Frames in psychiatric classification

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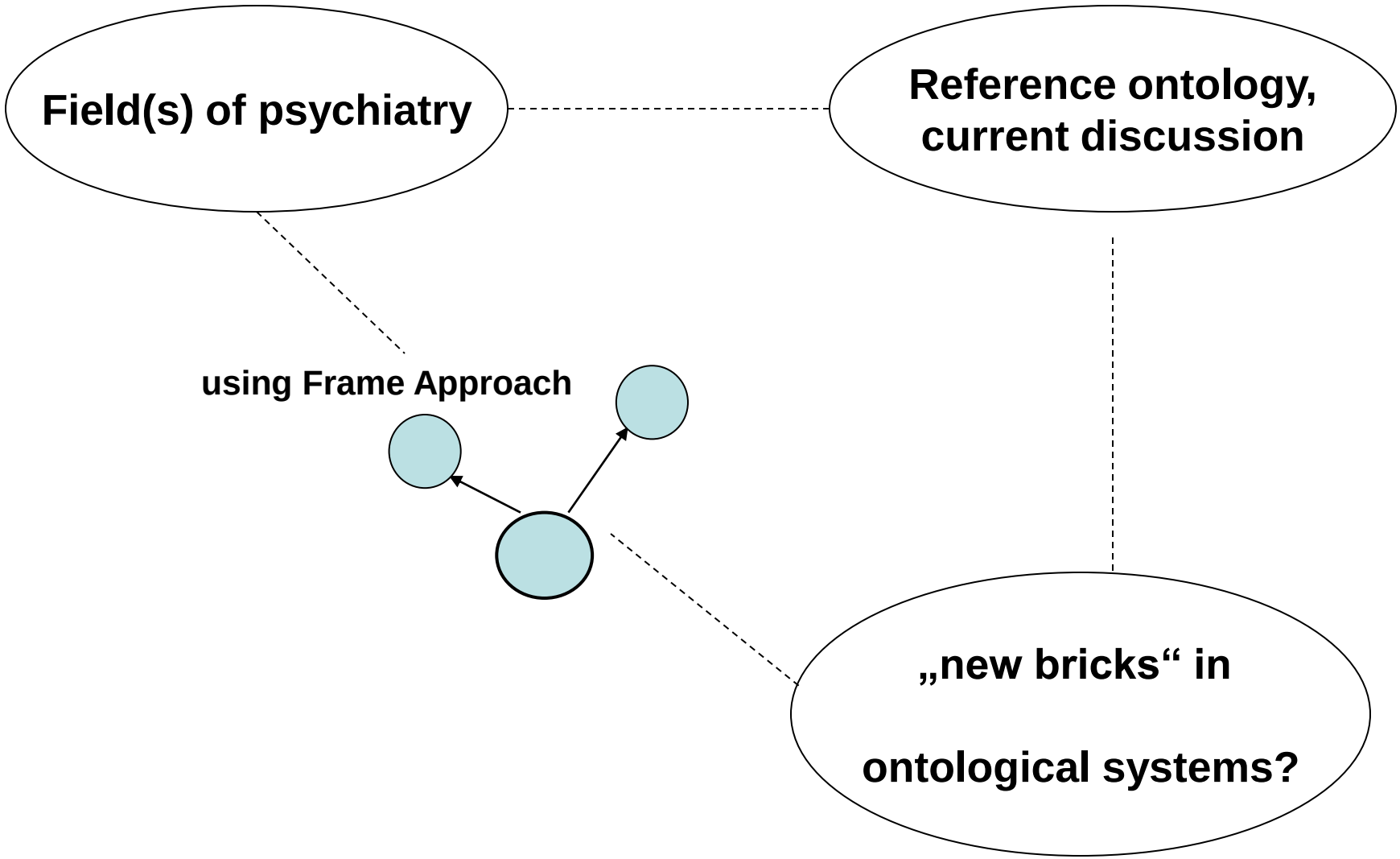

Field(s) of psychiatry
Reference ontology, current discussion
using Frame Approach
„new bricks“ in ontological systems?

ICD-10 - Classification of Diagnoses:

Diagnosis: “Condition state at the present time“

Discussion about psychiatric classification

Kristian E. Markon, PhD (University of Iowa, USA)

- is there a need for a nosology at all ?
- nosological systems would impede scientific development

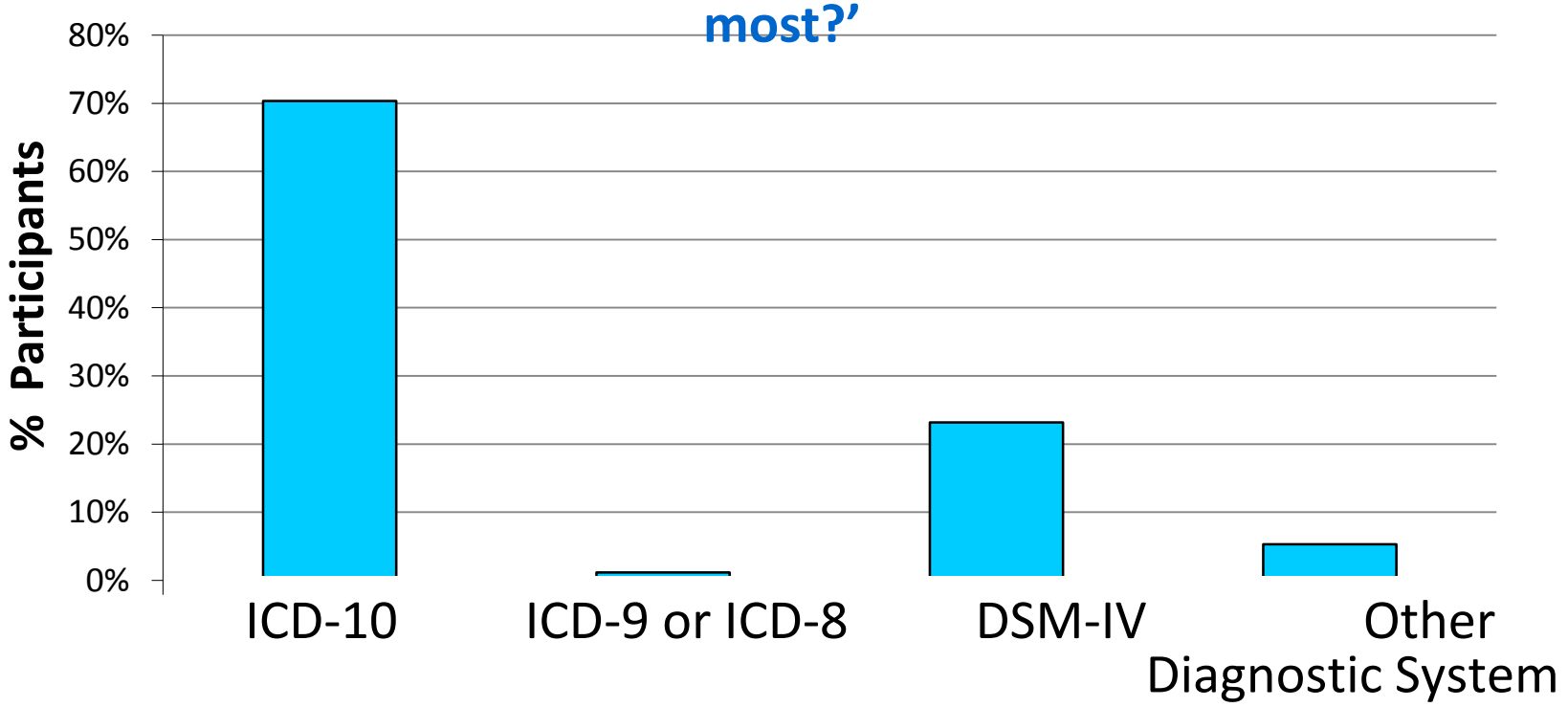
➔ Psychiatric disorders represent practical kinds of constructs.

Constructs or measures reflected in any given nosology **constrain the theories** that they can be applied to.

➔ Nosological systems ... being developed to serve as heuristic. If they have just an heuristic value, why publish them at all...

Classification systems

Q8 - 'In your day-to-day clinical work, which classification system for mental disorders do you use most?'



Reed et al, *World Psychiatry,* 2011

with kindly permission from J.Reed, WHO

ICD-10: The F-Group

Mental and behavioural diseases

Organic and another diseases

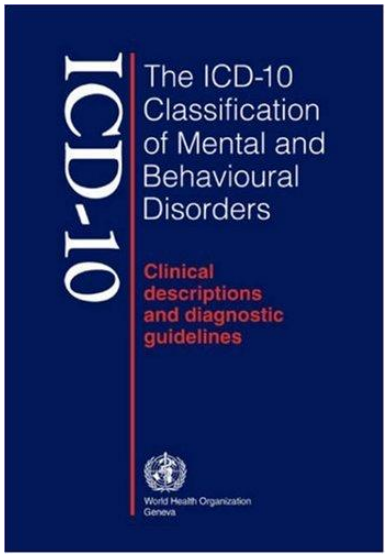
Difference?

no valid biomarkers for mental disorders

ICD-10: The F-Group

Psychiatry

Psycho-oncology



The F-Group

Psychosomatics

Neurology

Clinical psychology

Case Study 1

- 51 year old woman, lives with her partner, no children;
  part-time job at police administration.
- several months on sick leave: condition of inner emptiness, severely impaired on her capacity to work
- triggered through a temporaly high pressure situation (high work load) at the office
- “coping“ by drinking too much alcohol daily, isolating herself from her mates
- searched for professional assistance to prevent getting addicted
- constant feeling of inner strain since she is able to think
- core feeling of permanent insecurity, as if something could go wrong
- low self-esteem

Case Study 2

- 49 year old woman, divorced, living alone, no children, tutor on training college
- has severe signs of fatigue, increased need for sleep
- feels mentally unfit to do her teaching
- according to her physician no physical causes
- some years ago she suffered stroke with a corollary loss of normal language capability
- after stationary rehabilitation capable of good language again
- before stroke she was in a position of a senior controller in a big company
- after rehabilitation she felt no more capable to stay well focused on her functions

➔ decision to give up her job

Classification in case studies - comorbidity

Case 1: Severe Depressive Episode (F32.2) against the backround of narcistic personality disorder (F60.8)

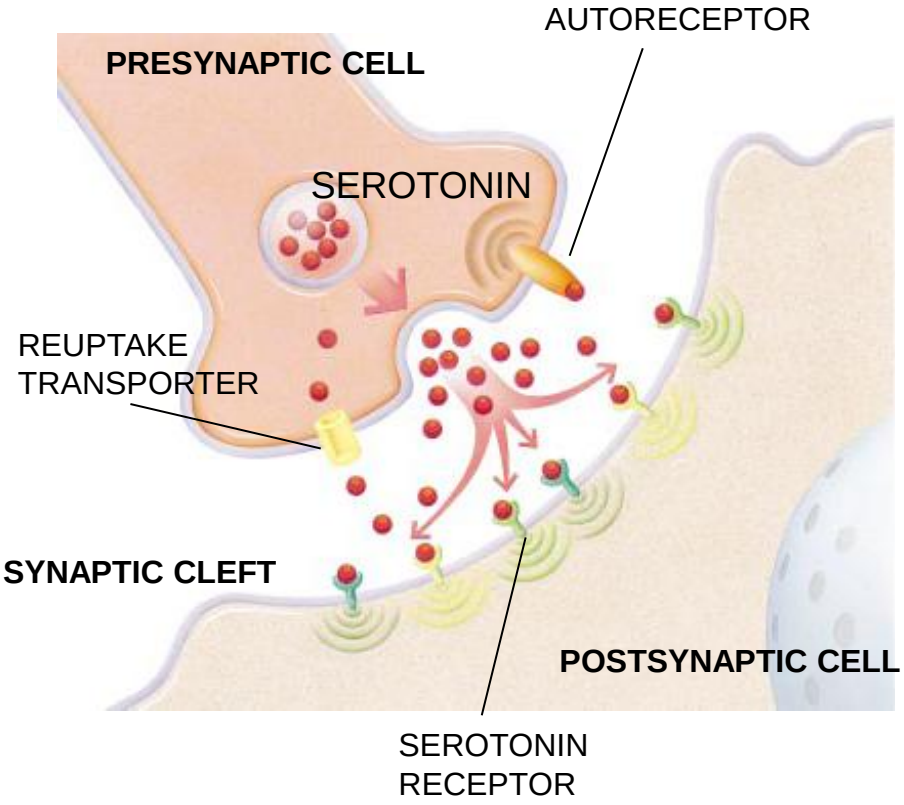
➔ Primary mental disease(s)

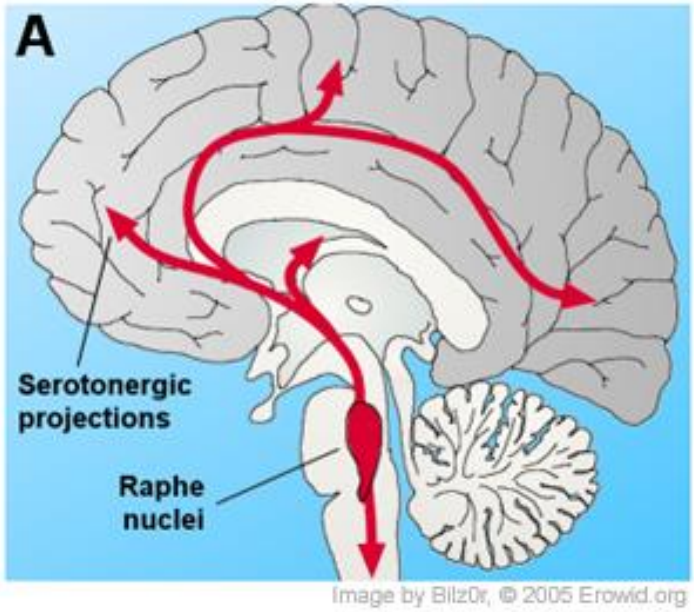
Case 2: Severe Depressive Episode (F32.2) against the backround of stroke (I63.9)

➔ Primary somatic diseas leads to (secondary) mental disease

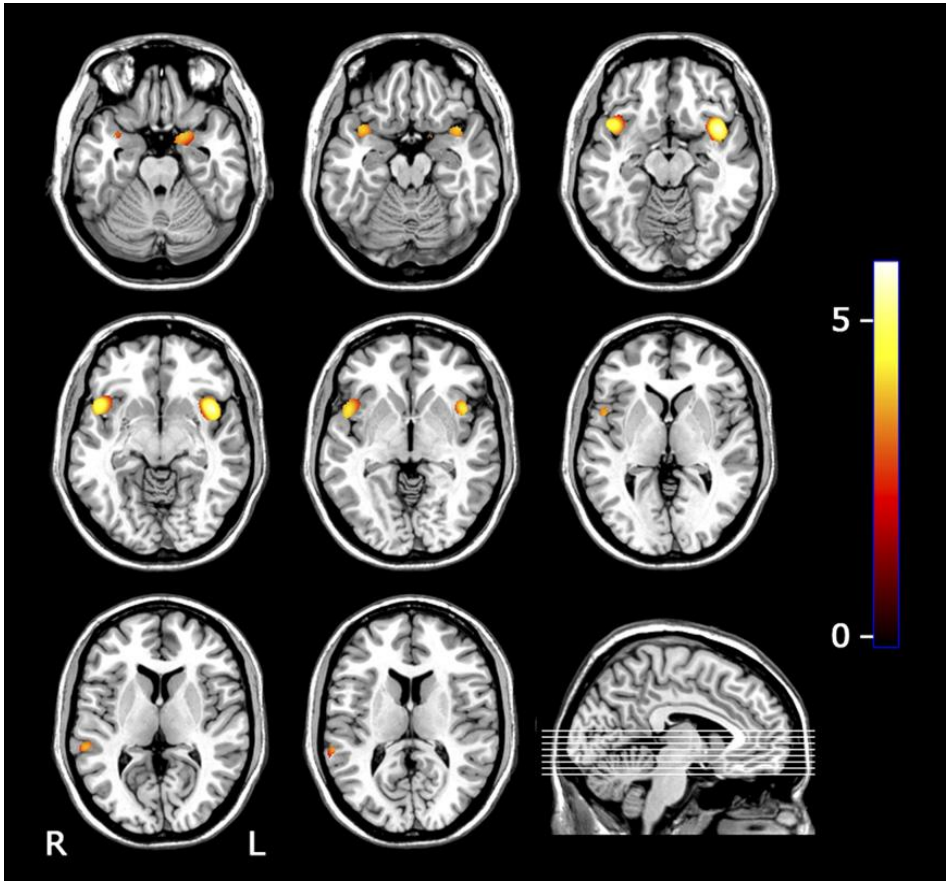
Looking behind diagnosis: Neurobiology of depression

Serotonin hypothesis





Looking behind diagnosis: Neurobiology of Auditory hallucinations



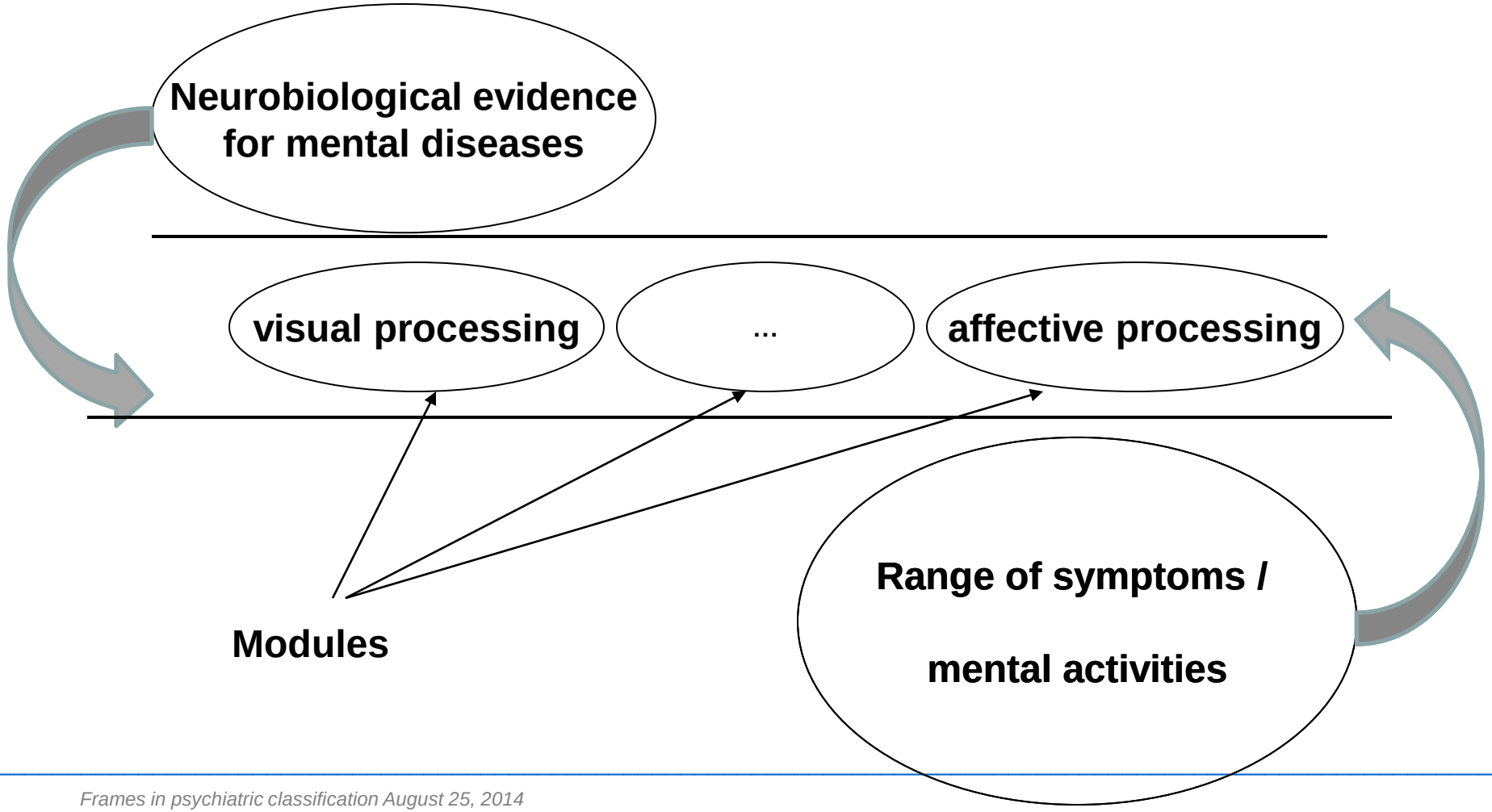
Auditory hallucinations in schizophrenia

Grey matter density reductions:

- bilateral insula
- bilateral superior temporal gyri
- left amygdala

G. García-Martí et al. (2008)

Idea of modularity
Linking neurobiology with symptoms



What are modules?

discernable functional units

that organize human mind

synonyme:

faculties of mind

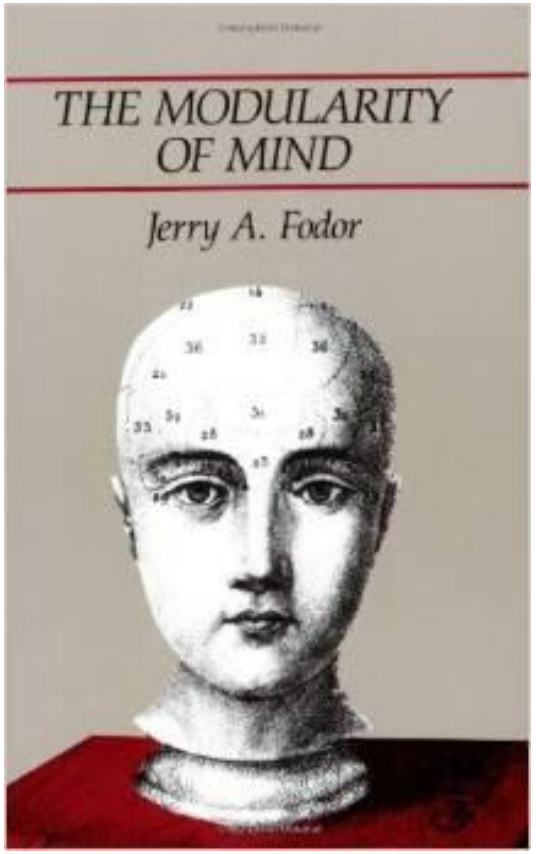
attractive for psychiatric classification

Gaebel at al. 2006

Modularity

debate around the idea of modularity since publication of

„Modularity of Mind“ (1983), J. Fodor



Properties of modules

(1) Localized: modules are realized in dedicated neural architecture

(2) Subject to characteristic breakdowns: modules can be selectively impaired

(3) Mandatory: modules operate in an automatic way

(4) Fast: modules generate outputs quickly

(5) Shallow: modules have relatively simple outputs (e.g., not judgments)

(6) Ontogenetically determined: modules develop in a characteristic pace and sequence

(7) Domain specific: modules cope with a restricted class of inputs

(8) Inaccessible: higher levels of processing have limited access to the representations within a module

(9) Informationally encapsulated: modules cannot be guided by information at higher levels of processing

J. Prinz (2006)

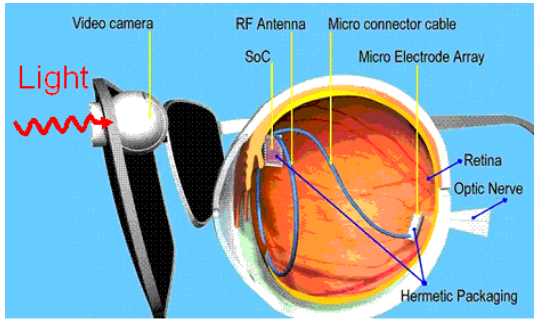
Criticism of the modularity of mind

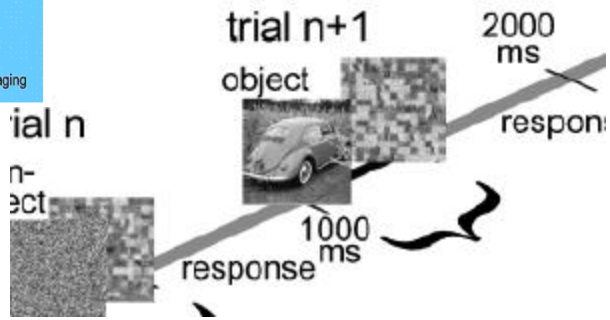
Jesse Prinz: “Systems that have been alleged to be modular

cannot be characterized by the properties on Fodors‘ list “

“shallow output“ – outputs requiring only few of processing but:

visual system – from retinal stimulation to visual recognition complex process





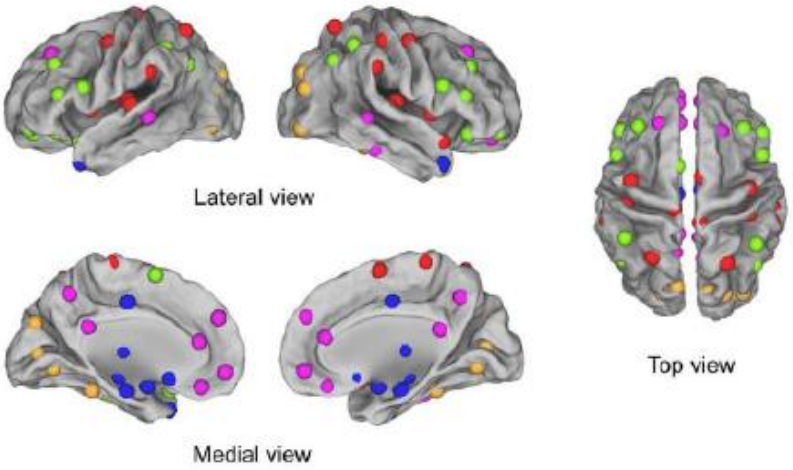
Criticism of the modularity of mind

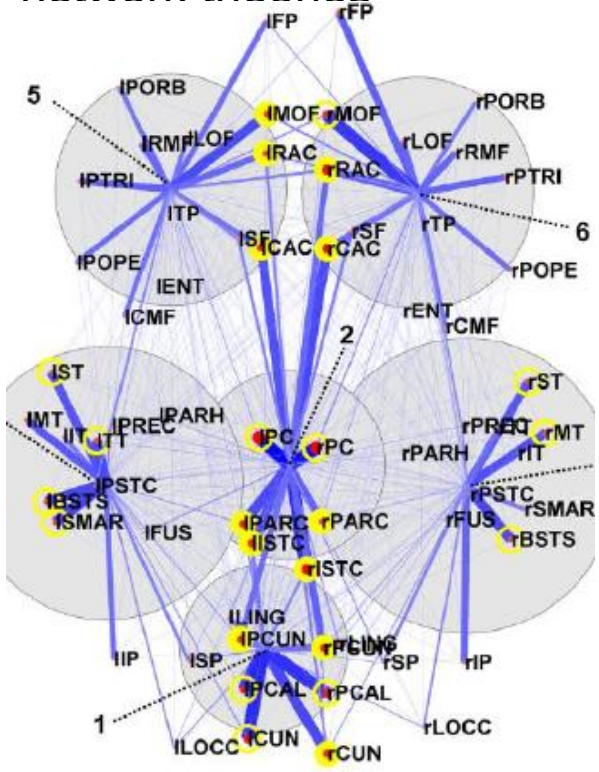
- intense debate in the cognitive sciences for more than two decades

- despite criticism modularity supported by arguments convincing many

Neurobiological foundation of modules

spatially stable subunits vs. network theories



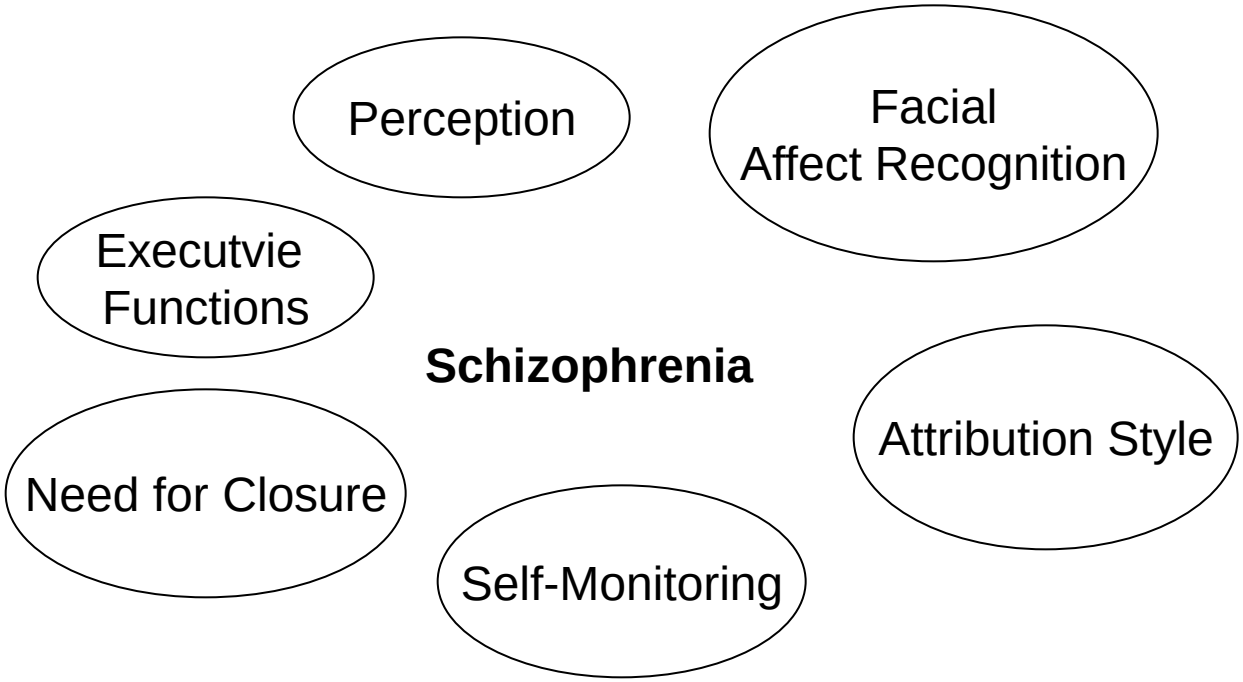


He et al., 2009

Modules and disorders

identification of modules (functional entities) and their disturbances

➔ definition of relevant core modules for given disorder



Kircher, 2008

Disturbed Mental Functions (Modules) in Schizophrenia

Disturbances on modular level

How disturbances may occur on a modular level?

General principles of impaired modular functions:

- Slowing of impulse transfer
- Reduction of response amplitude
- Episodic interruptions
- Delayed „switching“ between modules
- Reduced access to contextual information („hyper-modularity“)

(Zielasek & Gaebel, 2008)

Connection between symptoms and modules?

beliefs as normally non-modular processes

become modular in schizophrenic delusions (David, 2003)

module

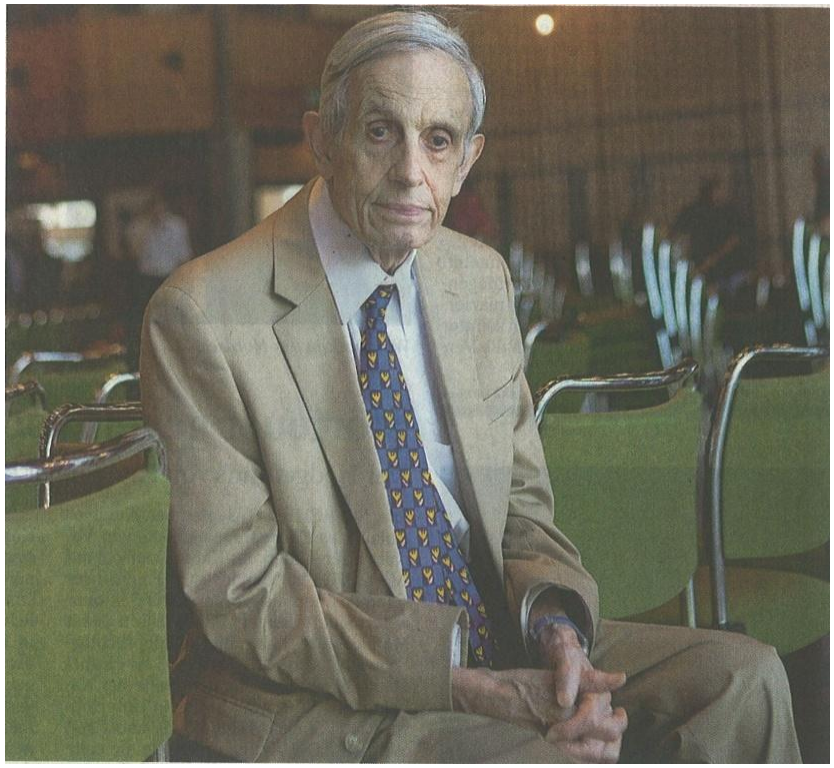
symptom

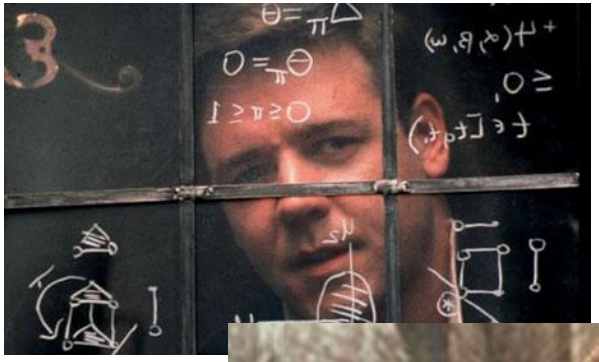
→ reduced access to information from other cognitive domains

that may correct false beliefs („hyper-modularity“)

(Zielasek & Gaebel, 2008)

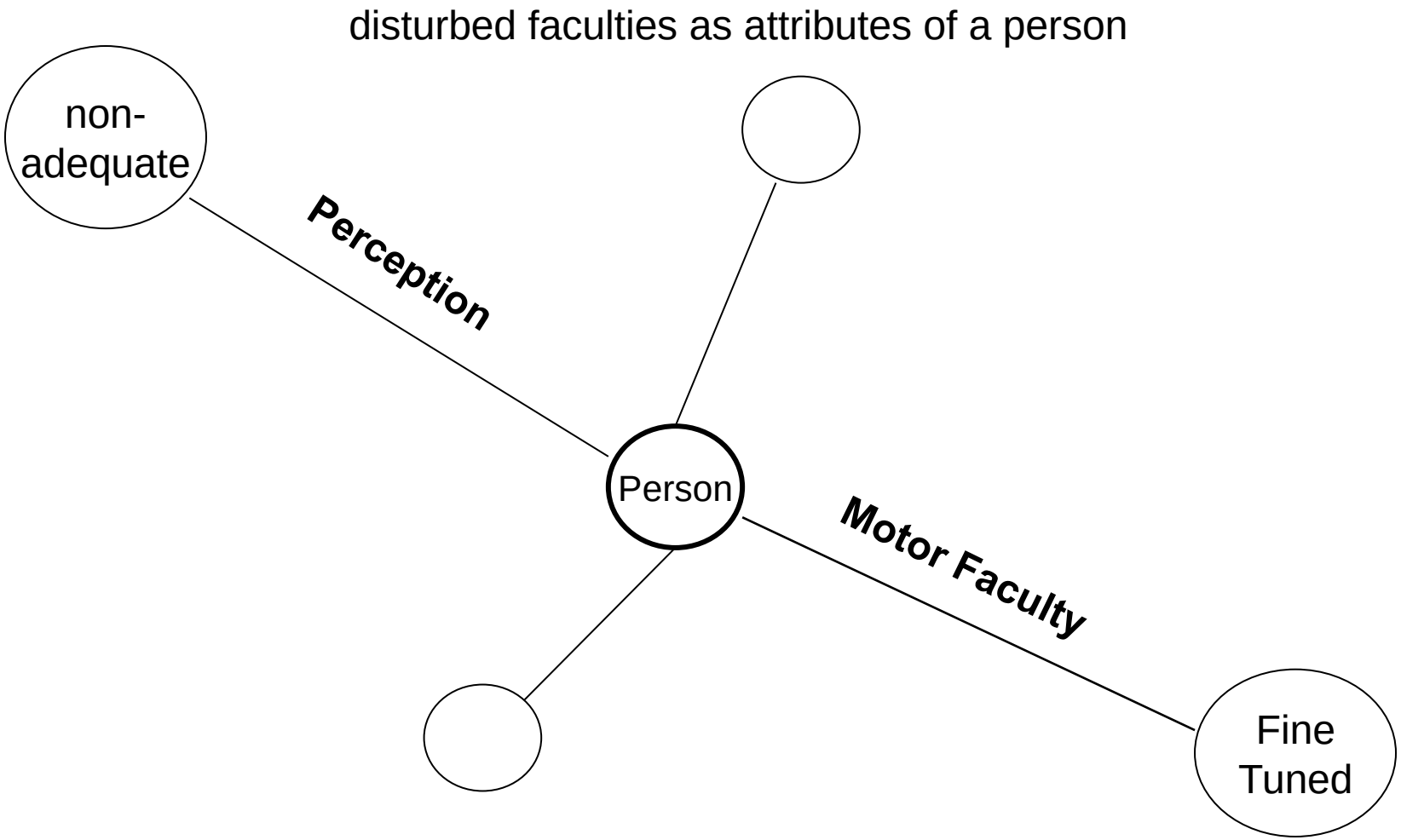
John Nash suffered delusions over long time…





get insight …

Modules or Faculties of Mind & Frame Analysis



Example of executive faculty

Executive function (behavioral outcomes) allows us

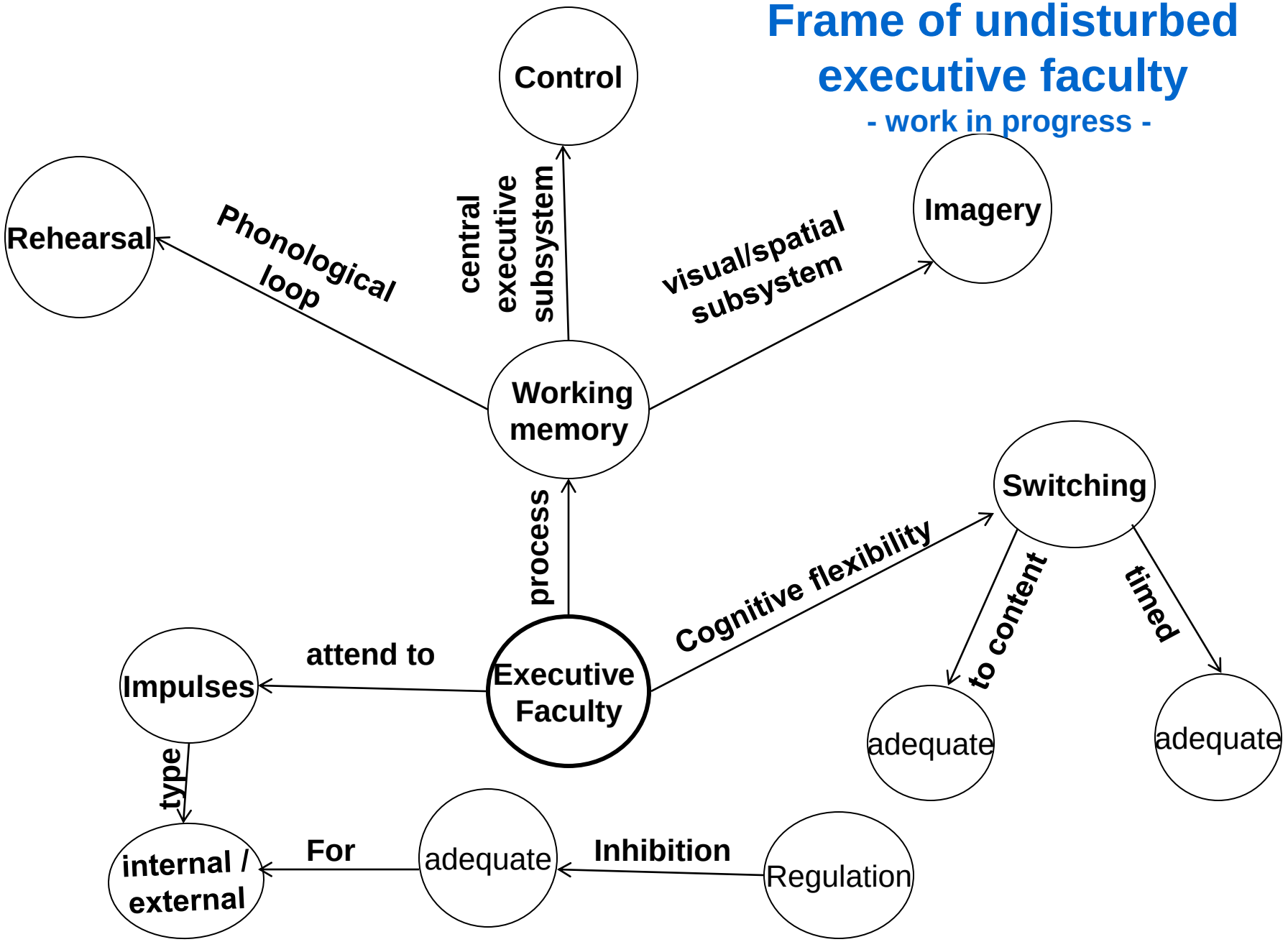
- **make plans**
- **keep track of time**
- **change our minds**
- **choose appropriate actions etc.**

based on interacton of three parts:

- **subdue irrelevant impulses (Inhibition)**
- **process information (Working memory)**
- **switch to new situation (Cognitive flexibility)**

Frame of undisturbed executive faculty

- work in progress -



Frame of specific phobia

Classificatory Definition of Specific Phobia (F40.2) ICD-10 ➔ basis for frame

A. Either (1) or (2):

(1) marked fear of a specific object or situation not included in agoraphobia or social phobia
(2) marked avoidance of such objects or situations

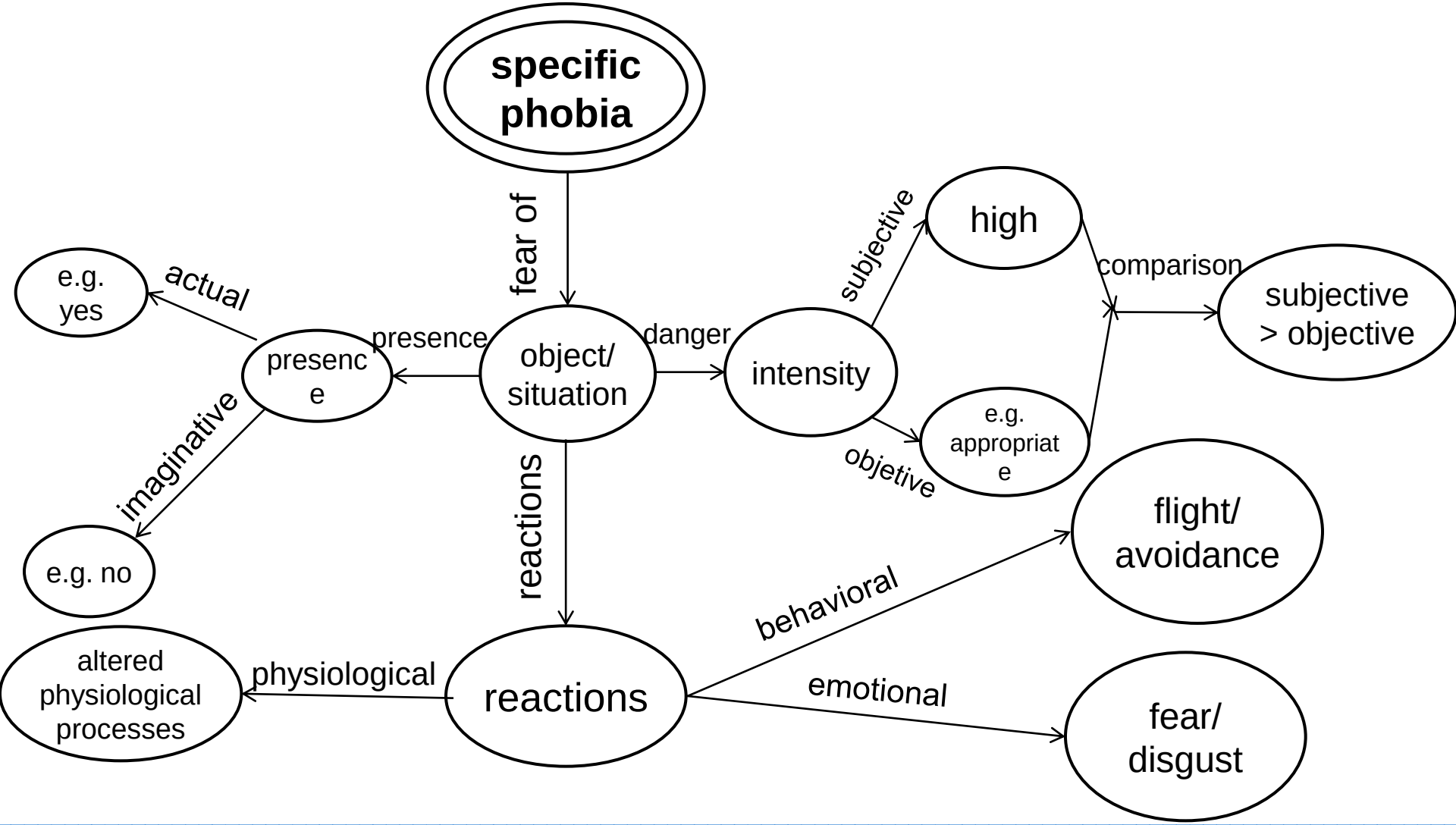
Among the most common objects or situations are animals, birds, insects, heights…

B. Symptoms of anxiety in the feared situation at some time since the onset of the disorder

C. Significant emotional distress due to the symptoms or the avoidance, and a recognition that these are excessive or unreasonable

D. Symptoms are restricted to the feared situation, or when thinking about it

Frame of specific phobia (F 40.2)



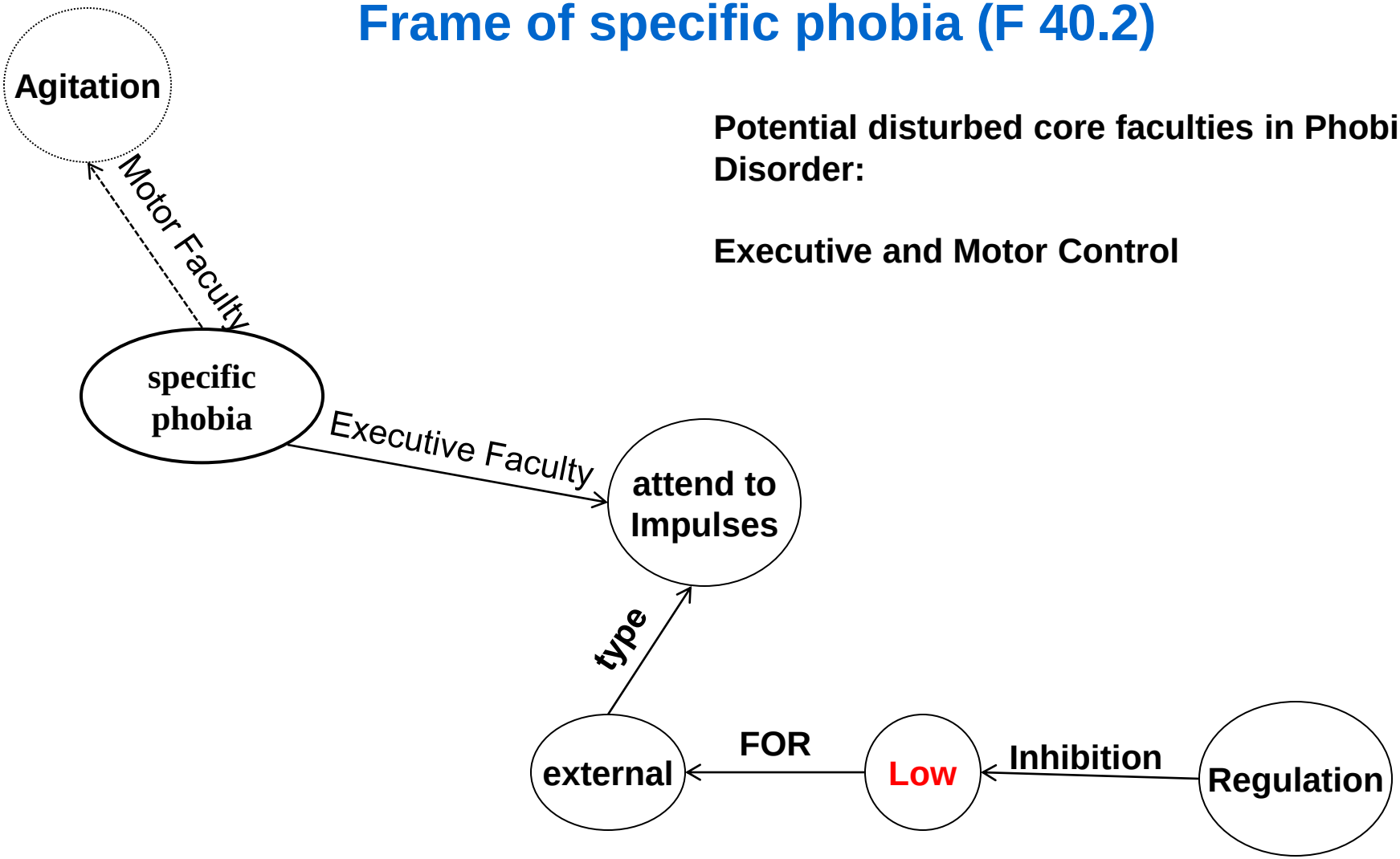
Modular „bricks“ as a part of psychiatric taxonomy?

Modules must be identified and related to clinical symptoms

A range of perceptive, intentional, social, motor, affective/emotional modules may be expected

➔ Hierarchy of module dysfunctions in mental disorders according to the affected functional modules.

Frame of specific phobia (F 40.2)



Potential disturbed core faculties in Phobic Disorder:

Executive and Motor Control

Perspective

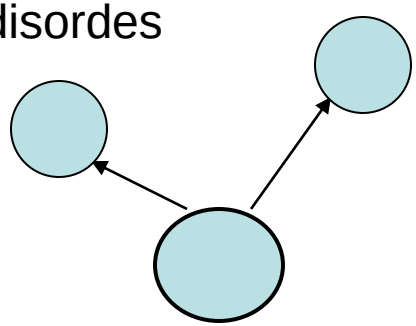
Interlinking

Ontology of Mental Diseases

- **F**0 Organic including symptomatic disorders
- **F**1 Substance related disordes
- ...

Ontology of faculties of mind

- Perception
- Motor
- Executive Function
- ...



frame analysis for connecting both

➔ from research on different diseases to research

exploring basic functions or underlying mechanisms

Thank you!