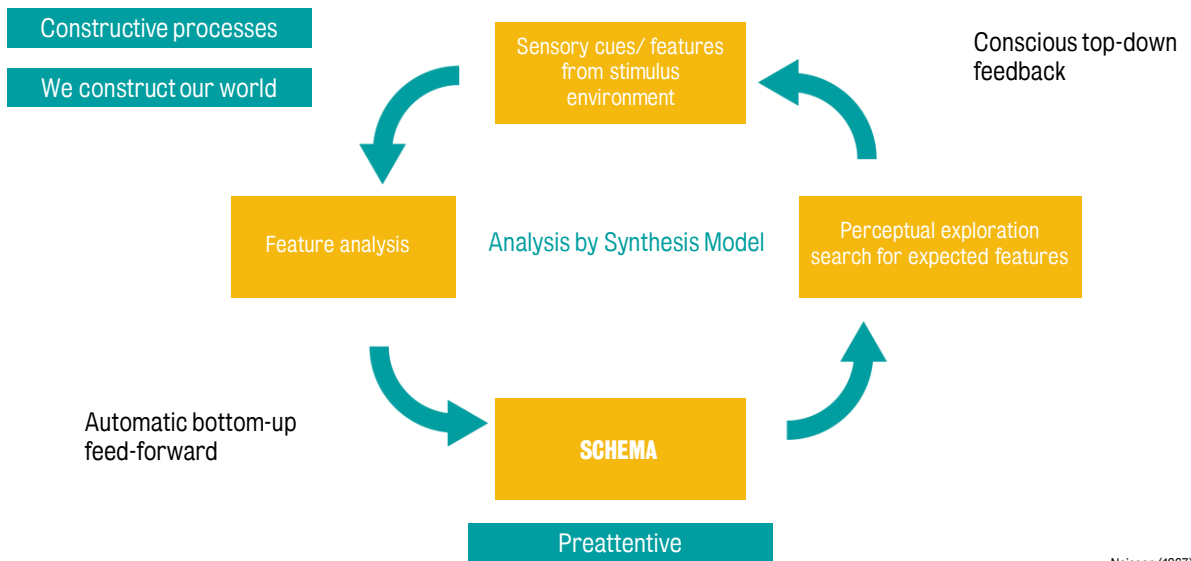
Borgi et al. (2014)

Baby schema and cognitive dissonance

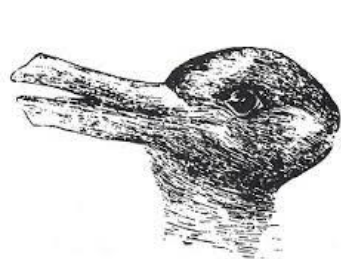


Mixing adult and child-like features can cause unsettling imagery

Schema and perception



Ambiguous and hidden figures



Schema and memory

Schemas provide framework



Memory is constructive process

Method

Participants wait in room for 35 seconds
Set up as office
61 items – saliency, schema expectancy
Expected items missing
Unexpected items included
Tested for memory of items

Results

Remember obvious (expected) items
Remember unexpected (salient) items
Falsely remember expected items that were not there



Fill in the gaps
Construct a memory

Brewer & Treyens (1981), Bower & Black (1979)

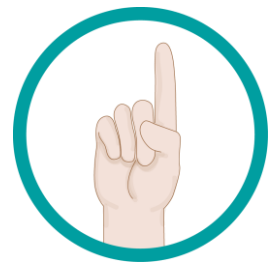
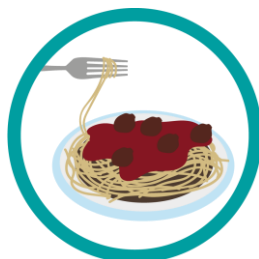
Other types of schema: Event schema

How to act

Event schema

Example: Restaurant

Script



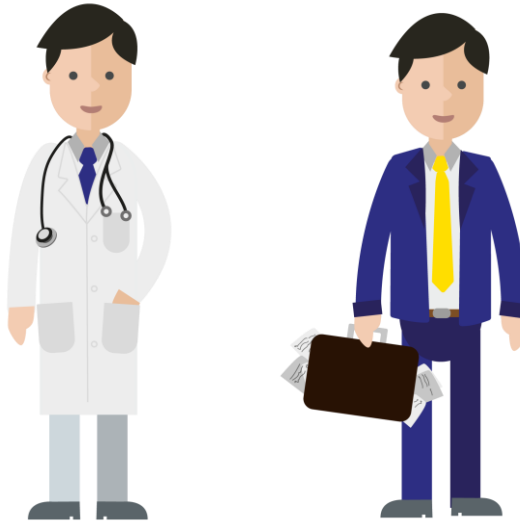
Other types of schema: Role schema

Professions

Attributes
Dichotomised

Age, gender, race

Stereotypes
Prejudice



Self schema



Negative self-schema
increases vulnerability to
mental health problems

**This brings us to the end of this third topic
and the end of the first week of the module.**

References

- Borgi, M., Cogliati-Dezza, I., Brelsford, V., Meints, K., & Cirulli, F. (2014). Baby Schema in Human and Animal Faces Induces Cuteness Perception and Gaze Allocation in Children. *Developmental Psychology* 5: 411.
- Bower, G.H. & Black, J.B. (1979). Scripts In Memory For Text. *Cognitive Psychology*. 11: 177 – 220.
- Brewer, W.F. & Treyens, J.C. (1981). Role Of Schemata In Memory For Places. *Cognitive Psychology*. 13: 2077230
- Craik, F.I.M. & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology: General*, 104: 268-294.
- Glocker, M., Langleben, D.D., Ruparel, K., Loughhead, J.W., Gur, R.C. & Sachser, N. (2008). Baby Schema in Infant Faces Induces Cuteness Perception and Motivation for Caretaking in Adults. *Ethology* 115: 257–263.
- Greenwood, J. D. (1999). Understanding the 'cognitive Revolution' in Psychology. *Journal of the History of the Behavioral Sciences* 35: 1–22. doi:10.1002/(SICI)1520-6696(199924)35:1<1::AID-JHBS1>3.0.CO;2-4.
- Keller, T.A., Just, M.A. (2015). Structural and functional neuroplasticity in human learning of spatial routes. *NeuroImage*: [10.1016/j.neuroimage.2015.10.015](https://doi.org/10.1016/j.neuroimage.2015.10.015)
- Maguire E.A., Woollett K., Spiers H.J. (2006). London taxi drivers and bus drivers: a structural MRI and neuropsychological analysis. *Hippocampus*. 16:1091-101.
- Neisser, U. (1967). *Cognitive Psychology*. 1st Edition edition. New York: Prentice Hall.
- Shepard, R. & Metzler, J. (1971). [Mental rotation of three-dimensional objects](#). *Science* 171: 701- 703.
- Sprengelmeyer, R., Perrett, D., Fagan, E., Cornwell, R., Lobmaier, J., Sprengelmeyer, A., Aasheim, H., Black, I., Cameron, L., Crow, S., Milne, N., Rhodes, E., & Young, A. (2009). The Cutest Little Baby Face: A Hormonal Link to Sensitivity to Cuteness in Infant Faces. *Psychological Science*, 20: 149–154.

References

Sternberg, S. (1966). High-speed scanning in human memory. *Science*, 153: 652-654.

Tolman, E. C., & Honzik, C. H. (1930). Introduction and removal of reward, and maze performance in rats. *University of California Publications in Psychology*, 4: 257–275.

Tolman, E.C. (1948). Cognitive maps in rats and men. *Psychological Review*, 55: 189-208.

Attributions

“Rabbit–duck Illusion.” *Wikipedia, the Free Encyclopedia*, February 26, 2016. https://en.wikipedia.org/w/index.php?title=Rabbit%E2%80%93duck_illusion&oldid=707029204.

“My Wife and My Mother-in-Law.” *Wikipedia, the Free Encyclopedia*, April 8, 2016. https://en.wikipedia.org/w/index.php?title=My_Wife_and_My_Mother-in-Law&oldid=714314043.

Dalmation picture from Gregory R (1970). *The intelligent eye*. McGraw-Hill, New York. (Photographer: Ronald C James), First publication of the picture probably in *Life Magazine*. 58: 120.

Salvadore Daili, Slave Market with the Disappearing Bust of Voltaire (1940)