Evolutionary Psychology and social cognition

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Conceptual toolkit

• The brain: a functional system
• Proximal/Ultimate
• Ancestral environment
• Proper domain / Actual domain
• Domain specificity
• Modularity
The brain: A functional system
The brain: A functional system
Figure 1. Algorithm for treatment of nausea and vomiting of pregnancy: If no improvement, proceed to next step.

**Add any of the following:**
(Listed in alphabetical order)
- chlorpromazine 10 to 25 mg every 4 to 6 h PO or IM or 50 to 100 mg every 6 to 8 h PR
- metoclopramide 5 to 10 mg every 8 h IM or PO
- ondansetron 4 to 8 mg every 6 to 8 h IM or PO
- prochlorperazine 5 to 10 mg every 6 to 8 h IM or PO
- promethazine 12.5 to 25 mg every 4 to 6 h IM, PO, or PR

**Start rehydration treatment:**
- IV fluid replacement (per local protocol)
- multivitamin IV supplementation
- dimenhydrinate 50 mg (in 50 mL of saline, over 20 min) every 4 to 6 h IV

**NOTE**
- Use of this algorithm assumes that other causes of NVP have been ruled out. At any step, when indicated, consider total parenteral nutrition.
- At any time you can add any or all of the following:
  - vitamin B6 (25 to 50 mg orally every 8 h PO)
  - vitamin B12 (1000 mg/m², intramuscular or subcutaneous, every 7 h PO)

Add 1 of the following:
- methylprednisolone 15 to 20 mg every 8 h IV or 1 mg/kg continuously up to 24 h
- ondansetron 8 mg every 15 min every 12 h IV or 1 mg/kg continuously up to 24 h

**Add any of the following:**
(Listed in alphabetical order)
- chlorpromazine 25 to 50 mg every 4 to 6 h IV
- metoclopramide 5 to 10 mg every 8 h IV
- prochlorperazine 5 to 10 mg every 6 to 8 h IV

**NO DEHYDRATION**

Add any of the following:
(Listed in alphabetical order)
- chlorpromazine 10 to 25 mg every 4 to 6 h PO or PR up to 200 mg/d when taking 4 Diabetex tablets daily (if vomiting frequently, take 50 to 45 min before taking Diabetex); or promethazine 12.5 to 25 mg every 4 to 6 h PO or PR.

**DEHYDRATION**
The brain: A functional system
The brain: A functional system
The brain: A functional system
The brain: A functional system
The brain: A functional system

456 435 567 x 567 435 098 = ?
The brain: A functional system
The brain: A functional system
The brain: A functional system
The brain: A functional system

• « Why » questions

• « How » questions
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Environment of Evolutionary Adaptedness (EEA)
Ultimate level / Proximal level
Ultimate level / Proximal level
Ultimate level / Proximal level

**Fight-or-flight Response**

- **Hypothalamus**
  - activates sympathetic nervous system
    - activates adrenal medulla
      - impulses activate glands and smooth muscles
      - releases norepinephrine
      - releases epinephrine
    - bloodstream
      - neural activity combines with hormones in the bloodstream to constitute fight-or-flight response
  - activates adrenal-cortical system by releasing CRF
    - pituitary gland secretes hormone ACTH
      - ACTH arrives at adrenal cortex and releases approximately 30 hormones

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Ultimate level / Proximal level

- heart rate and blood pressure increase
- veins in skin constrict to send more blood to major muscle groups (responsible for the "chill" sometimes associated with fear -- less blood in the skin to keep it warm)
- blood-glucose level increases
- muscles tense up, energized by adrenaline and glucose (responsible for goose bumps -- when tiny muscles attached to each hair on surface of skin tense up, the hairs are forced upright, pulling skin with them)
- smooth muscle relaxes in order to allow more oxygen into the lungs
- nonessential systems (like digestion and immune system) shut down to allow more energy for emergency functions
- trouble focusing on small tasks (brain is directed to focus only on big picture in order to determine where threat is coming from)
Proper domain and actual domain

Figure 1. (a) The proper domain (blue) and the actual domain (red) of a cognitive module. In assigning items to a domain, it is likely that there will be some false negatives and some false positives. (b) The proper domain (blue) and the actual domain (red) of hover flies. The actual domain is outlined by a yellow and blackstripe, as conceptualised for hover flies in painting images.
Proper domain and actual domain
Proper domain and actual domain
Ultimate level / Proximal level

Behavioral level

Neuro-cognitive level

Evolutionary level
Proper domain and actual domain
Proper domain and actual domain
Domain specificity
Domain specificity
Modularity
Modularity
Modularity
# System 1 vs. System 2

## Table 1: General Features of the Two Systems

<table>
<thead>
<tr>
<th>The Intuitive system</th>
<th>The Reasoning System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast and effortless</td>
<td>Slow and effortful</td>
</tr>
<tr>
<td>Process is inaccessible; only results enter awareness</td>
<td>Process is consciously accessible and viewable</td>
</tr>
<tr>
<td>Does not demand attentional resources</td>
<td>Demands attentional resources, which are limited</td>
</tr>
<tr>
<td>Parallel distributed processing</td>
<td>Serial processing</td>
</tr>
<tr>
<td>Pattern matching; thought is metaphorical, holistic</td>
<td>Symbol manipulation; thought is truth preserving, analytical</td>
</tr>
<tr>
<td>Common to all mammals</td>
<td>Unique to humans over age 2, and perhaps some language-trained apes</td>
</tr>
<tr>
<td>Context dependent</td>
<td>Context independent</td>
</tr>
<tr>
<td>Platform dependent (depends on the brain and body that houses it)</td>
<td>Platform independent (the process can be transported to any rule following organism or machine)</td>
</tr>
</tbody>
</table>

Note. These contrasts are discussed in Bruner (1986); Chaiken (1980); Epstein (1994); Freud (1900/1976); Margolis (1987); Metcalfe and Mischel (1999); Petty & Cacioppo (1986); Posner and Snyder (1975); Pyszczynski and Greenberg (1987); Reber (1993); Wegner (1994); Wilson (in press); and Zajonc (1980).