

## Table of Contents

- **Multiple Neural Pathways for Encoding Visual Shape**
  - **Dorsal Visual Cortex Processes for Shape Perception**
    - Shape of 3D concavities
    - 3D letter recognition
  - **Role of the Basal Ganglia in Shape-based Object Recognition**
  - **Influence of Physical Size on Perception and Memory for Objects**
    - Effect of real-world size on object shape perception
    - Effects of large-scale spatial separation on word item memory
- **Identifying Object Shape Features**
  - How does the visual system identify parts of common objects?
  - Which face features do we use to recognize different emotions?
  - Detecting clusters of objects
- **Visual Numeracy**
  - Cortical networks for understanding numbers
    - Mathematical Ways of Operating - Neural Correlates
    - Meta-analysis of numeracy neuroimaging
  - How does visual grouping affect enumeration?
  - How do generative AI image models estimate number?
- **Visual Esthetics**
- **Hearing Disorders**

Summary outline of research studies currently active.

*In addition to holding brief descriptions of the projects, these wiki pages are used by the lab to document ongoing work (for example, software programming notes).*

*We like to write lots of notes on the fly. The waist-deep-in-a-project, nuts-and-bolts documentation pages are usually only available to lab members.*

*We are happy to share code and techniques upon request.*

---

# Multiple Neural Pathways for Encoding Visual Shape

# Dorsal Visual Cortex Processes for Shape Perception

## Shape of 3D concavities

fMRI of perceiving shape from 3D concavities



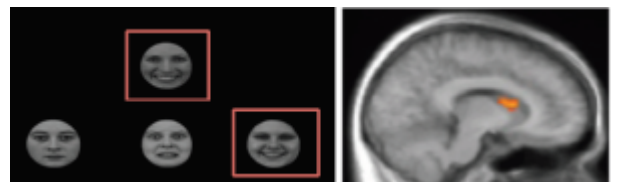
## 3D letter recognition

3D letter recognition and visual crowding



# Role of the Basal Ganglia in Shape-based Object Recognition

Holistic perception in Parkinson's Disease

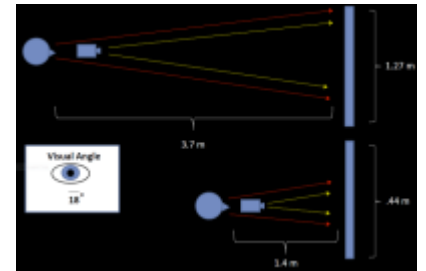


# Influence of Physical Size on Perception and Memory for

# Objects

## Effect of real-world size on object shape perception

Physical Size and Holistic Perception



fMRI Study on Physical Size and Holistic Perception

## Effects of large-scale spatial separation on word item memory

Learning in Large-Scale Interactive Displays

---

# Identifying Object Shape Features

## How does the visual system identify parts of common objects?

Crowding and parts-based recognition

Deferred decisions in object recognition

## **Which face features do we use to recognize different emotions?**

[Name That Emotion!](#)

## **Detecting clusters of objects**

[What is a Cluster?](#)

---

# **Visual Numeracy**

## **Cortical networks for understanding numbers**

### **Mathematical Ways of Operating - Neural Correlates**

[Mathematical Ways of Operating - Neural Correlates](#)

### **Meta-analysis of numeracy neuroimaging**

[Meta-analysis of intraparietal sulcus \(IPS\) fMRI activation during numerical reasoning](#)

## **How does visual grouping affect enumeration?**

[Visual Number Sense](#)

[Visual Number Sense fMRI](#)

# Visual Esthetics

Color preference

From:

<https://www.wiki.anthonycate.org/> - **Visual Cognitive Neuroscience**

Permanent link:

<https://www.wiki.anthonycate.org/doku.php?id=research:research&rev=1558555692>

Last update: **2019/05/22 16:08**

