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.

**NO DEHYDRATION**

Add any of the following:
- 10 mg of doxylamine combined with 10 mg of pyridoxine (Dieclectin, delayed release) up to 4 tablets daily
- Metoclopramide 10 mg PO every 4 to 6 h
- Promethazine 12.5 to 25 mg PO every 4 to 6 h
- Sodium citrate 100 mg PO every 4 to 6 h
- Dimenhydrinate 50 to 100 mg PO or PR every 4 to 6 h

**DEHYDRATION**

Add rehydration therapy:
- IV fluid replacement (per local protocol)
- Prophylactic IV hydration
- Metoclopramide 10 mg PO every 4 to 6 h
- Promethazine 12.5 to 25 mg PO every 4 to 6 h
- Chlorpromazine 25 to 50 mg PO or PR every 4 to 6 h
- Dimenhydrinate 50 to 100 mg PO every 4 to 6 h

**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:
  - Pyridoxine (vitamin B6) 25 to 50 mg PO every 8 h
  - Ginger root powder, capsules, or extract up to 1000 mg/d

Additional notes:
- Chlorpromazine is not recommended during the first 10 wk of pregnancy because of possible increased risk for endotoxins.
- Nausea and vomiting of pregnancy (NVP) — nausea and vomiting of pregnancy, PO — by mouth, PR — by rectum.
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- « 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

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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 model in explaining how cognitive deficits (false negatives) and false positives are represented. (b) The natural ecology of common hover flies (Diptera) and the potential for cross-contamination of the domain of interest (represented by the black circle) by species of hover flies that share congenital traits with them.
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 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>
<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).