Depersonalization Disorder (DPD)
A Model System for Consciousness?

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Scientific studies of consciousness have proposed various **models of consciousness**:
- **visual system** (Crick & Koch), **anesthesia** (Flohr), **dreaming** (Revonsuo), **coma** (Laureys), **epilepsy** (Blumenfeld)

A model should cover the constitutive **subsystems of consciousness** (Tart 1975):
- **exteroception, interoception, input processing, memory, sense of identity, emotions, evaluation and decision making, subconscious, motor output,** and **space/time sense**

These may be categorized into **Somatic, Perceptual, Cognitive,** and **Emotional** components.

? What 'explanatory correlates' should these models describe ?

Four **fundamental properties** characterizing most if not all **conscious experiences** (Seth 2009):
(i) the co-existence of **segregation and integration** in conscious scenes
(ii) the emergence of a **subjective first-person perspective**
(iii) the presence of **affective conscious contents**, either transiently (emotion) or as a background (mood)
(iv) experiences of **intention and agency** that are characteristic of voluntary action

? Are there also model candidates in clinical neuropsychiatry ?

A comparative search through **comprehensive diagnosis lists** (e.g., the DSM-IV) for disturbances, deficits, and impairments in the components and correlates of consciousness:

DSM-IV disorder category	Symptoms (disturbances, deficits, impairments) by component				Reality testing?
	Somatic	Perceptual	Cognitive	Emotional	
Adjustment				+	
Anxiety	+			+	
Cognitive			+		
Childhood	N/A	N/A	N/A	N/A	
Dissociative	**+**	**+**	**+**	**+**	**Intact**
Eating	+	+		+	
Factitious	+		+		
Impulse-Control			+	+	
Mood				+	
Personality			+	+	
Schizophrenia	**+**	**+**	**+**	**+**	Impaired X
Sexual	+		+		
Sleep	+				
Somatoform	+				
Substance Related	**+**	**+**	**+**	**+**	Impaired X

In dissociative disorders, practically **all subsystems of consciousness are affected.**
Depersonalization disorder (DPD) is a **dysfunction of the subjective experience,** where **reality testing** remains **intact.**

! DPD as a noteworthy candidate model system for consciousness !

No recognized treatment for DPD, but conditions and methods that may...

…induce DPD-like symptoms:
psychological stress,
psychoactive substance use,
κ-opioid receptor agonists (KOR)

…reduce DPD-like symptoms:
pharmacotherapy: κ-opioid receptor antagonists (naloxone, naltrexone), SSRI antidepressants, cognitive-behavioral therapy (CBT)

! DPD-like symptoms may be induced by κ-opioid agonists !

Symptoms of DPD and acute effects of *Salvia divinorum* – a recreationally used hallucinogenic plant containing the κ-opioid agonist **salvinorin-A**:

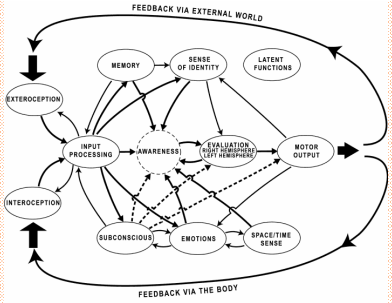
Component	Symptoms of DPD (Medford et al. 2005)	*Salvia divinorum* / salvinorin-A effects (Sumnall et al. 2010)
Somatic	**Desomatisation**: Diminution, loss or alteration of bodily sensations, sense of disembodiment; there may be a raised pain threshold	changes in the perception of size, weight, and posture
Perceptual	**Derealisation**: Threatening sense of unfamiliarity or unreality in the environment, perceptual anomalies may be present, other people may feel like actors in a play	no boundaries between inner and outer reality, a sense of unity, 'wherever I looked was especially beautiful'
Cognitive	**Depersonalization**: Disturbing sense of being 'separate from oneself', observing oneself as if from outside, feeling like a robot or automaton	understanding the universe, feeling beyond or outside of time, consciousness/mind located outside the physical body, 'at the same time I was also someone or something else', 'I experienced thoughts that I believed were not my own'
Emotional	**De-affectualisation**: Diminution or loss of emotional reactivity: emotions seem to lack spontaneity and subjective validity; this may affect intimate relationships	sense of reverence, more connected to other people

! Salvinorin-A induces brief and positive DPD-like dissociative symptoms !

Exploring consciousness by clinically induced depersonalization?
- the subjective experience of **„*feeling unreal*"**
- studying **self-awareness, embodiment,** and **metacognition**
- the concept of **"being no-one"** in the philosophy of mind

Subsystems of consciousness

- Exteroception
- Interoception
- Input processing
- Memory
- Sense of identity
- Emotions
- Subconscious
- Motor output
- Space/time sense
- Evaluation and decision making



(Tart 1975)

Depersonalization Disorder (DPD)

- a feeling of being detached from one's mental processes or body
- accompanied by intact reality testing
- DSM-IV: 300.6 (Depersonalization disorder)
- ICD10: F48.1 (Depersonalization-derealisation syndrome)
- *„feeling unreal"*

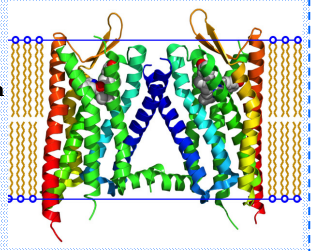
(DSM-IV TR 2000)

The κ-opioid receptor (KOR)

- 1 of 4 opioid receptor types
- no morphine-like effects

Agonists:
- produce dysphoria & delirium
- in nature: Mentha spp.
- therapy: addiction treatment

Antagonists:
- naloxone, naltrexone
- therapy: antidepressant



(Tejeda et al. 2012)

Salvia divinorum ("diviner's sage")

- a hallucinogenic mint/sage
- traditional use in Mexico
- recent recreational use
- smoked or chewed
- short duration 10–25 min
- psychoactive: salvinorin-A
- potent κ-opioid agonist
- effects reported 'unique'
- space/time distortions
- entity encounters (!)

(Sumnall et al. 2010)

Clinically induced depersonalization by salvinorin-A could be an interesting method for exploring and modelling consciousness!

References

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