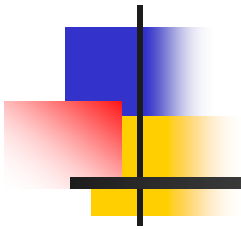
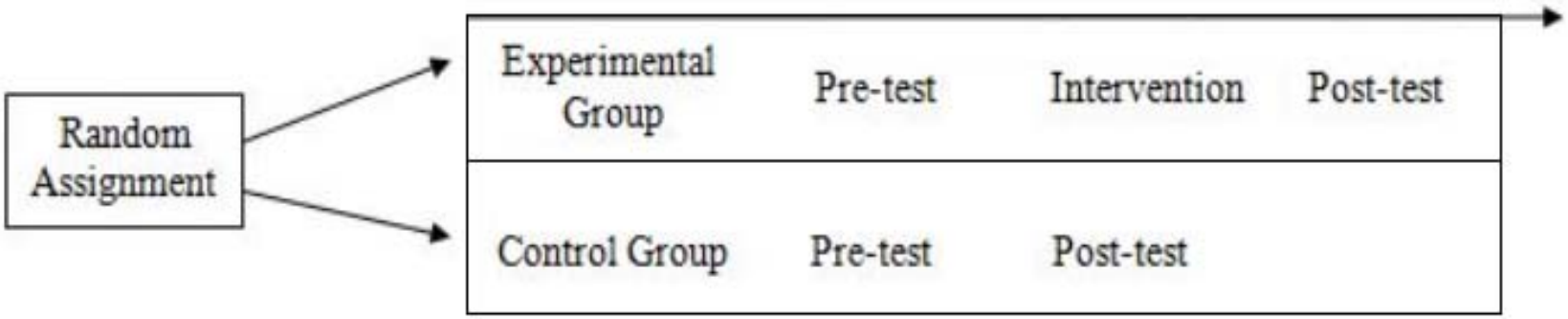


Emotion and Cognition

Emotion and Cognition

- Once regarded as distinctly separate concepts
- Researchers control for the effects of emotion on thinking by creating "neutral" study environments



Emotion and Cognition

- Emotion can be difficult to scientifically quantify
  - Involves conscious, unconscious, and subjective evaluations of stimuli or "attitude objects"


RAAAAAAAA
AAAAAAAAA
AAAAAAAAA
AAAAAAAAA
AAAAAAAAA
AAAAAGE!!!

Emotion and Cognition

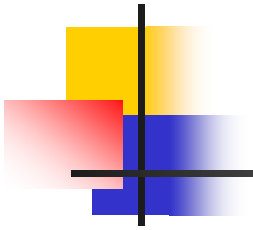
- Research shows emotional processing can operate independently from cognitive thought

  (a) Mere exposure effect (Zajonc): Preferences need no inference

  (b) Cognitive fluency: Previously encountered stimuli is easier to mentally process

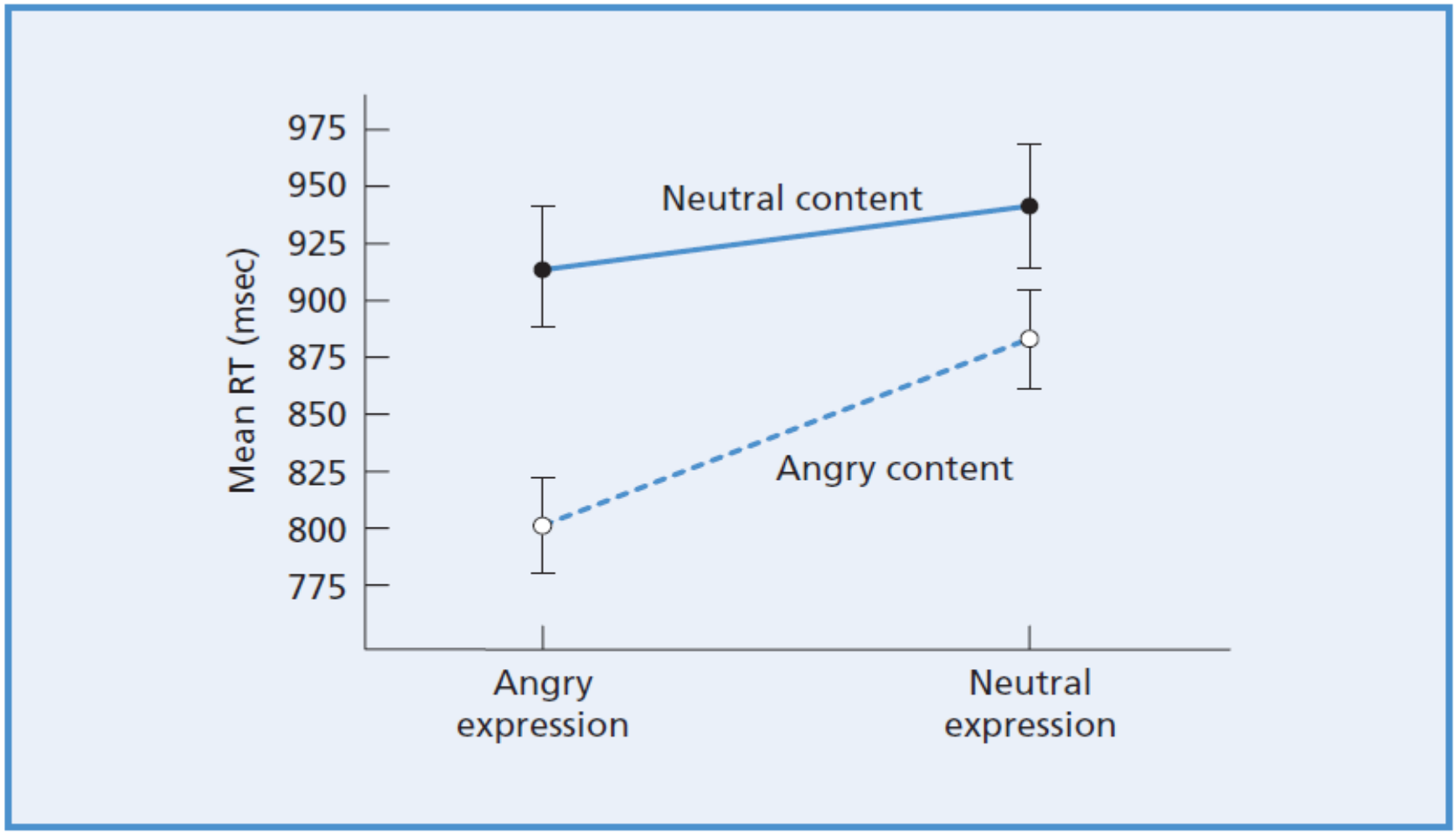
Emotion and Cognition

- Viewing emotion-laden visual stimuli heightens cortical activation
- Stronger responses for stimuli with emotional content (e.g., a battle) vs. neutral scenes (e.g., eating cereal)

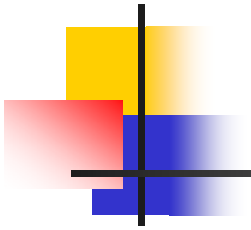


Emotion and Cognition

- **Emotion and Person Evaluation** (Bower, 1980s)
  - Angry and happy faces perceived more rapidly in visual search tasks vs. neutral faces
  - Emotionally-derived words produce similar effects when compared to neutral words ("crazy" vs. "lake")

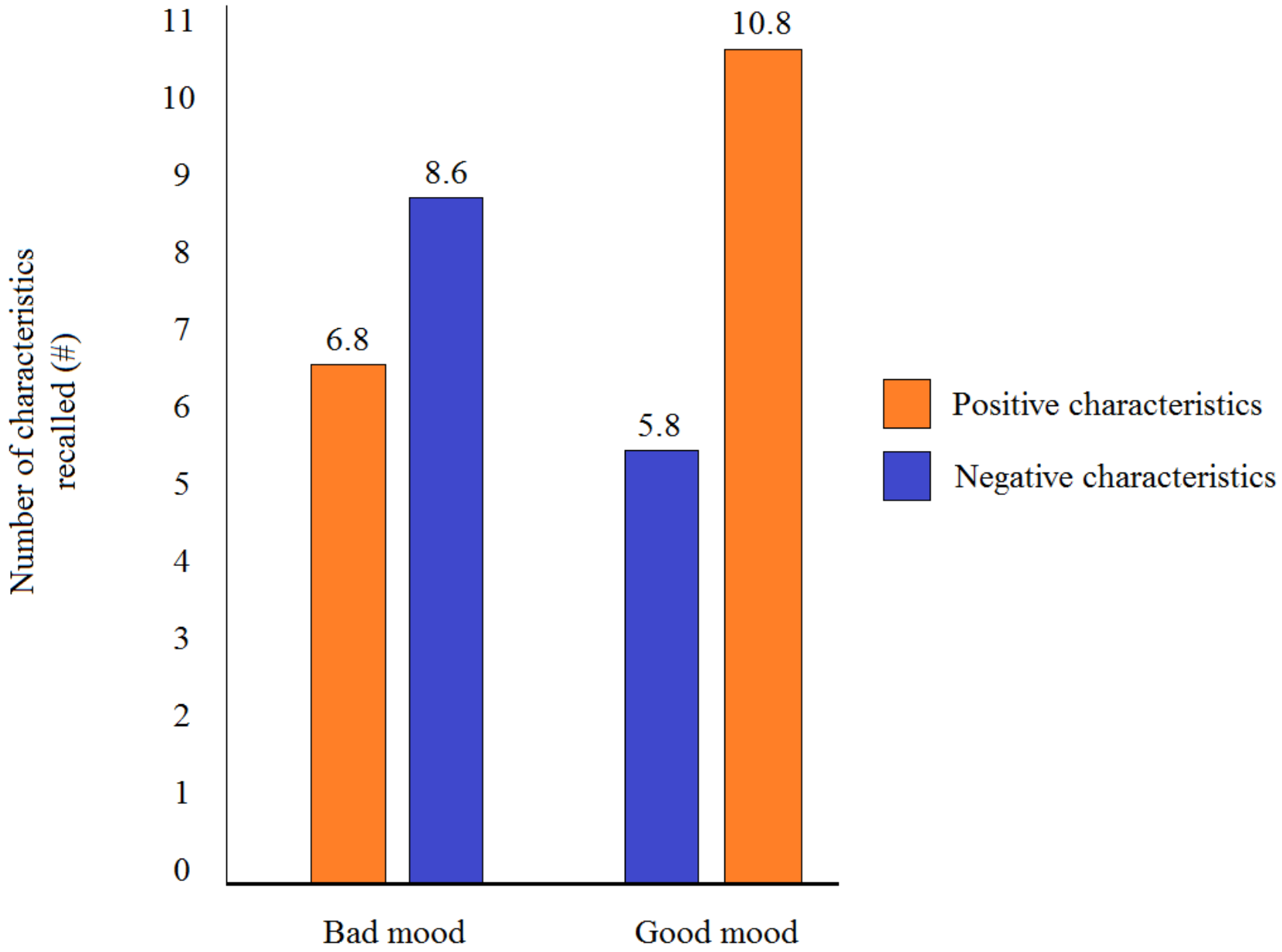


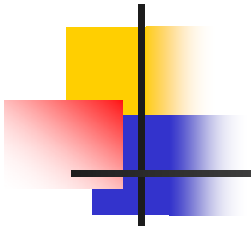
Mean reaction times on the content task as a function of word content (angry vs neutral) and word expression (angry vs neutral).



Emotion and Cognition

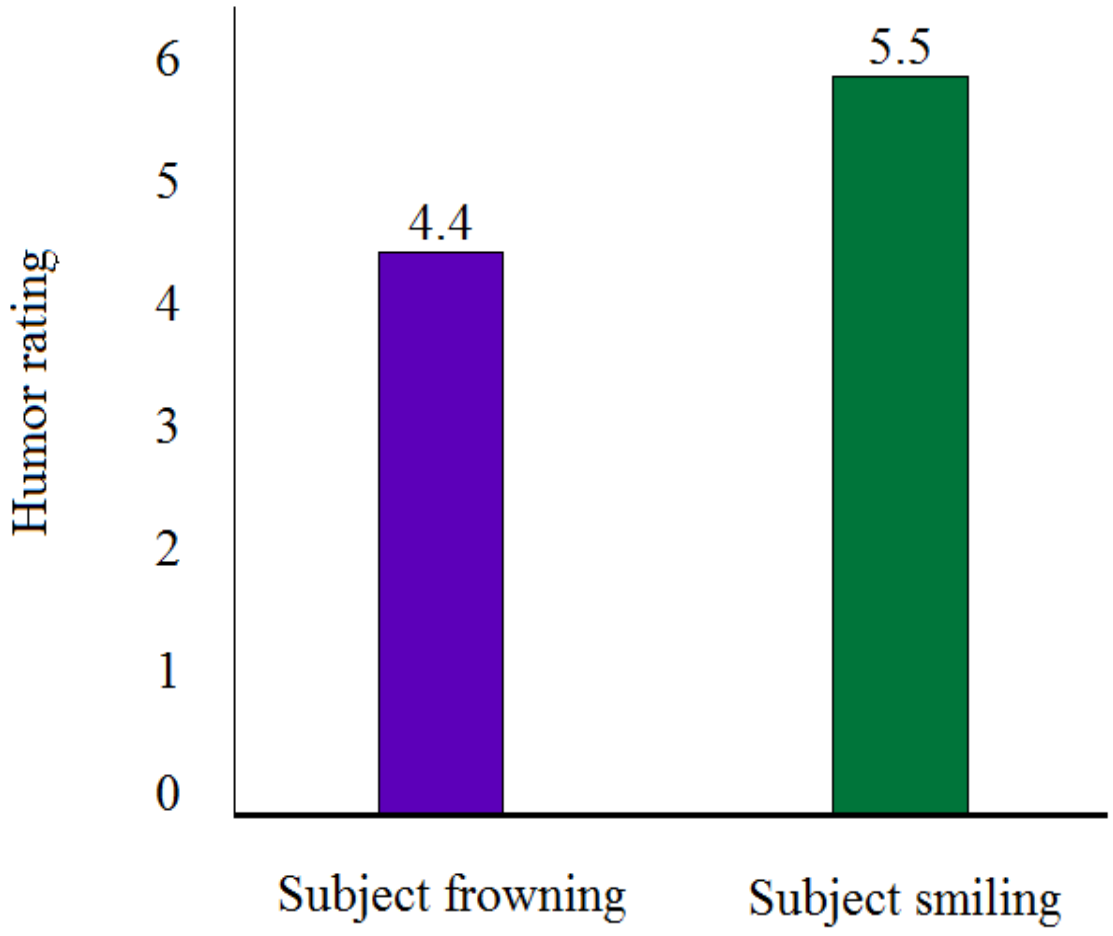
- **Emotion and Person Evaluation** (Bower, 1980s)
  - Subjects in positive (vs. negative) moods remembered more positive characteristics and fewer negative characteristics of targets


Number of characteristics recalled (#)
11
10
9
8
7
6
5
4
3
2
1
0
6.8
8.6
5.8
10.8
Bad mood
Good mood
Positive characteristics
Negative characteristics

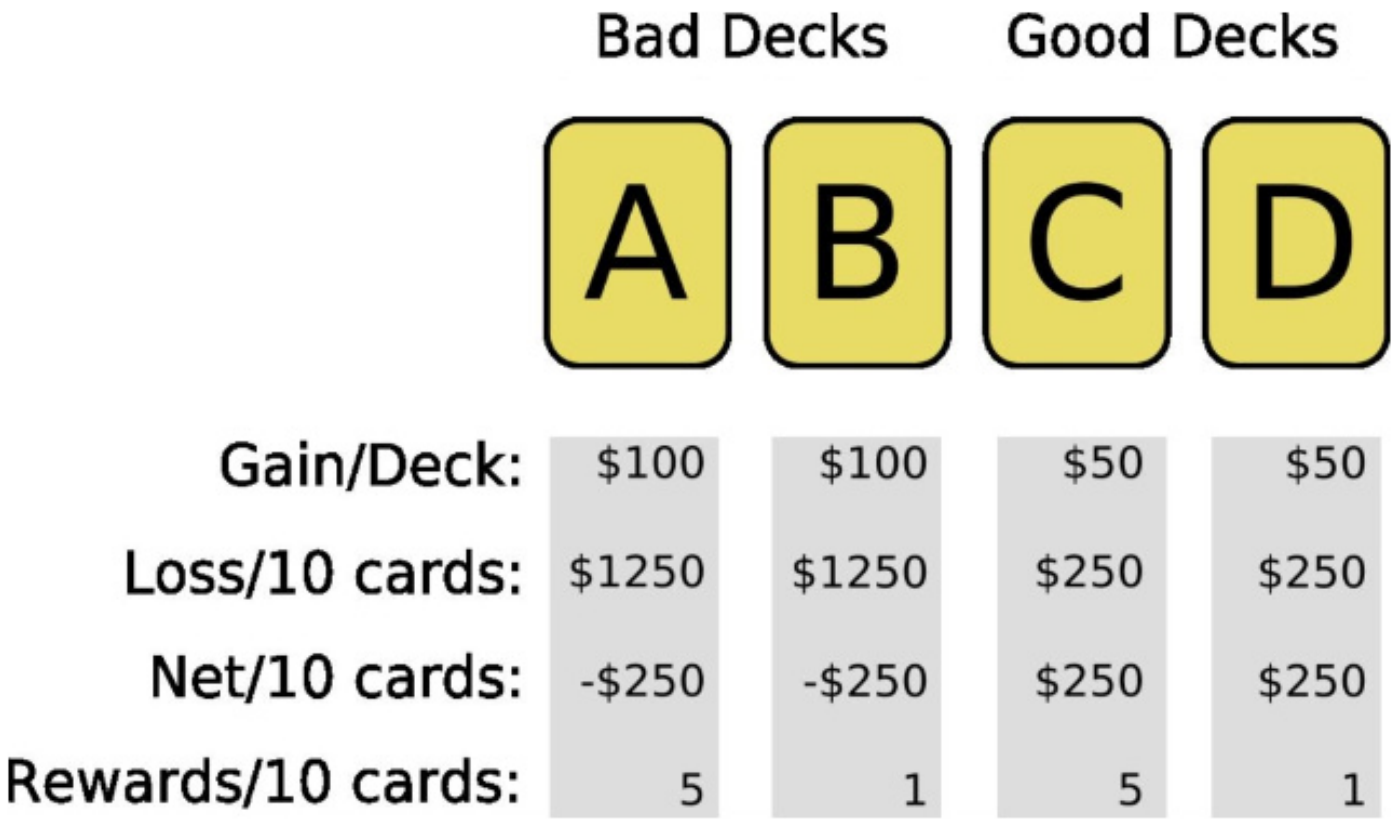


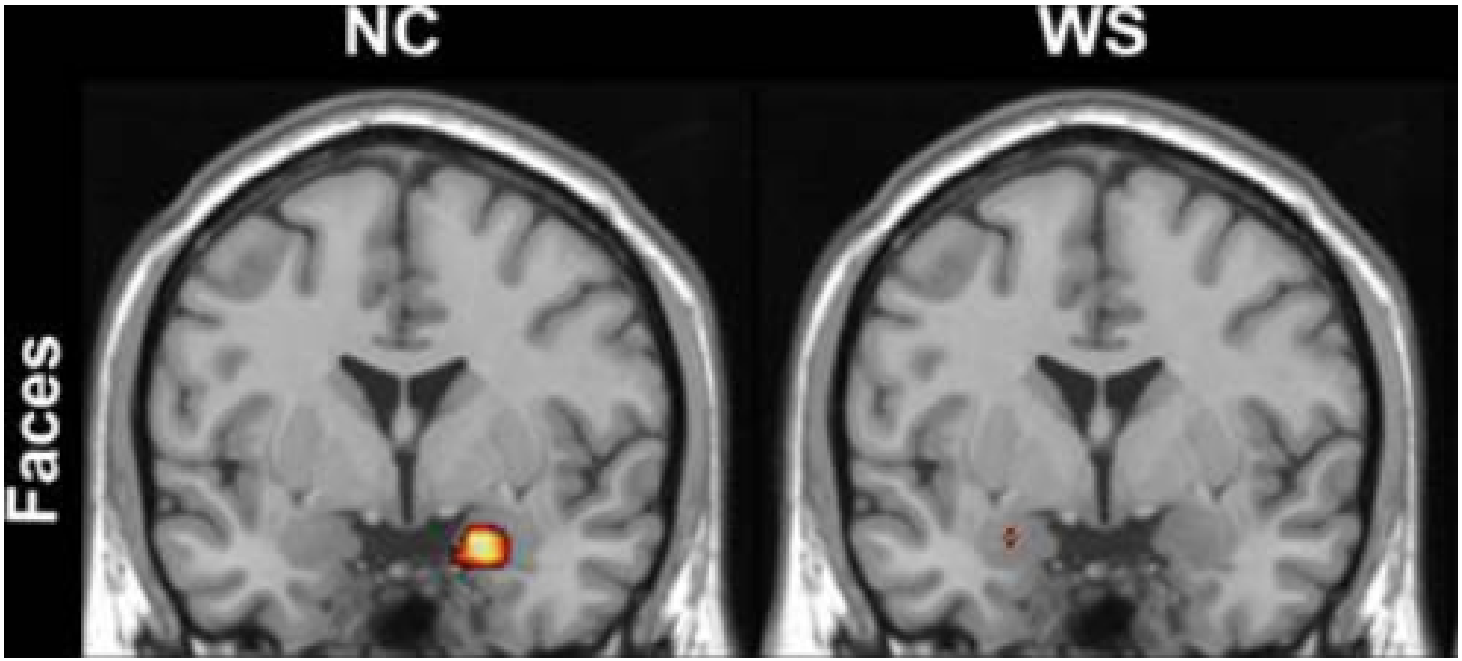
Emotion and Cognition

- **Emotion and Object Evaluation** (Laird, 1980s)
  - Subjects consistently rate cartoons as more funny when asked to maintain a fixed smile (vs. frowning)

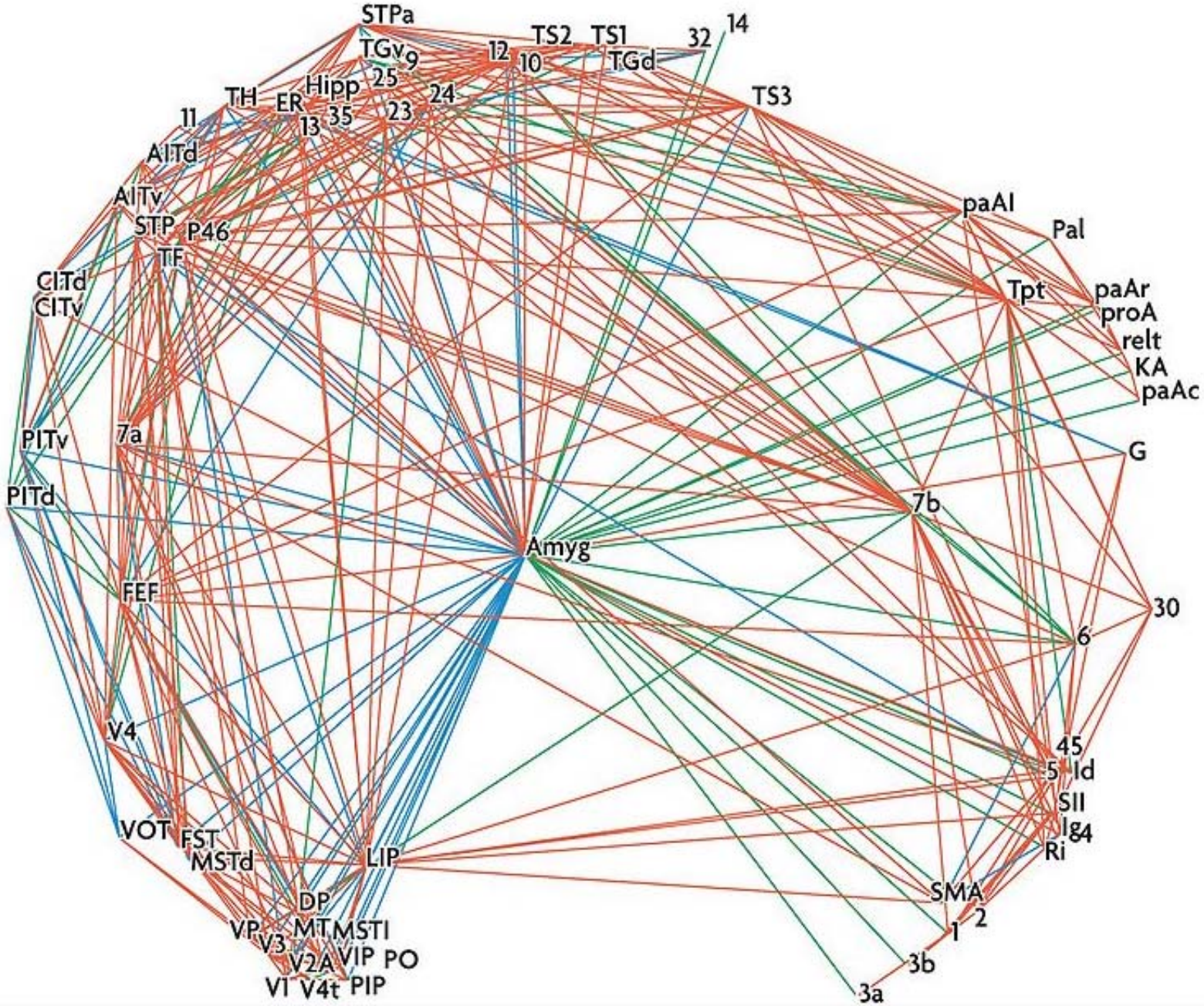

Humor rating
6
5
4
3
2
1
0
4.4
5.5
Subject frowning
Subject smiling

Iowa Gambling Task (IGT)

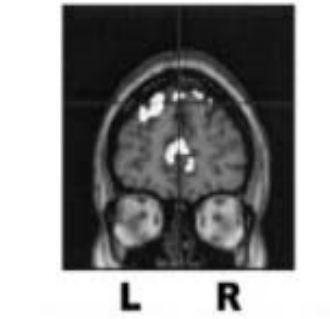


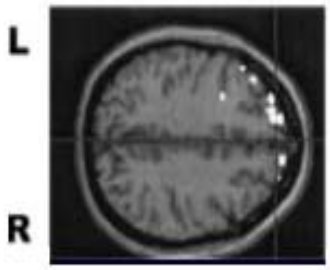


Reduced danger signaling by the amygdala might be responsible for fearlessness in social interactions

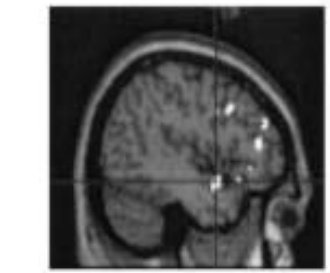

STPa
TS2
TS1
32
14
TGv
9
12
10
TGd
25
TH
Hipp
24
TS3
ER
35
23
11
13
AITd
AITv
paAI
STP
P46
Pal
TF
CITd
CITv
Tpt
paAr
proA
relt
KA
paAc
PITv
7a
G
PITd
7b
Amyg
FEF
30
6
V4
45
5
Id
SII
Ig4
VOT
FST
Ri
MSTd
LIP
SMA
DP
VP
V3
MT
MSTl
1
2
V2A
VIP
PO
3b
V1
V4t
PIP
3a

Positive affect/thought
processed in left frontal lobe



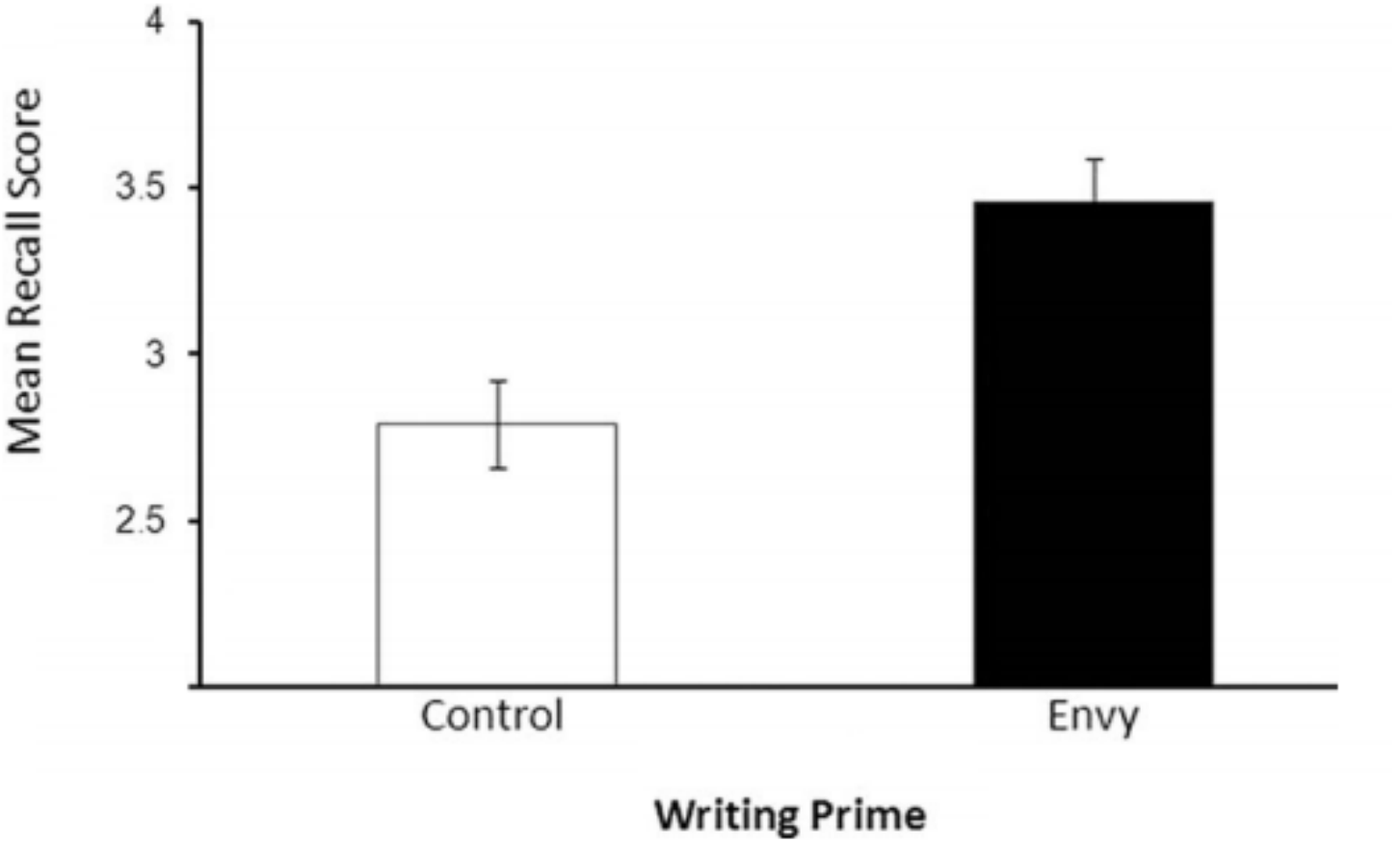


Negative affect/thought
processed in right frontal lobe

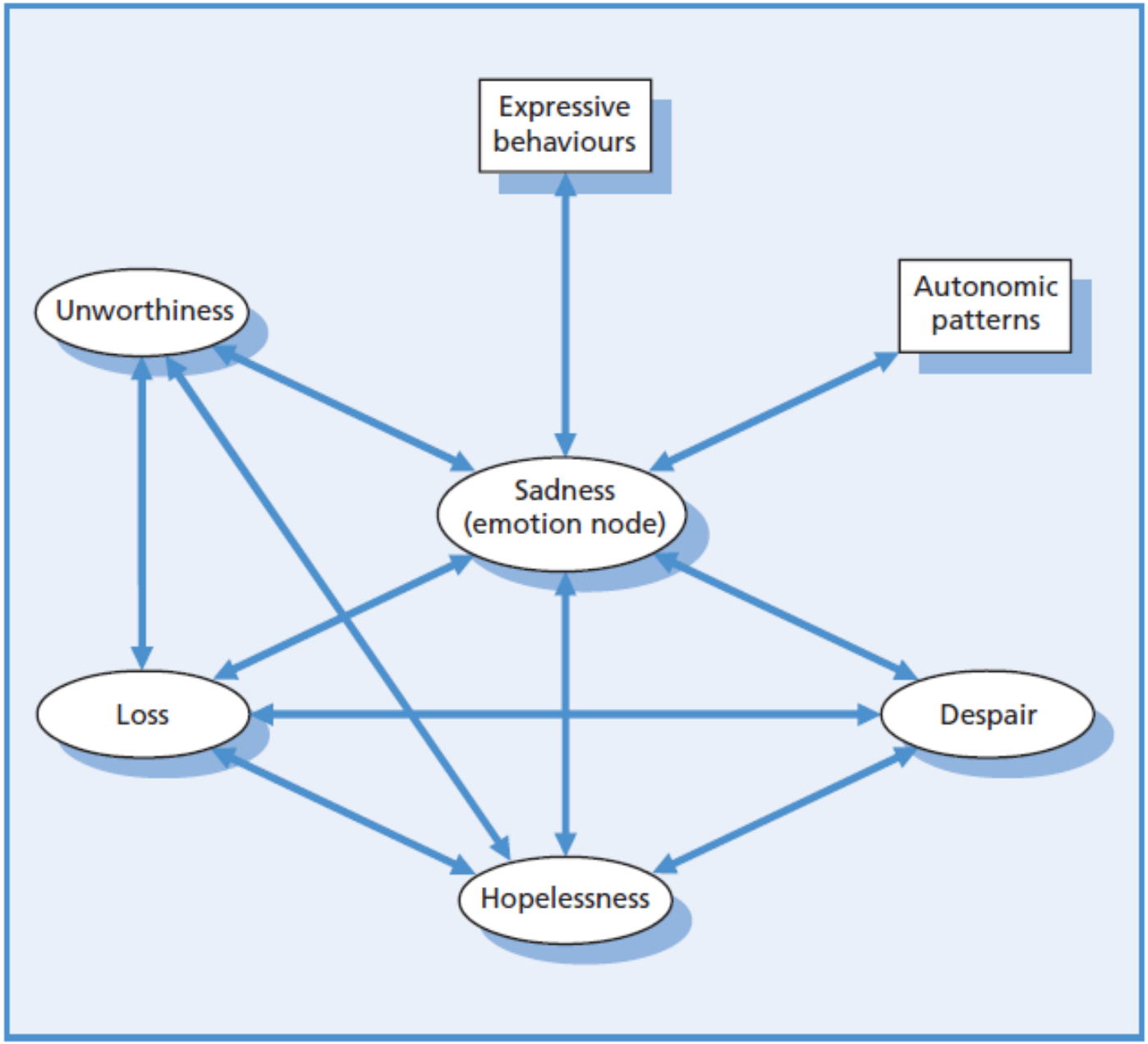


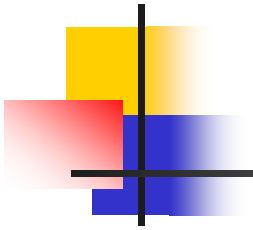
Positive affect

The Cognitive Consequences of Envy (Hill et. al, 2011)



Envy significantly increased attunement to and memory for targets (vs. controls)


Expressive behaviours
Unworthiness
Autonomic patterns
Sadness (emotion node)
Loss
Despair
Hopelessness



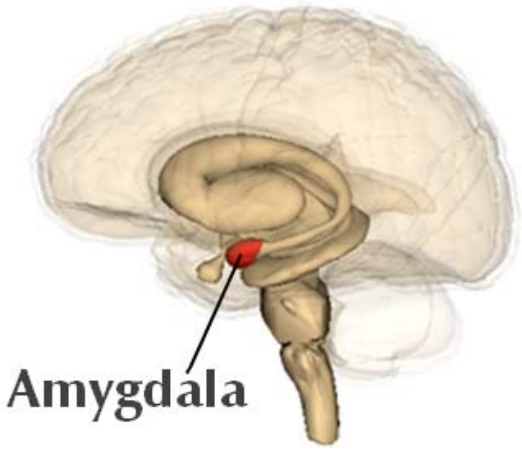
Emotion and Cognition

- Two separate neurological emotional circuits:
  1. Slow-acting thalamus-to-cortex-to-amygdala circuit
  2. Fast-acting thalamus-to-amygdala circuit


Automatic Processing
• fast, intuitive
• effortless
• emotion driven
• involves the amygdala and limbic system
Controlled Processing
• logical, careful
• takes effort
• takes over when an experience doesn't fit a developed schema
• involves parts of the prefrontal cortex

Emotion and Cognition

- **Amygdala localization**
  - Right side of amygdala more strongly involved in *formation* of emotionally-based memory
  - Left side of amygdala associated with *retrieval* of emotionally-based memory



Cognitive Appraisal Theory (Lazarus, 1980s)

1. Primary appraisal

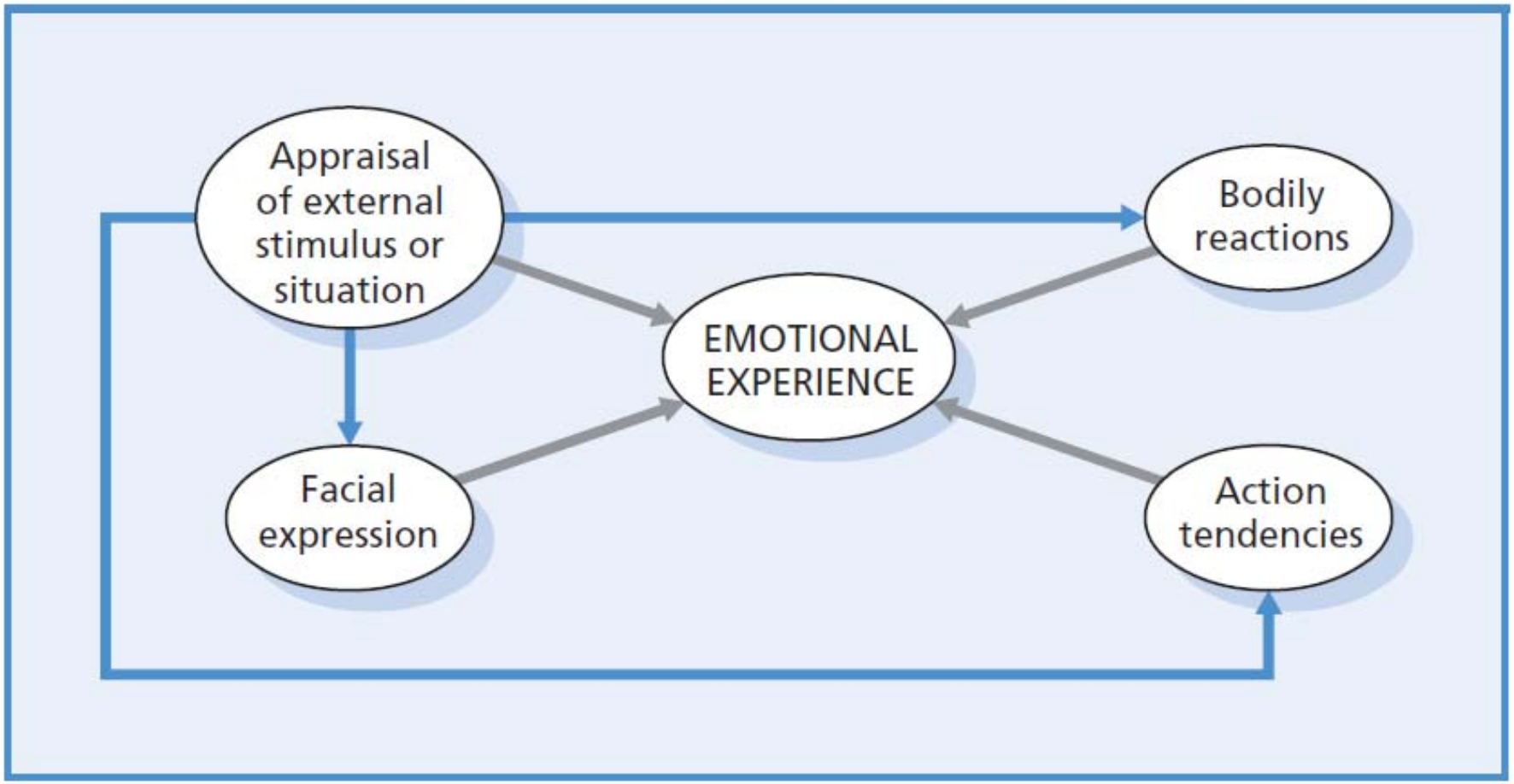
- Situations regarded as positive, negative, stressful, irrelevant to well-being; motivational relevance

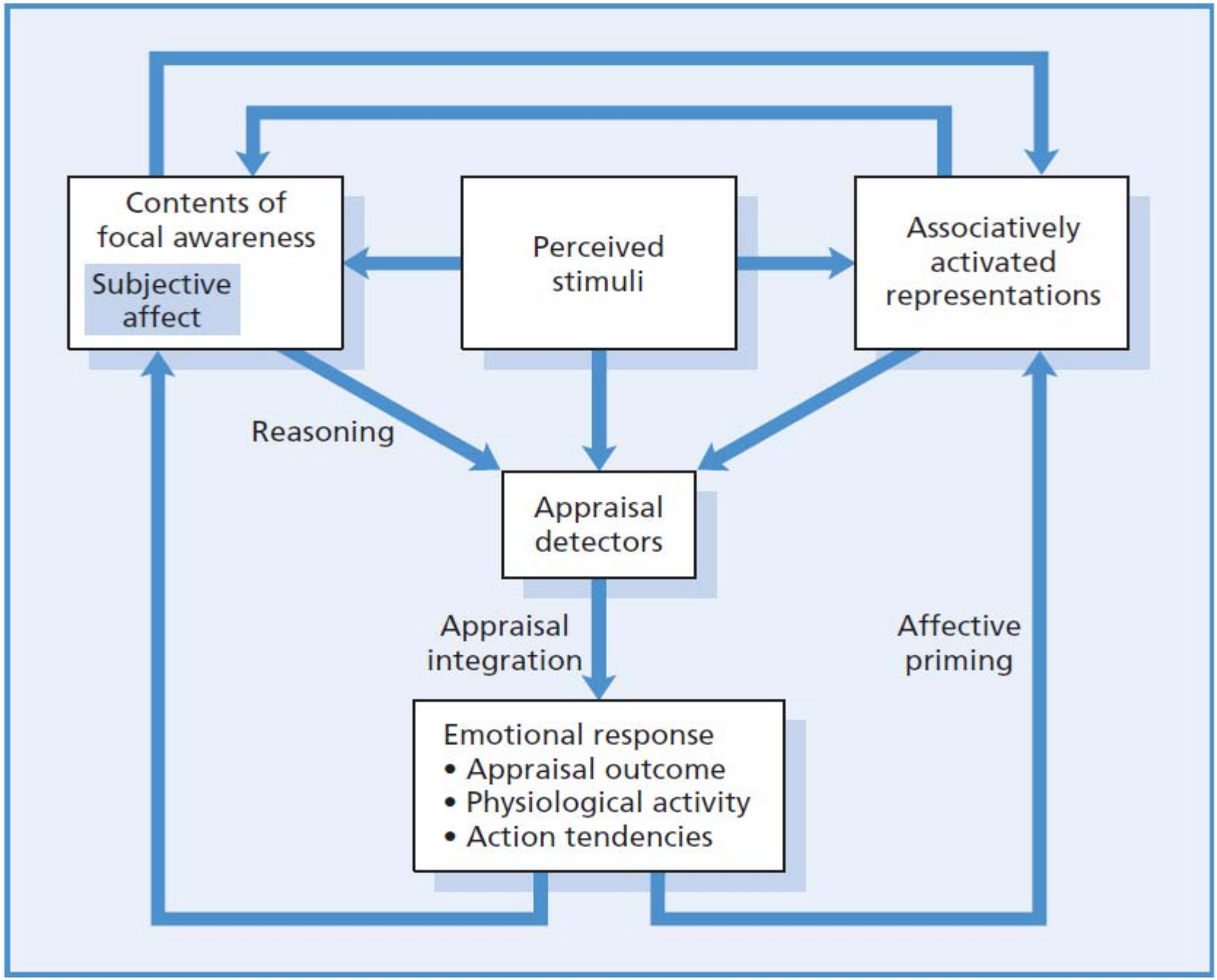
2. Secondary appraisal

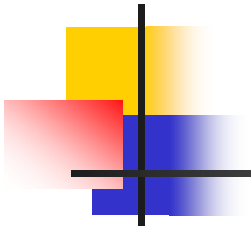
- Accountability considered, along with resources to cope with/or address situation

3. Re-appraisal

- Monitoring stage, adjustments made as necessary, future expectancy


Appraisal of external stimulus or situation
Bodily reactions
EMOTIONAL EXPERIENCE
Facial expression
Action tendencies


Contents of focal awareness
Subjective affect
Perceived stimuli
Associatively activated representations
Reasoning
Appraisal detectors
Appraisal integration
Affective priming
Emotional response
• Appraisal outcome
• Physiological activity
• Action tendencies



Emotion and Cognition

- **Cognitive Appraisal Theory**
  - Level of emotional impact generally altered (e.g., viewed more positively, or less positively)
  - Changes in emotional experience directly correlated with amygdala activity

Emotion and Cognition

- **Cognitive Appraisal Theory**
  - Some criticisms
    - Cognitive appraisals can be a *consequence* of emotion rather than a cause
    - Theory implies appraisals involve deliberate conscious processing…(not always the case)