Evolu&onary Psychology

and social cogni&on

Nicolas Baumard

Coralie Chevallier
Conceptual toolkit

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

Give 10 mg of doxylamine combined with 10 mg of pyridoxine (Dizacyn, delayed release) up to 4 tablets daily (ie., 2 at bedtime, 1 in the morning, and 1 in the afternoon). Adjust schedule and dose according to severity of symptoms.

Add dimenhydrinate 50 to 100 mg every 4 to 6 h PO or PR up to 200 mg/d when taking 4 Dizacyn tablets daily (if vomiting frequently, take 50 to 45 min before taking Dizacyn) or promethazine 12.5 to 25 mg every 4 to 6 h PO or PR.

NO DEHYDRATION

DEHYDRATION

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 4 h IM or PO
- omeprazole 4 to 8 mg every 6 to 8 h 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 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 parental nutrition.

At any time, any of the following:
- pyridoxine (vitamin B6); 25 to 50 mg every 6 PO
- ginger root powder, tablet, or extract
- up to 1000 mg/d oral
- acupuncture or acupressure at nuchal P6

Study showed that up to 8 tablets daily did not increase baseline risk for "nausea" in fetuses or any other adverse effects. Monitor for potential side effects of Dizacyn and other H1 blockers.

No study has compared esomeprazole fluid replacement for NVP.

Safety of up to 200 mg/d of B6 has been confirmed.

Ginger products are not standardized.

Starches are not recommended during the first 10 wk of pregnancy because of possible increased risk for oral clefts.

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

IM — intramuscular; IV — intravenous; NVP — nausea and vomiting of pregnancy; PO — by mouth; PR — by rectum.
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
The brain: A functional system

• "Why" questions
• "How" questions
Ulimate level

Proximal level Evolutionary level

Behavioral level Neuro-cognitive level
Ul&mate
level
Proximal
level
Evolu&tionary
level
Behavioral
level
Neuro‐cogni&ve
level
**Fight-or-flight Response**

- **Hypothalamus**
  - Activates sympathetic nervous system
  - Activates adrenal medulla
    - Impulses activate glands and smooth muscles
    - Releases norepinephrine
    - Releases epinephrine
    - Bloodstream

- **Adrenal-cortical system**
  - Activates by releasing CRF
  - Pituitary gland secretes hormone ACTH
    - ACTH arrives at adrenal cortex and releases approximately 30 hormones

**Neural activity combines with hormones in the bloodstream to constitute fight-or-flight response**

©2005 HowStuffWorks
Fight-or-Flight Response

- 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 any 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)
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 a wasp-detector module. An area of the actual domain (shown in black and yellow stripes) is occupied by hover flies mimicking wasps (false positives).
Proper domain and actual domain.
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 unintentional and runs automatically</td>
<td>Process is intentional and controllable</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>
</tbody>
</table>

Context dependent  | Context independent
Platform dependent (depends on the brain and body that houses it) | Platform independent (the process can be transported to any rule following organism or machine)

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).