

AUTISM

COMPUTATIONAL PSYCHIATRY COURSE 2022, ETH ZÜRICH, 12/09/2022
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Neurodevelopment

Developmental
disorder

Neurodiversity

AUTISM

Current
clinical
problems

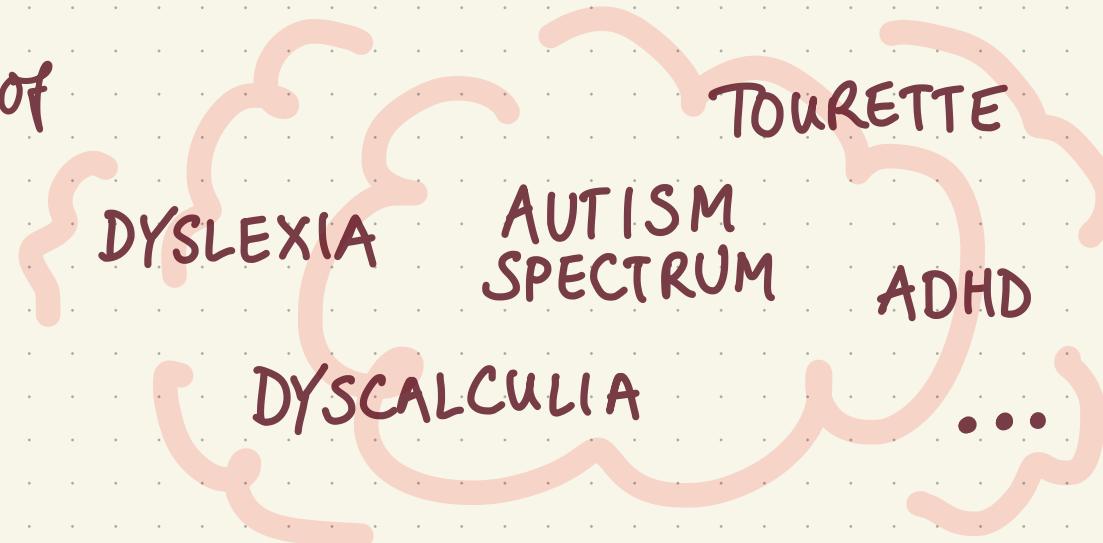
Computational Psychiatry
The solution ?



neuro-
diversity

varying degrees of

- generalisation
- severity
- frequency



neuro-developmental disorders

varying degrees of

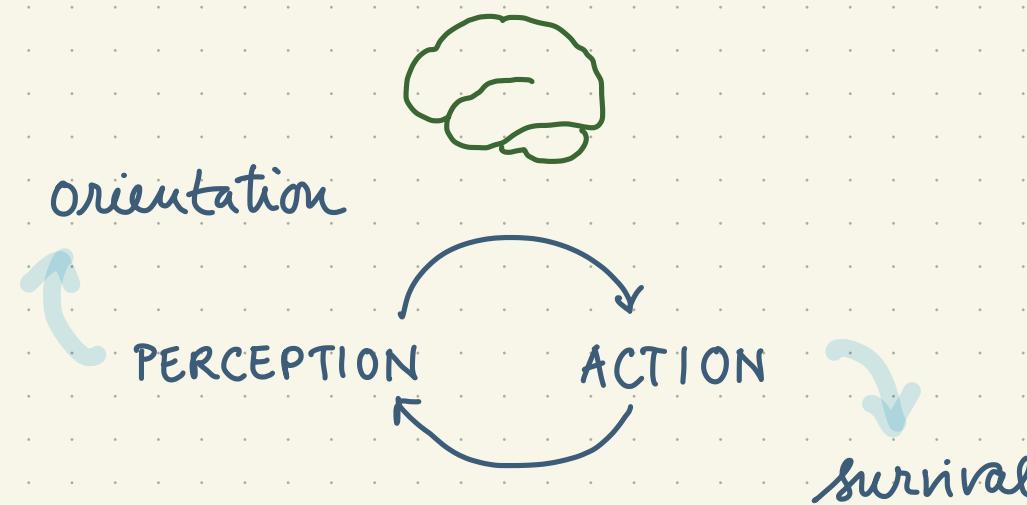
- generalisation
- severity
- frequency



neuro-developmental disorders

of

INFORMATION INTEGRATION



varying degrees of

- generalisation
- severity
- frequency

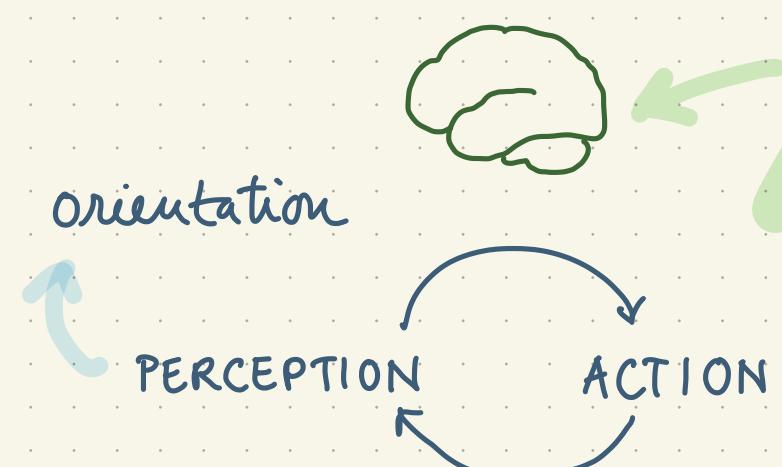


neuro-developmental disorders

of

INFORMATION INTEGRATION

impairments → advantages
 severity of consequences
 strongly dependent on
 - context
 - demands
 - experience
 - expectations
 - ...



highly complex system
 easily out of balance
 - temporarily
 - by constitution

survival

varying degrees of

- generalisation
- severity
- frequency

DYSLEXIA

AUTISM
SPECTRUM

TOURETTE

DYSCALCULIA

ADHD

...

NEURO-
DIVER-
SITY

neuro-developmental disorders

of

unconventional ways

impairments advantages

severity of consequences

strongly dependent on

- Context
- demands
- experience
- expectations

INFORMATION INTEGRATION



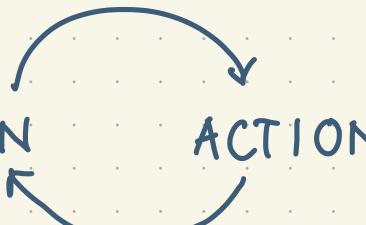
highly complex system

orientation

easily out of balance

PERCEPTION

- temporarily
- by constitution



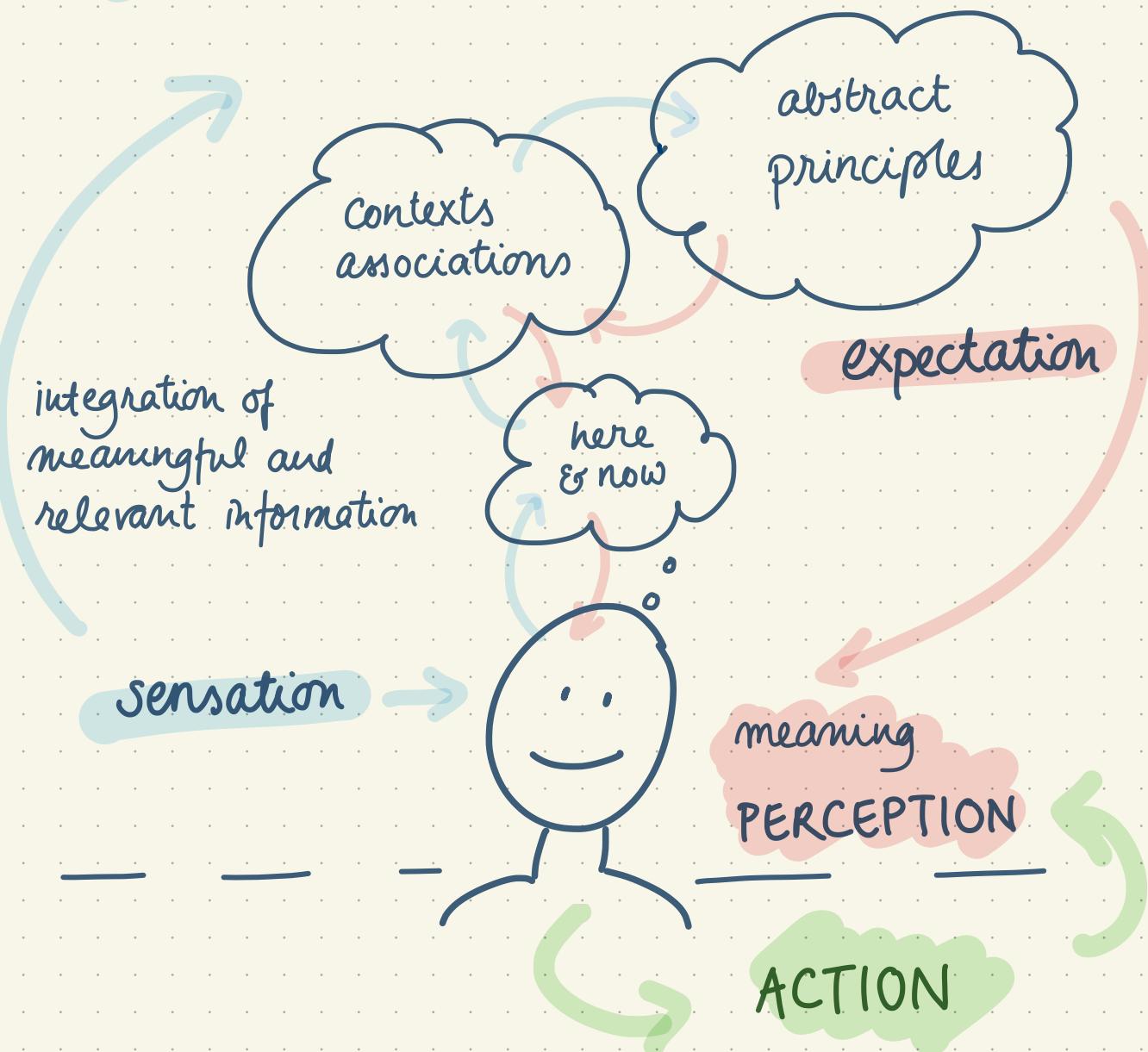
ACTION

survival

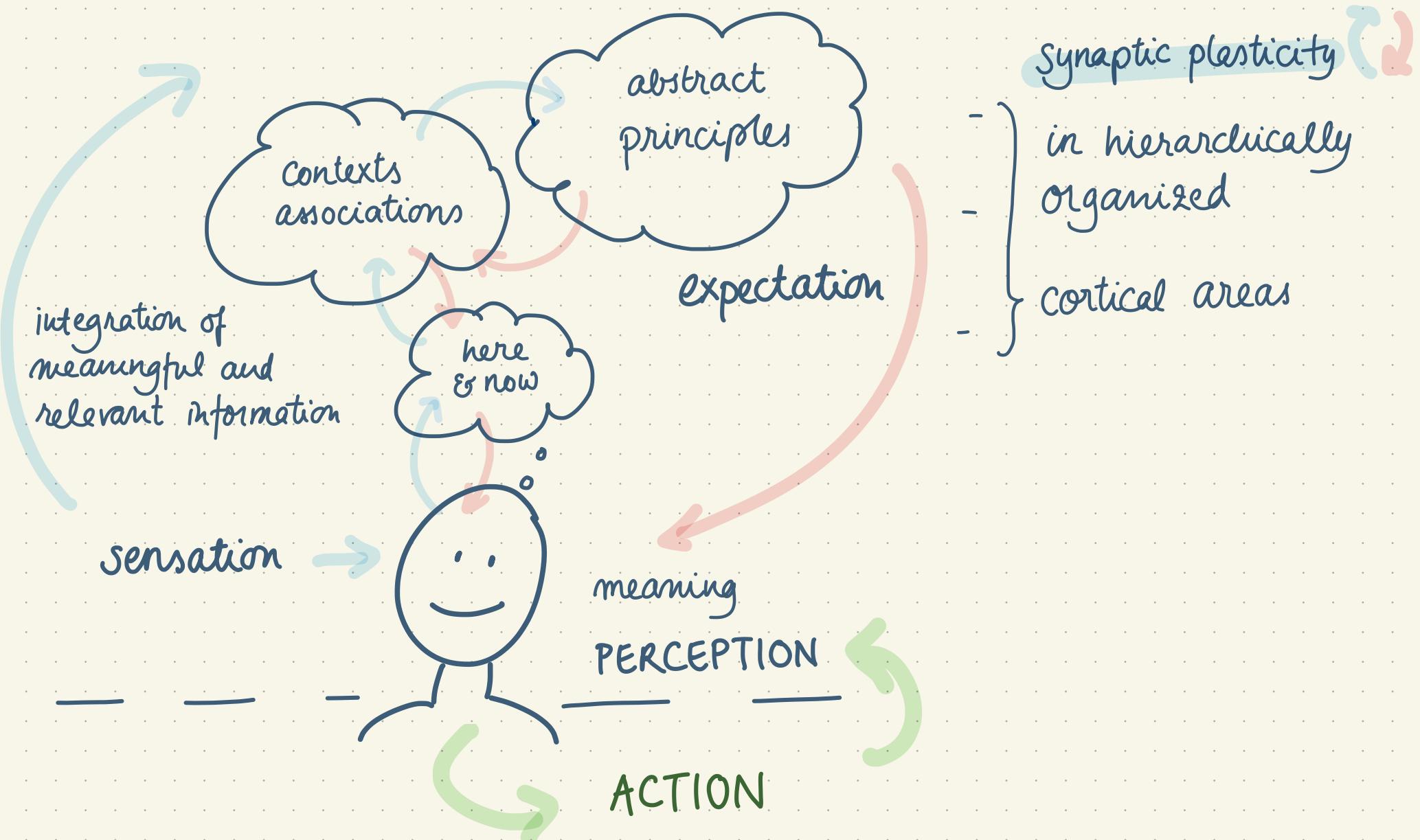
Neuro- development



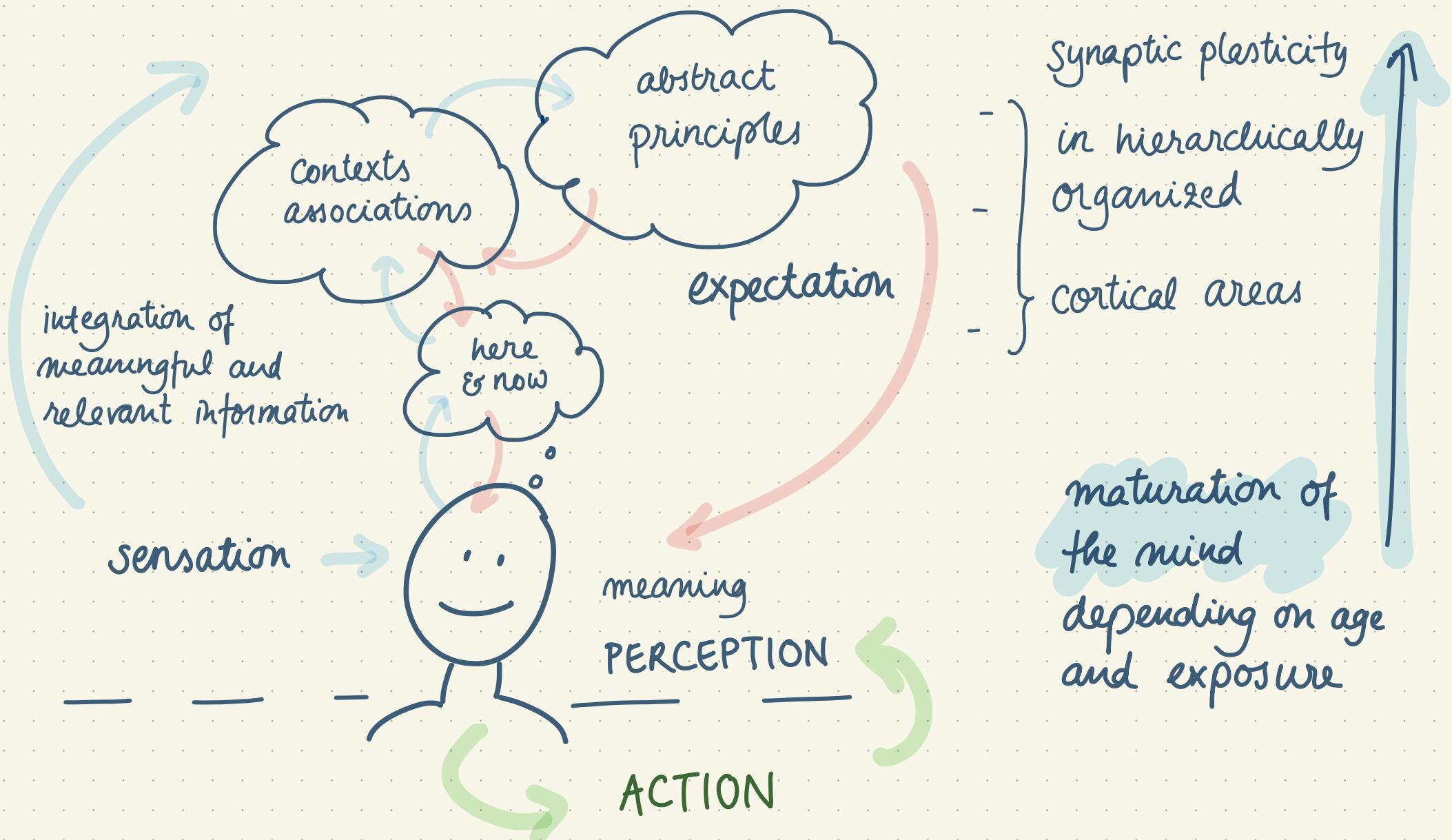
MENTAL MODEL OF THE WORLD AND THE SELF



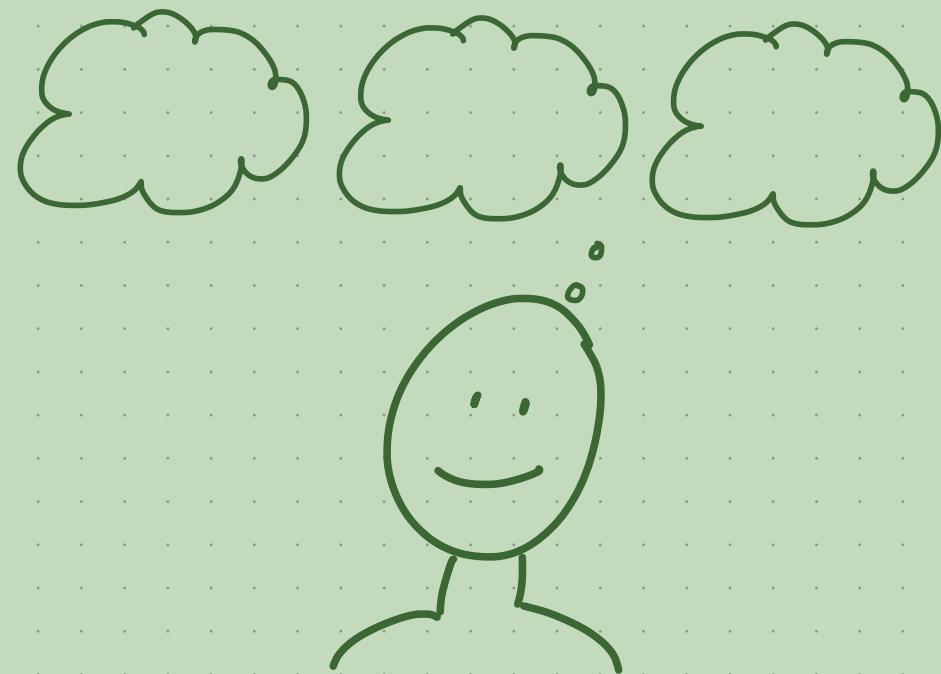
MENTAL MODEL OF THE WORLD AND THE SELF



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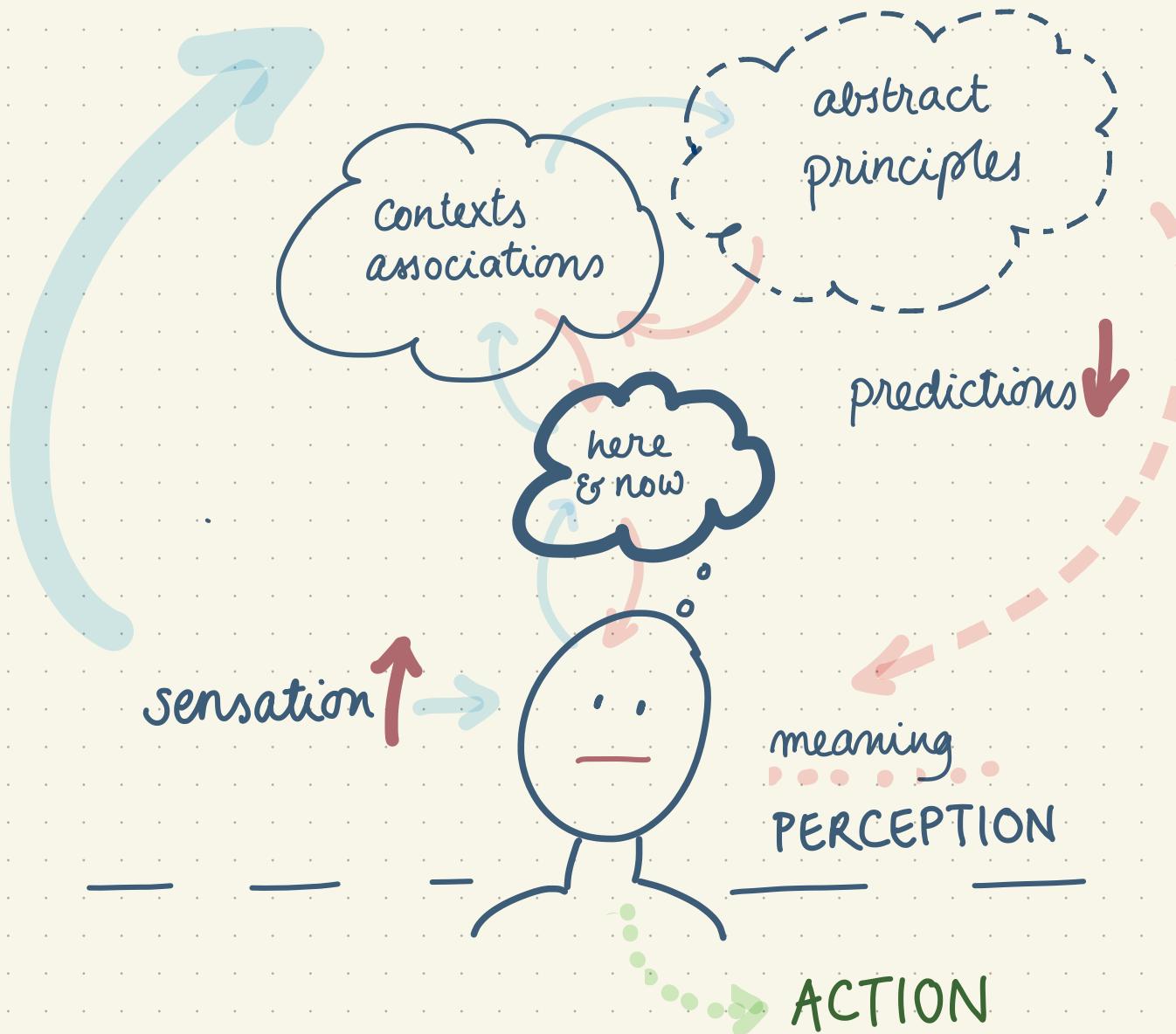


Neuro- developmental disorder



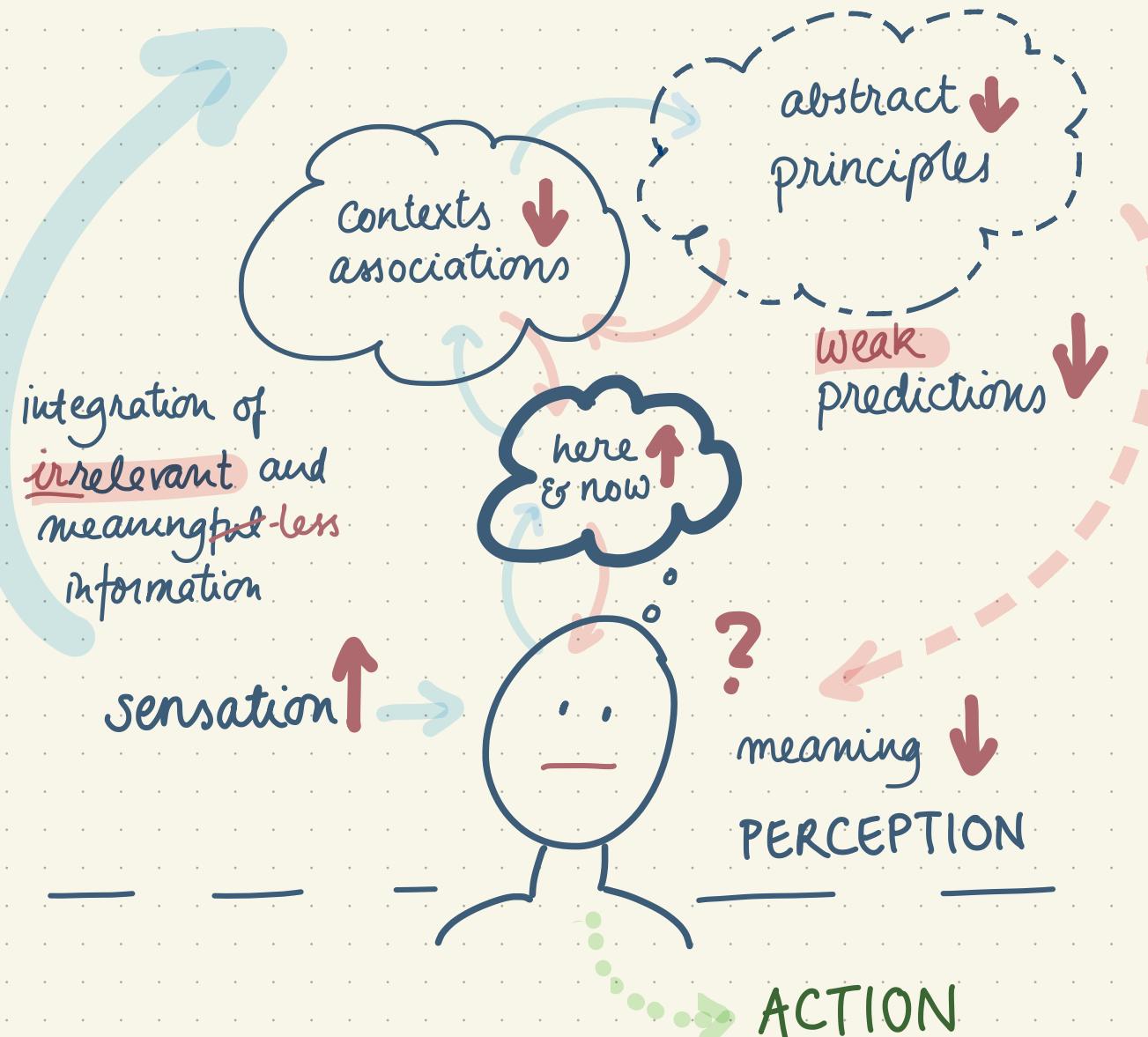
AUTISM SPECTRUM DISORDER

Congenital dysbalance in information processing



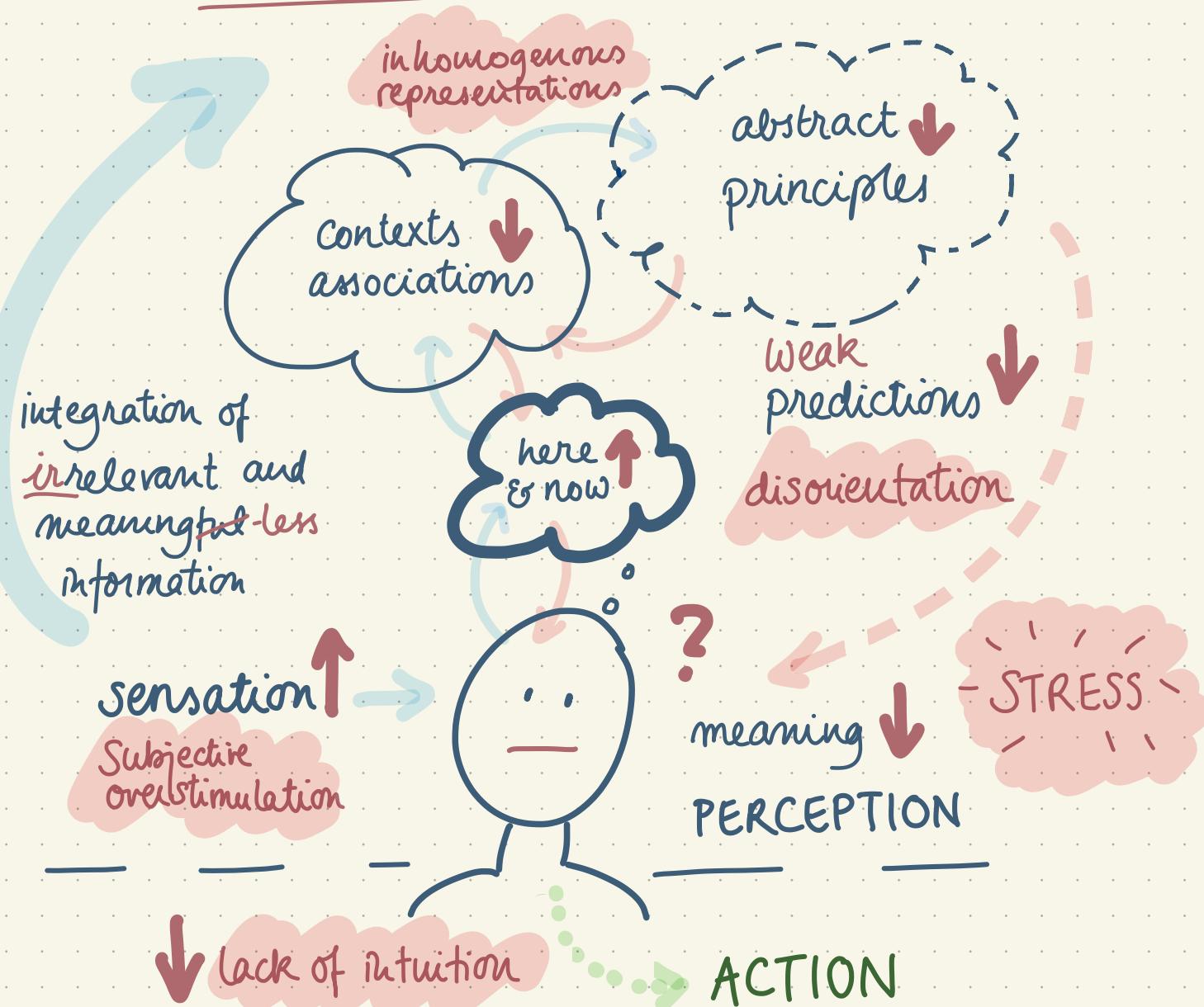
AUTISM SPECTRUM DISORDER

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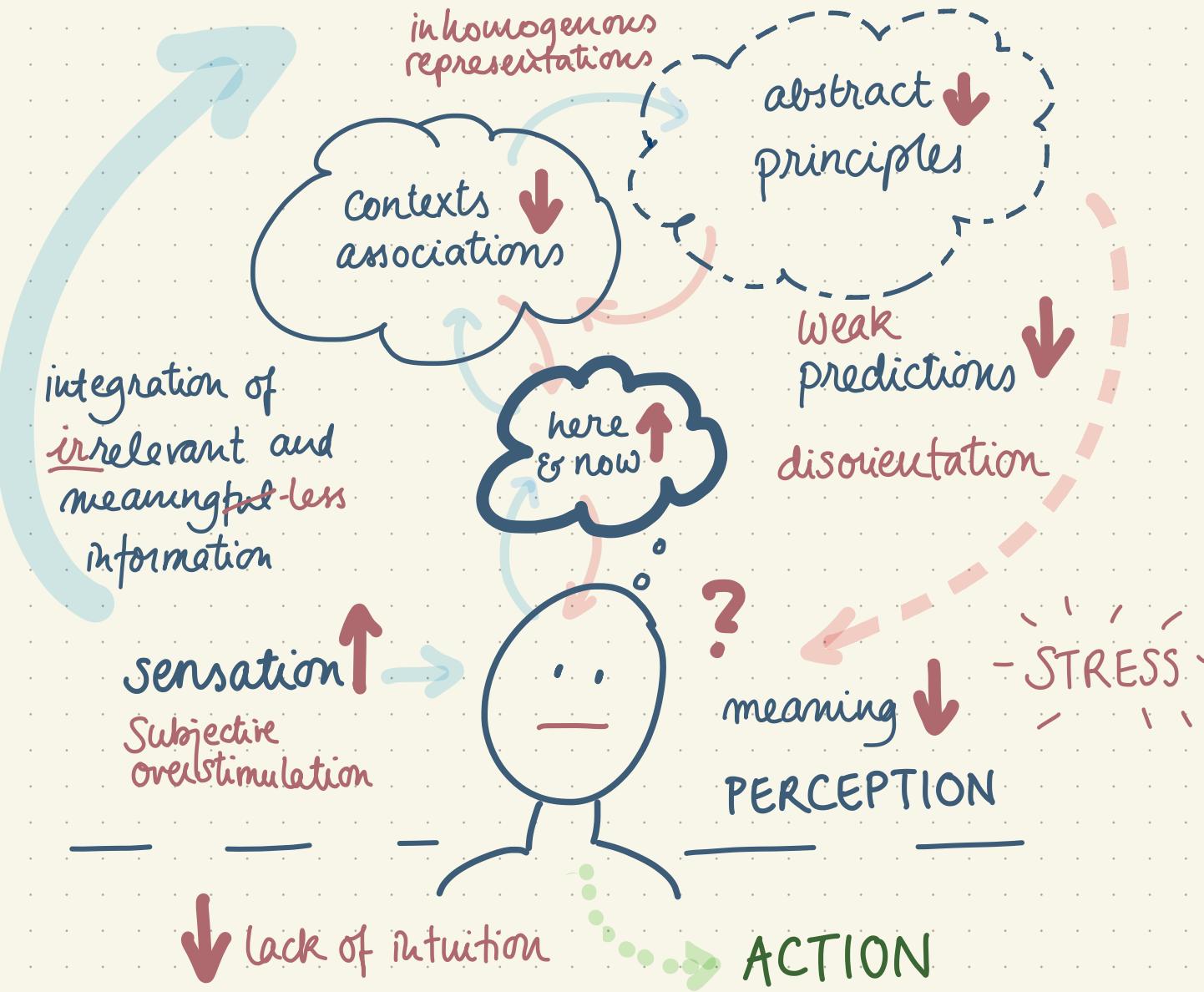
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AUTISM SPECTRUM DISORDER

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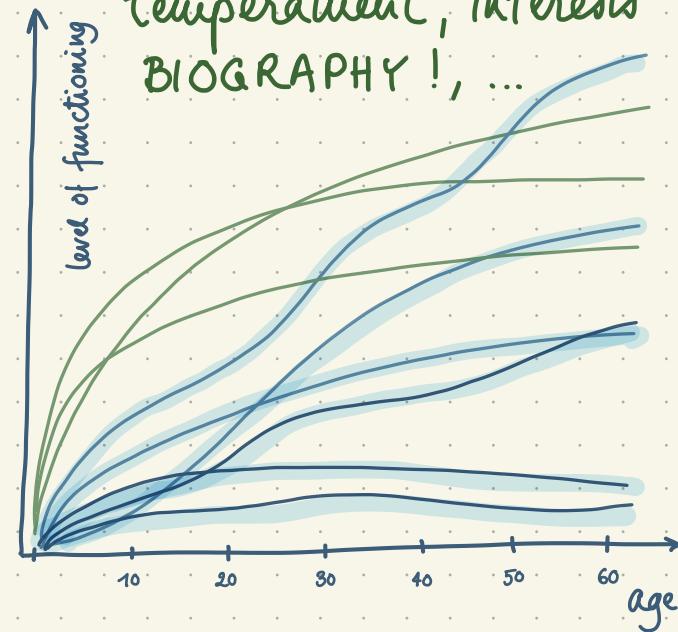


CLINICAL SYMPTOMS

- sensory
- interests
- (coping) behaviour
- interaction
- communication
- + consequences of chronic stress

ALTERED DEVELOPMENT

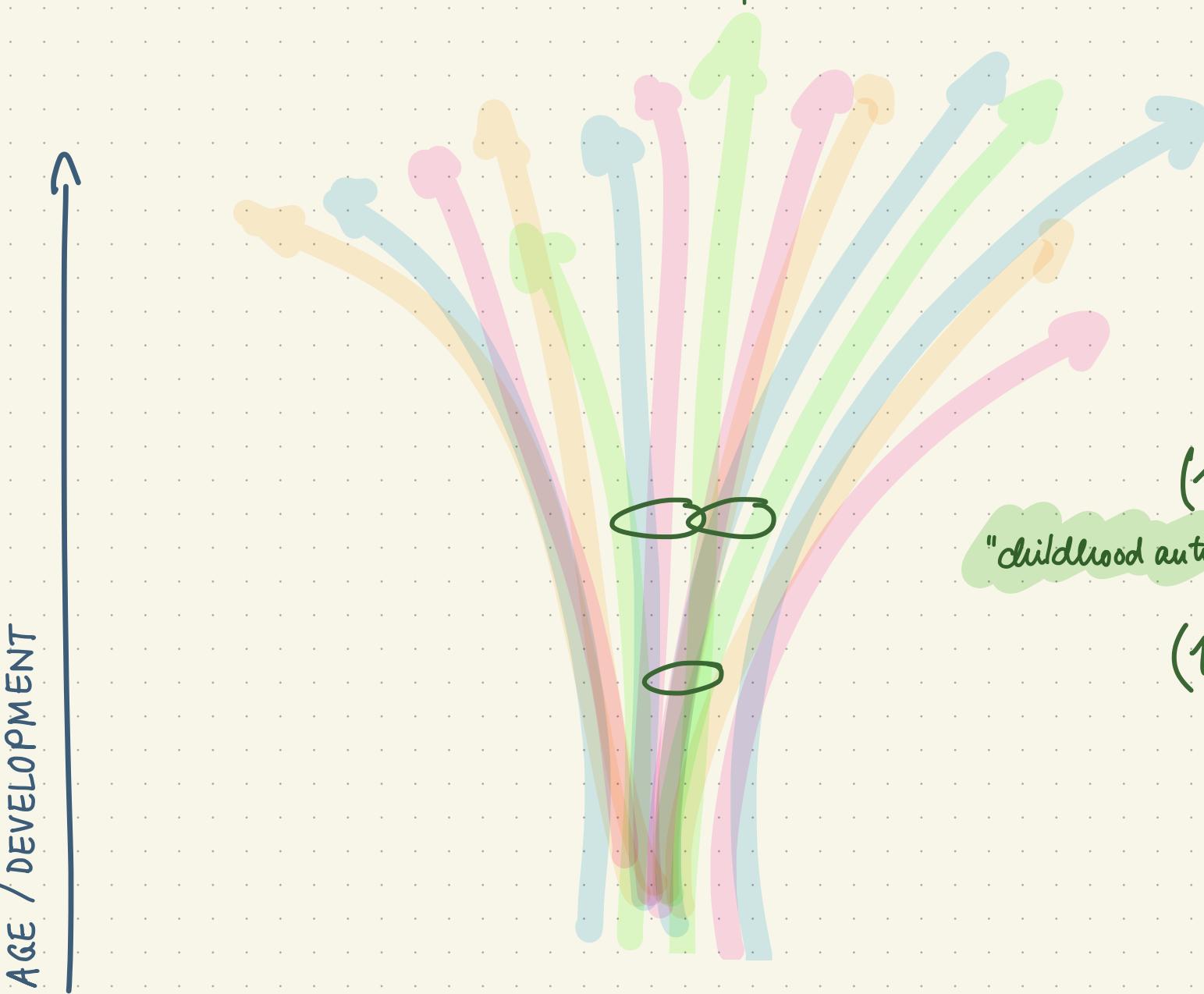
heavily dependent on temperament, interests
BIOGRAPHY !, ...





current
Clinical
Problems

BROAD SPECTRUM of clinical presentations



changes in
DIAGNOSTIC
CLASSIFICATION:

Symptom-oriented
definitions:

(1994) ICD-10
"childhood autism"/"Asperger's Sy." } narrow

(1979) ICD-9
"autism"

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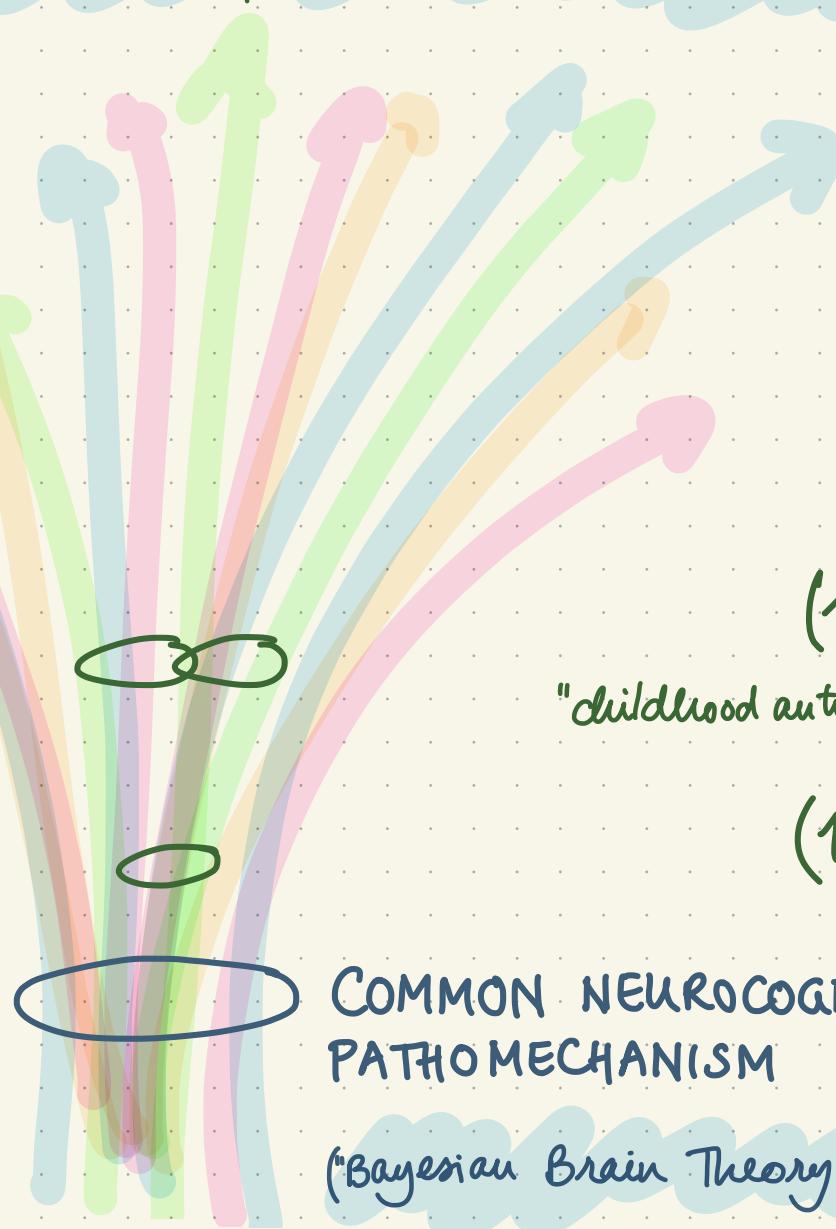
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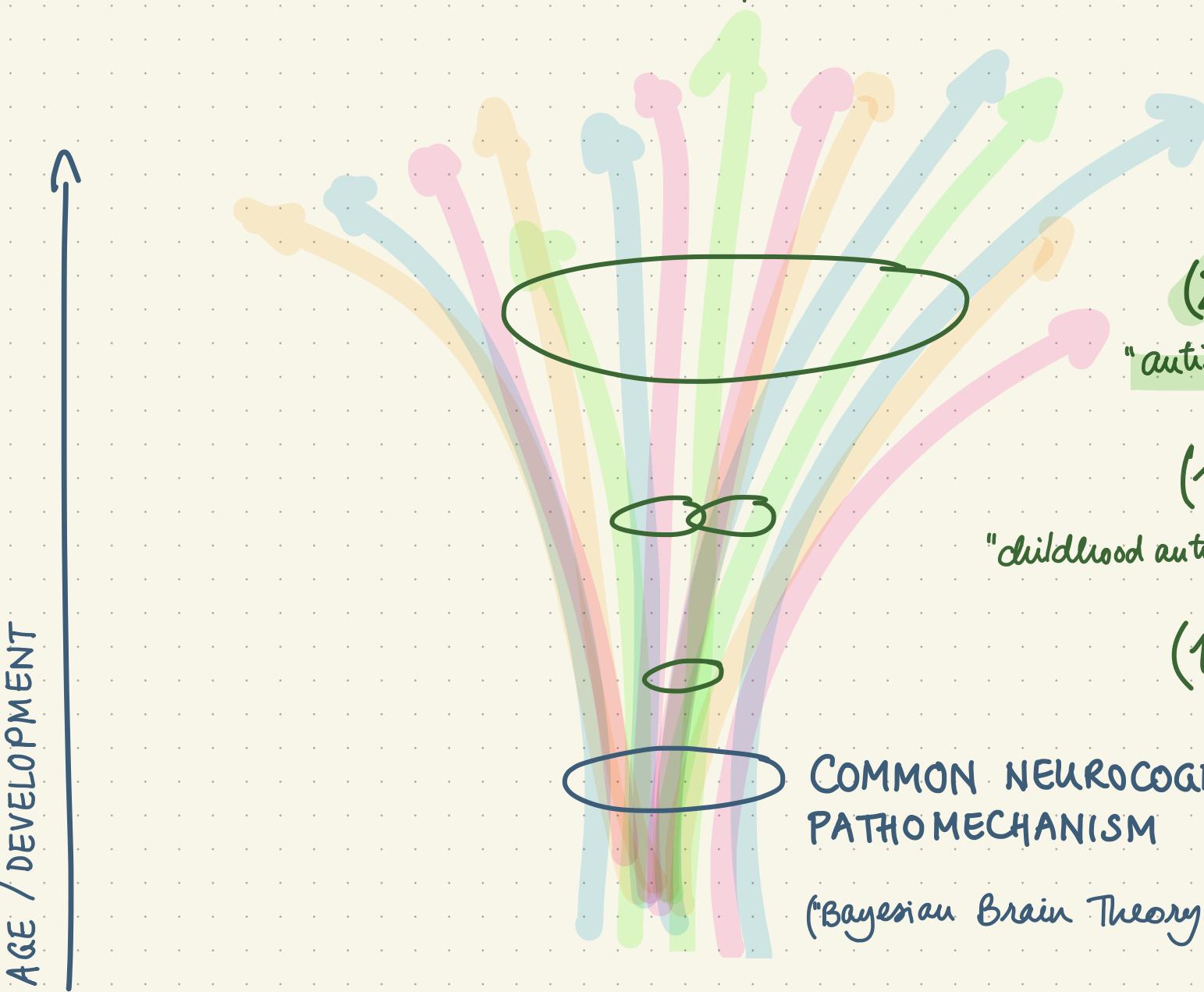
COMMON NEUROCOGNITIVE
PATHOMECHANISM

("Bayesian Brain Theory of autism")

↑
AGE / DEVELOPMENT



BROAD SPECTRUM of clinical presentations



changes in
DIAGNOSTIC
CLASSIFICATION:

Symptom-oriented
definitions:

(2022) ICD-11

"autism spectrum disorder"

broad
easier
applicable
to adults

(1994) ICD-10

"childhood autism"/"Asperger's Sy."

(1979) ICD-9

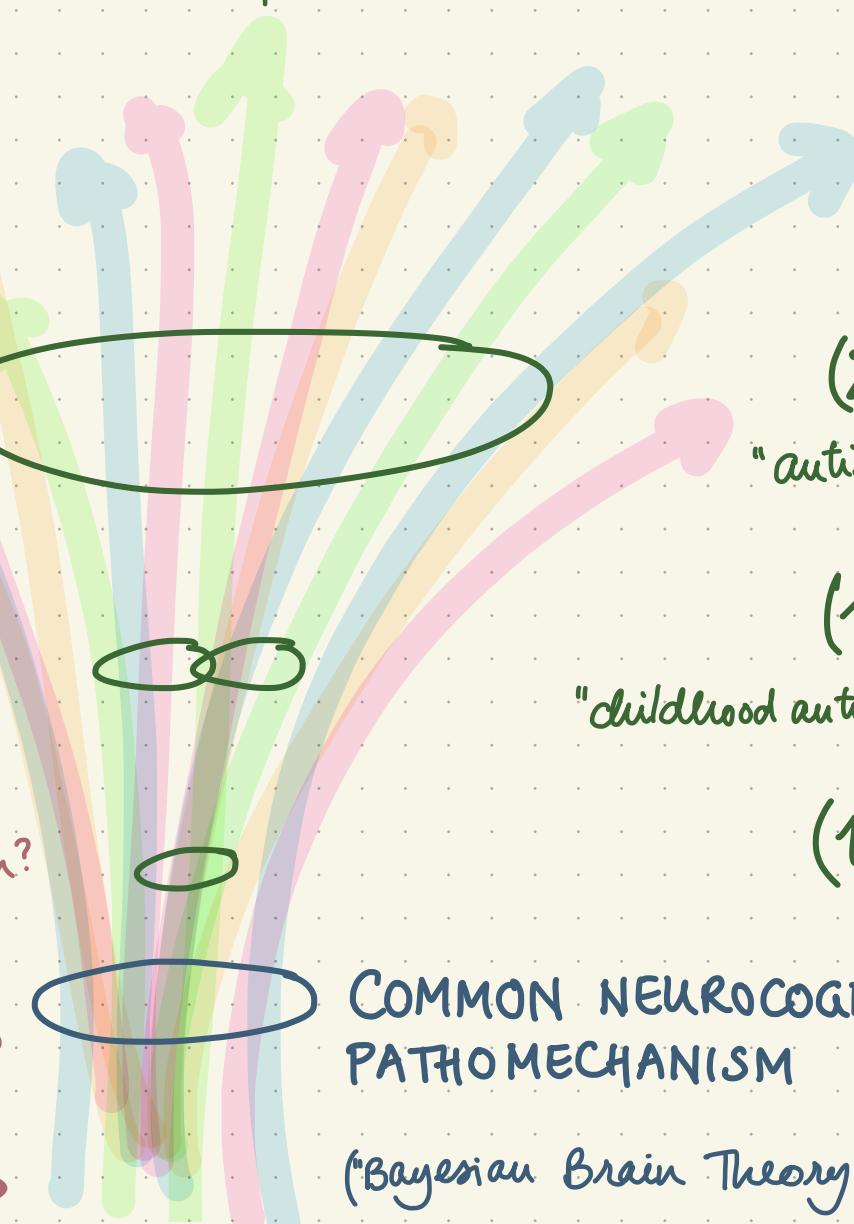
"autism"

narrow

CLINICAL PROBLEMS

BROAD SPECTRUM of clinical presentations

- ↑ AGE / DEVELOPMENT
- BOUNDARIES?
 - PHARMAKOTHERAPY?
 - early? with no speech?
 - with lack of introspection?
 - ASSESSMENT?
 - Objective / quantitative?
 - VALIDATION?



COMMON NEUROCOGNITIVE
PATHOMECHANISM

("Bayesian Brain Theory of autism")

changes in
DIAGNOSTIC
CLASSIFICATION:

Symptom-oriented definitions:

(2022) ICD-11 broad easier applicable to adults

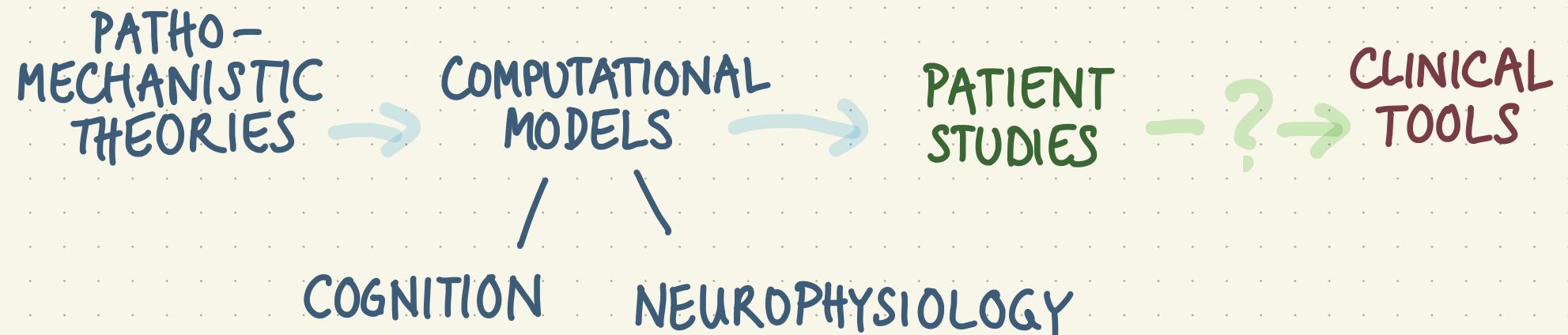
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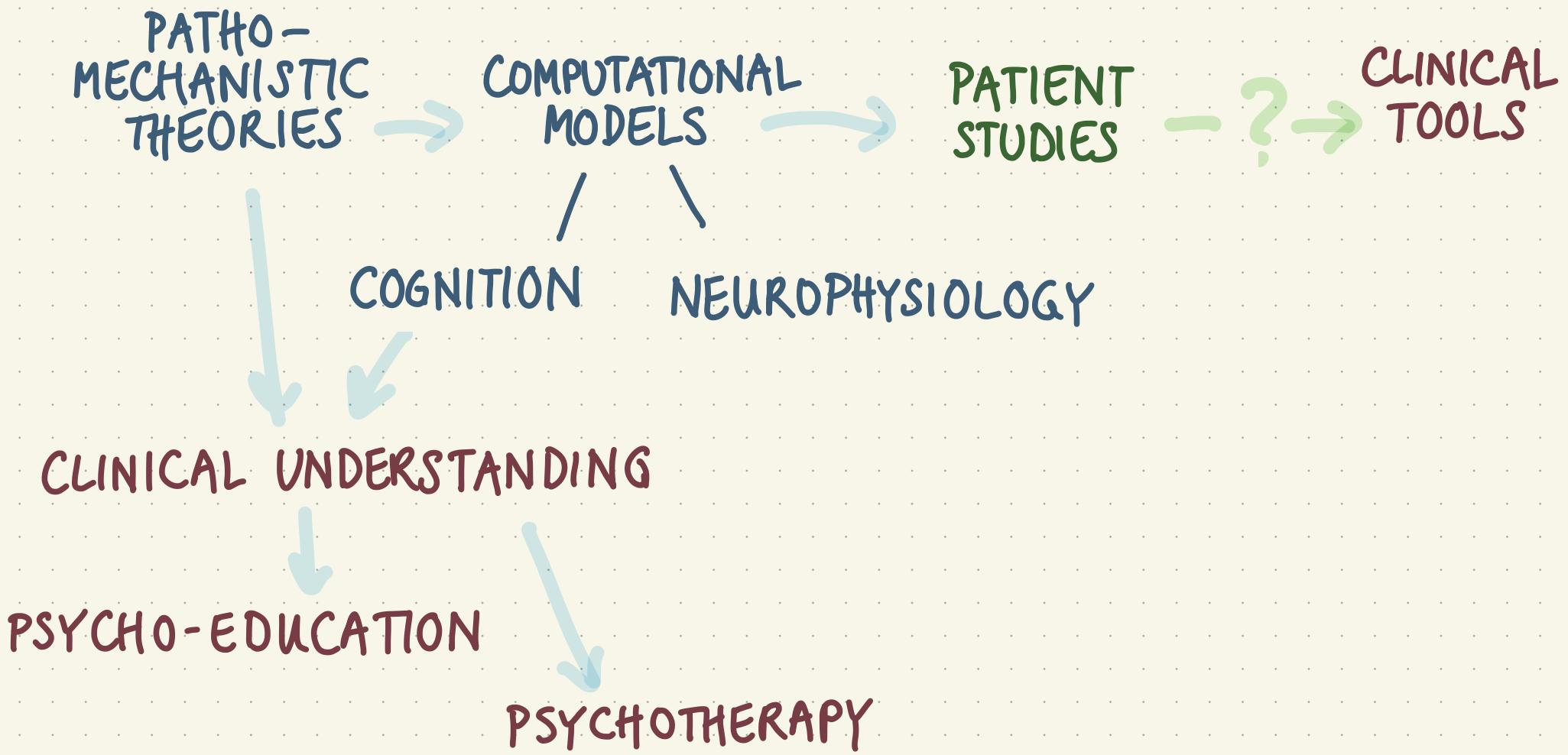
COMPUTATIONAL PSYCHIATRY

the solution?

COMPUTATIONAL PSYCHIATRY

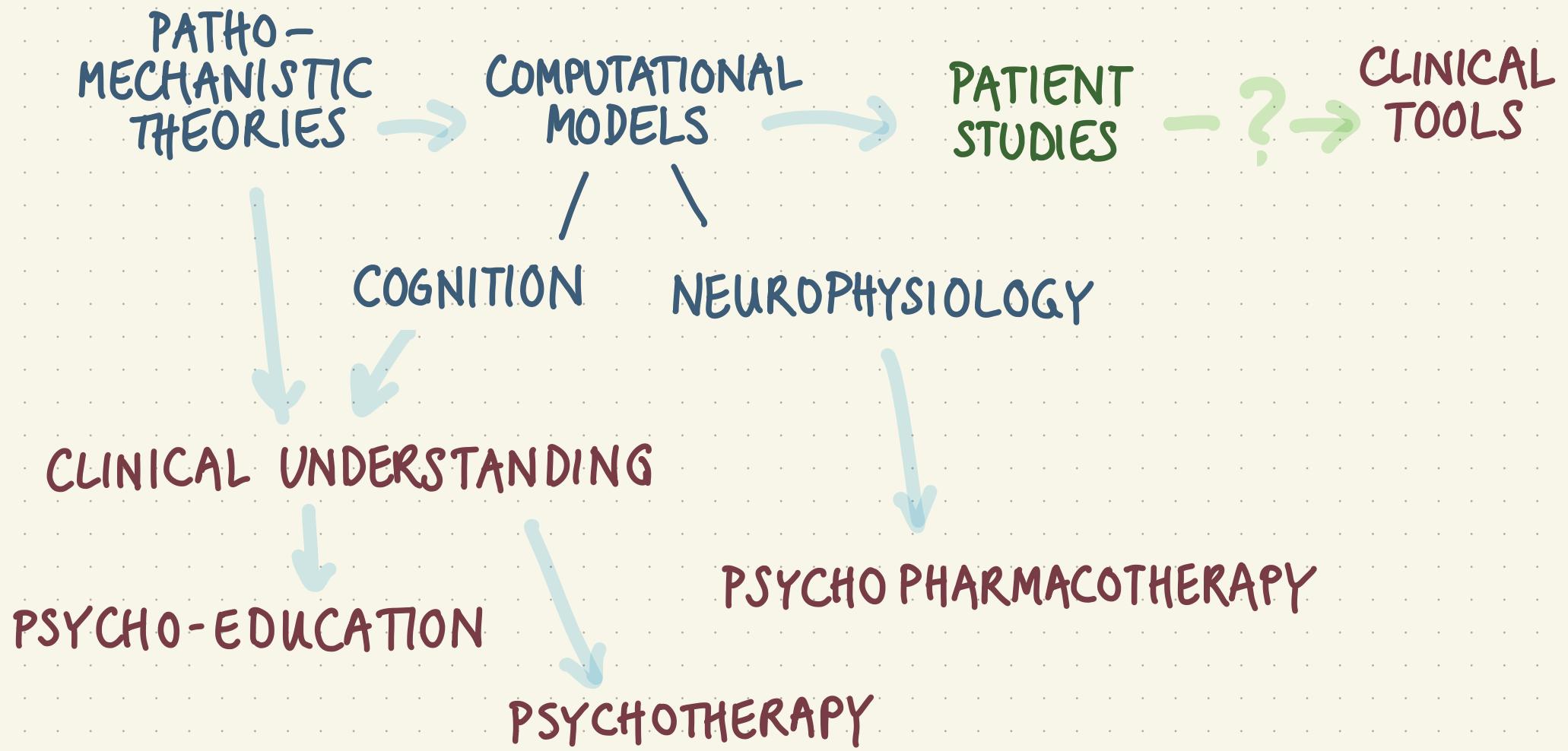


COMPUTATIONAL PSYCHIATRY



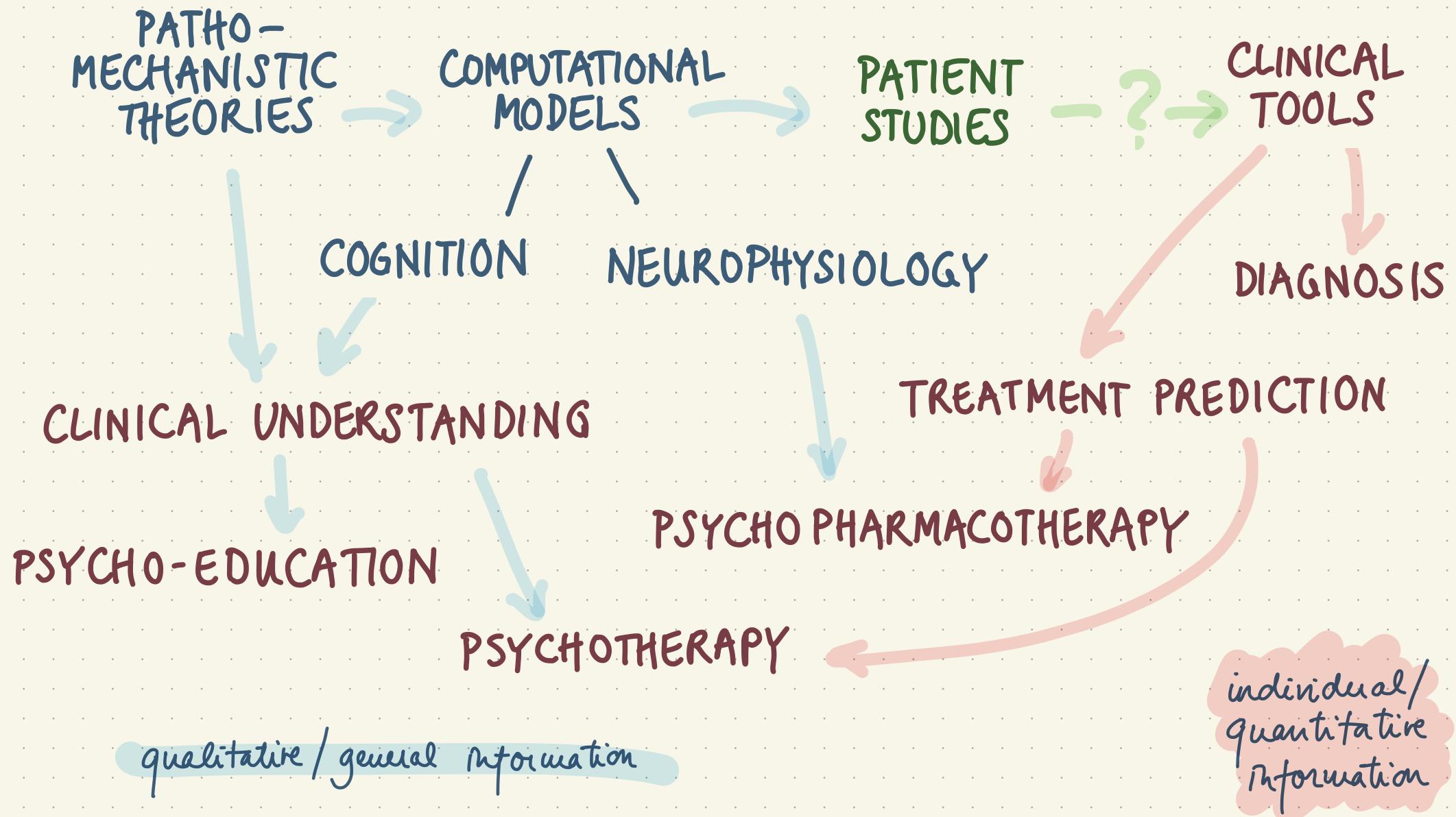
qualitative / general information

COMPUTATIONAL PSYCHIATRY



qualitative / general information

COMPUTATIONAL PSYCHIATRY



take home

Constitutional differences in information integration lead to unconventional ways of thinking & acting

A dysbalance causes weak and inhomogeneous maturation of the mental model.
Strong dependence on biography.

The mental model matures best if processes of information integration are in optimal balance

No objective assessment of assumed pathomechanism.

Explanation through computational theories. Framework for the development of objective tools.

take home

Thank you !

TNU-Team /

Klaas Enno Stephan et al.

insights into neuromodelling

BIASD-Team /

Maya Schneebeli,

Frederike Petzschner et al.

modeling the autistic mind

my patients

insights into their individual minds

my father

suitable genetic background