

Medizinischer Befund und juristischer Beweis - unter besonderer Berücksichtigung von neurobiologischen Erkenntnissen bei Sexualstraftätern

Strafrecht AT II, Prof. M. Thommen

Zürich, 27. Mai 2019

Prof. Dr. med. Marc Graf, Klinikdirektor
Klinik für Forensik
UPK Basel





- 1. Einleitung**
- 2. Das Basisratenproblem**
- 3. Paraphilien**
- 4. Sexualstraftäter**
- 5. Subjektive vs. objektive Daten**
- 6. Moderne Ansätze Diagnostik**

Art. 182 StPO Voraussetzungen für den Beizug einer sachverständigen Person

Staatsanwaltschaft und Gerichte ziehen eine oder mehrere sachverständige Personen bei, wenn sie nicht über die besonderen Kenntnisse und Fähigkeiten verfügen, die zur Feststellung oder Beurteilung eines Sachverhalts erforderlich sind.

StGB Art. 19 Schuldfähigkeit und Art. 56 ff Massnahmen.

Bsp. Drogenschnelltest

| | | Autolenker unter Drogen | | Summe |
|-------|---|-------------------------|----|-------|
| | | - | + | |
| Test | - | 45 | 5 | 50 |
| | + | 5 | 45 | 50 |
| Summe | | 50 | 50 | 100 |

$$PPV = \frac{\textit{richtig positive}}{\textit{richtig positive} + \textit{falsch positive}} = \frac{45}{45 + 5} = 0,9$$

$$NPV = \frac{\textit{richtig negative}}{\textit{richtig negative} + \textit{falsch negative}} = \frac{45}{45 + 5} = 0,9$$

Prävalenz 10 %

| | | Autolenker unter Drogen | | Summe |
|-------|---|-------------------------|----|-------|
| | | - | + | |
| Test | - | 81 | 1 | 82 |
| | + | 9 | 9 | 18 |
| Summe | | 90 | 10 | 100 |

$$PPV = \frac{\text{richtig positive}}{\text{richtig positive} + \text{falsch positive}} = \frac{9}{9 + 9} = 0,5$$

$$NPV = \frac{\text{richtig negative}}{\text{richtig negative} + \text{falsch negative}} = \frac{81}{81 + 1} = 0,99$$

Prävalenz 1 %

| | | Autolenker unter Drogen | | Summe |
|-------|---|-------------------------|---|-------|
| | | - | + | |
| Test | - | 90 | 0 | 90 |
| | + | 9 | 1 | 10 |
| Summe | | 99 | 1 | 100 |

$$PPV = \frac{\text{richtig positive}}{\text{richtig positive} + \text{falsch positive}} = \frac{1}{1 + 9} = 0,1$$

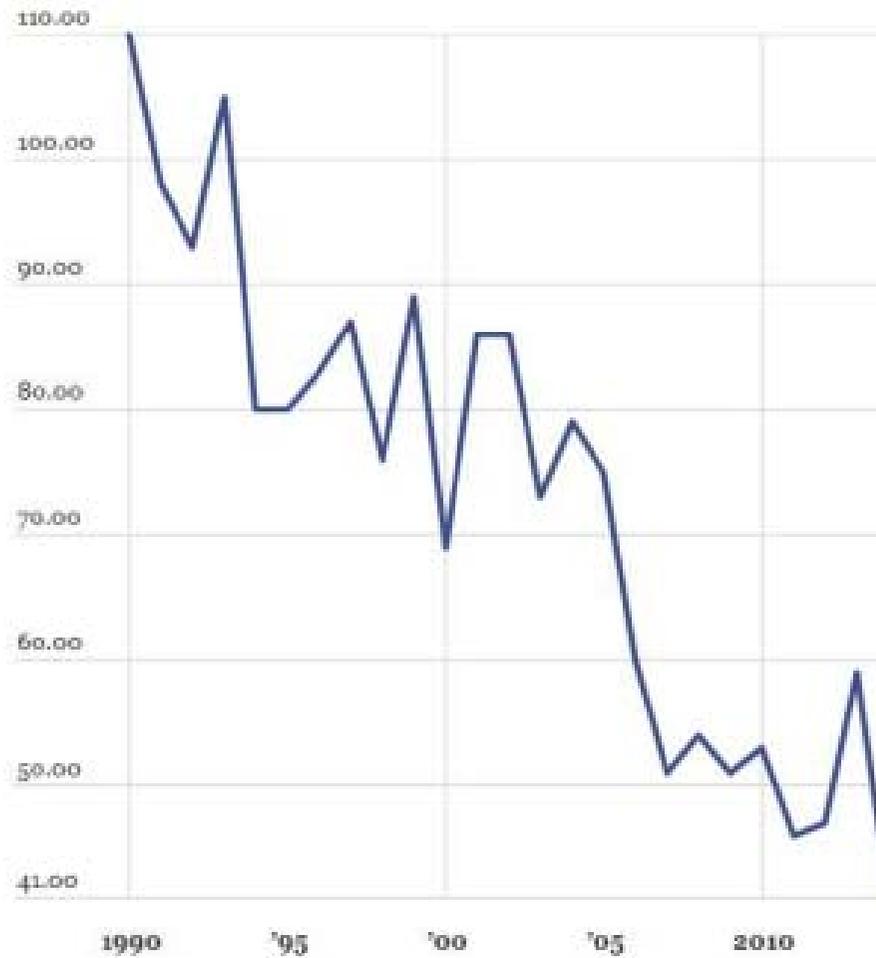
$$NPV = \frac{\text{richtig negative}}{\text{richtig negative} + \text{falsch negative}} = \frac{90}{90 + 0} = 1$$

https://en.wikipedia.org/wiki/Positive_and_negative_predictive_values

| | | True condition | | | |
|---------------------|------------------------------|---|--|--|--|
| | | Condition positive | Condition negative | <u>Prevalence</u> = $\frac{\Sigma \text{Condition positive}}{\Sigma \text{Total population}}$ | <u>Accuracy</u> (ACC) = $\frac{\Sigma \text{True positive} + \Sigma \text{True negative}}{\Sigma \text{Total population}}$ |
| Predicted condition | Predicted condition positive | <u>True positive</u> | <u>False positive</u> , <u>Type I error</u> | <u>Positive predictive value</u> (PPV), <u>Precision</u> = $\frac{\Sigma \text{True positive}}{\Sigma \text{Predicted condition positive}}$ | <u>False discovery rate</u> (FDR) = $\frac{\Sigma \text{False positive}}{\Sigma \text{Predicted condition positive}}$ |
| | Predicted condition negative | <u>False negative</u> , <u>Type II error</u> | <u>True negative</u> | <u>False omission rate</u> (FOR) = $\frac{\Sigma \text{False negative}}{\Sigma \text{Predicted condition negative}}$ | <u>Negative predictive value</u> (NPV) = $\frac{\Sigma \text{True negative}}{\Sigma \text{Predicted condition negative}}$ |
| | | <u>True positive rate</u> (TPR), <u>Recall</u> , <u>Sensitivity</u> , probability of detection, <u>Power</u> = $\frac{\Sigma \text{True positive}}{\Sigma \text{Condition positive}}$ | <u>False positive rate</u> (FPR), <u>Fall-out</u> , probability of false alarm = $\frac{\Sigma \text{False positive}}{\Sigma \text{Condition negative}}$ | <u>Positive likelihood ratio</u> (LR+) = $\frac{\text{TPR}}{\text{FPR}}$ | <u>Diagnostic odds ratio</u> (DOR) = $\frac{\text{LR+}}{\text{LR-}}$ |
| | | <u>False negative rate</u> (FNR), Miss rate = $\frac{\Sigma \text{False negative}}{\Sigma \text{Condition positive}}$ | <u>Specificity</u> (SPC), Selectivity, <u>True negative rate</u> (TNR) = $\frac{\Sigma \text{True negative}}{\Sigma \text{Condition negative}}$ | <u>Negative likelihood ratio</u> (LR-) = $\frac{\text{FNR}}{\text{TNR}}$ | |

Note that the positive and negative predictive values can only be estimated using data from a [cross-sectional study](#) or other population-based study in which valid [prevalence](#) estimates may be obtained. In contrast, the sensitivity and specificity can be estimated from [case-control studies](#).

Vollendete vorsätzliche Tötungsdelikte CH 1990 bis 2014



Normwerte Static-99 (www.static99.org)

Table 1: Static-99 sexual recidivism table

| Static-99 Score | 5 Year Sexual Recidivism (%) | | 10 Year Sexual Recidivism (%) | |
|--------------------|------------------------------|----------------------------------|-------------------------------|----------------------------------|
| | Routine CSC Samples | Preselected High Risk Samples | Routine CSC Samples | Preselected High Risk Samples |
| 0 | 2.3 | 8.3 | 1.8 | 13.0 |
| 1 | 3.2 | 10.3 | 2.6 | 15.8 |
| 2 | 4.3 | 12.8 | 3.9 | 19.1 |
| 3 | 5.7 | 15.7 | 5.7 | 23.0 |
| 4 | 7.7 | 19.1 | 8.2 | 27.3 |
| 5 | 10.2 | 23.1 | 11.8 | 32.1 |
| 6 | 13.4 | 27.7 | 16.7 | 37.3 |
| 7 | 17.4 | 32.7 | 23.0 | 42.8 |
| 8 | 22.3 | 38.2 | 30.8 | 48.5 |
| 9 | 28.2 | 44.0 | 39.8 | 54.3 |
| 10+ | 34.9 | 50.0 | 49.7 | 59.9 |
| Total N* | 752 | 1,163 | 342 | 735 |

Rückfall-Basisraten

Rezidivraten > 50 %

SVG, Drogen, homosexuelle Pädophilie

Rezidivraten 25 – 50 %

Körperverletzung, Eigentum, Exhibitionismus, heterosexuelle Pädophilie

Rezidivraten 10 – 25 %

Raub, Brandstiftung, Vergewaltigung, sexuelle Nötigung

Rezidivraten 3 – 10 %

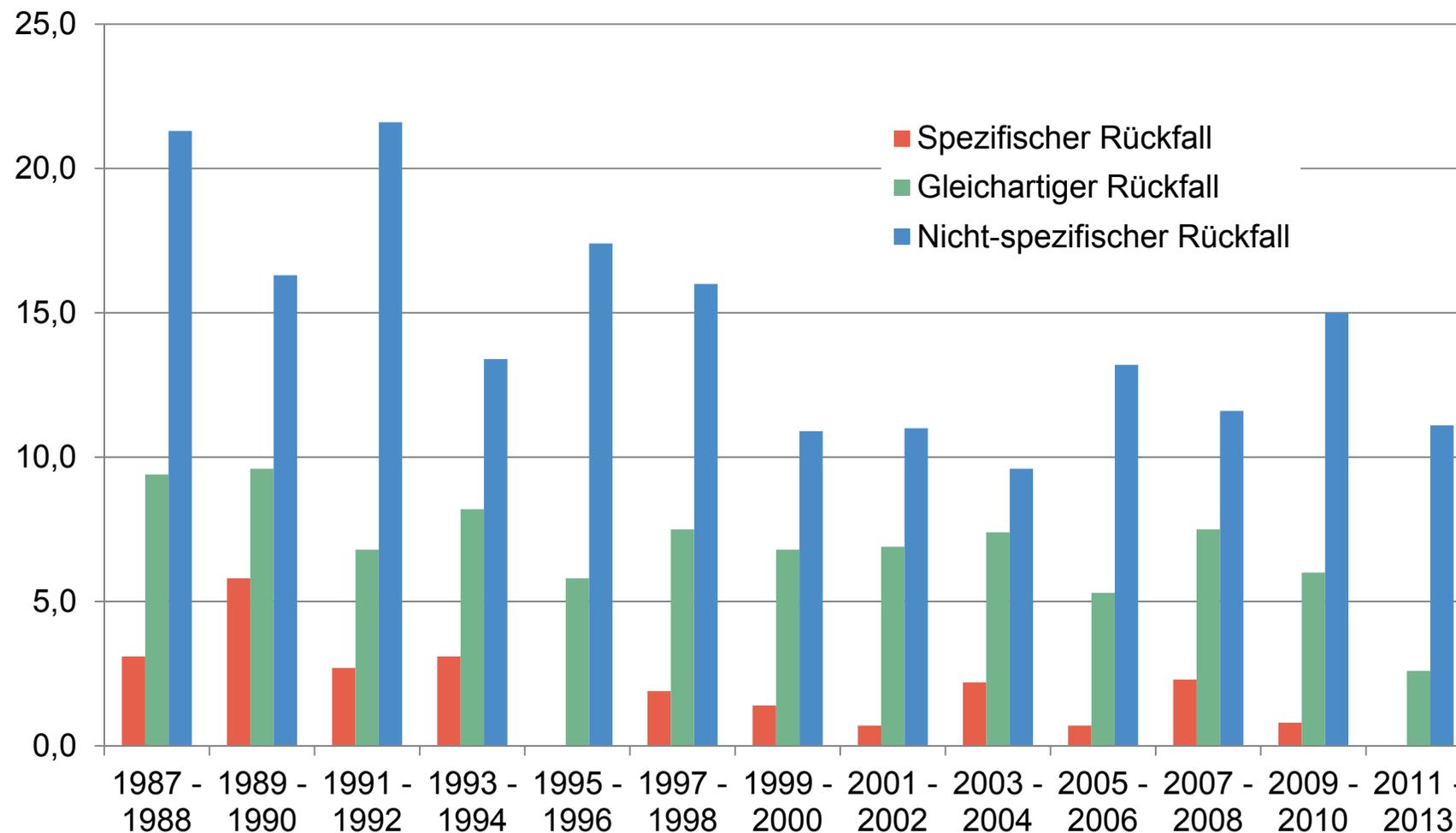
Inzest, Gewaltdelikte bei Pädophilie

Rezidivraten < 3 %

Mord und Totschlag

Rückfalldaten Bundesamt für Statistik

Sexualstraftaten



Eingangsbemerkungen

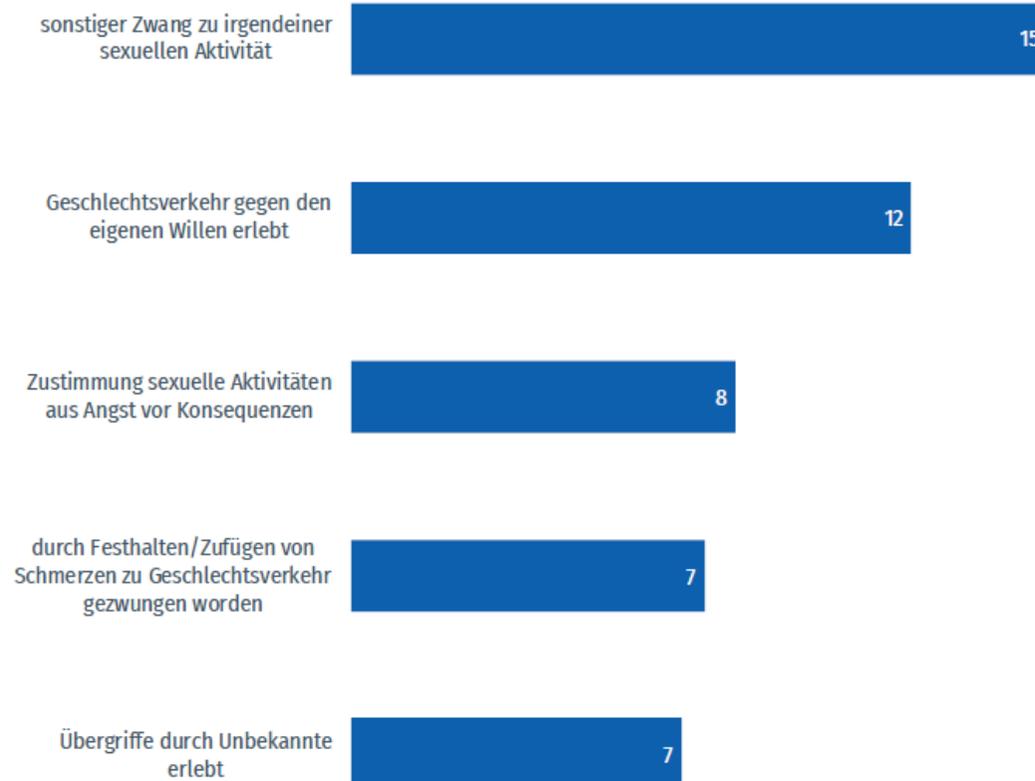
- › Die weitaus meisten Menschen mit einer Paraphilie leben diese ohne negative Konsequenzen für Dritte aus, nur ein sehr kleiner Teil wird straffällig.
- › Die meisten Erkenntnisse über Paraphilien stammen aber von straffälligen Menschen.
- › Konsequenzen:
 - › **Wissenschaftlicher Bias**
 - › **Stigmatisierung**

Sexuelle Gewalt an Frauen

Bericht gfs Bern für Amnesty International Mai 2019

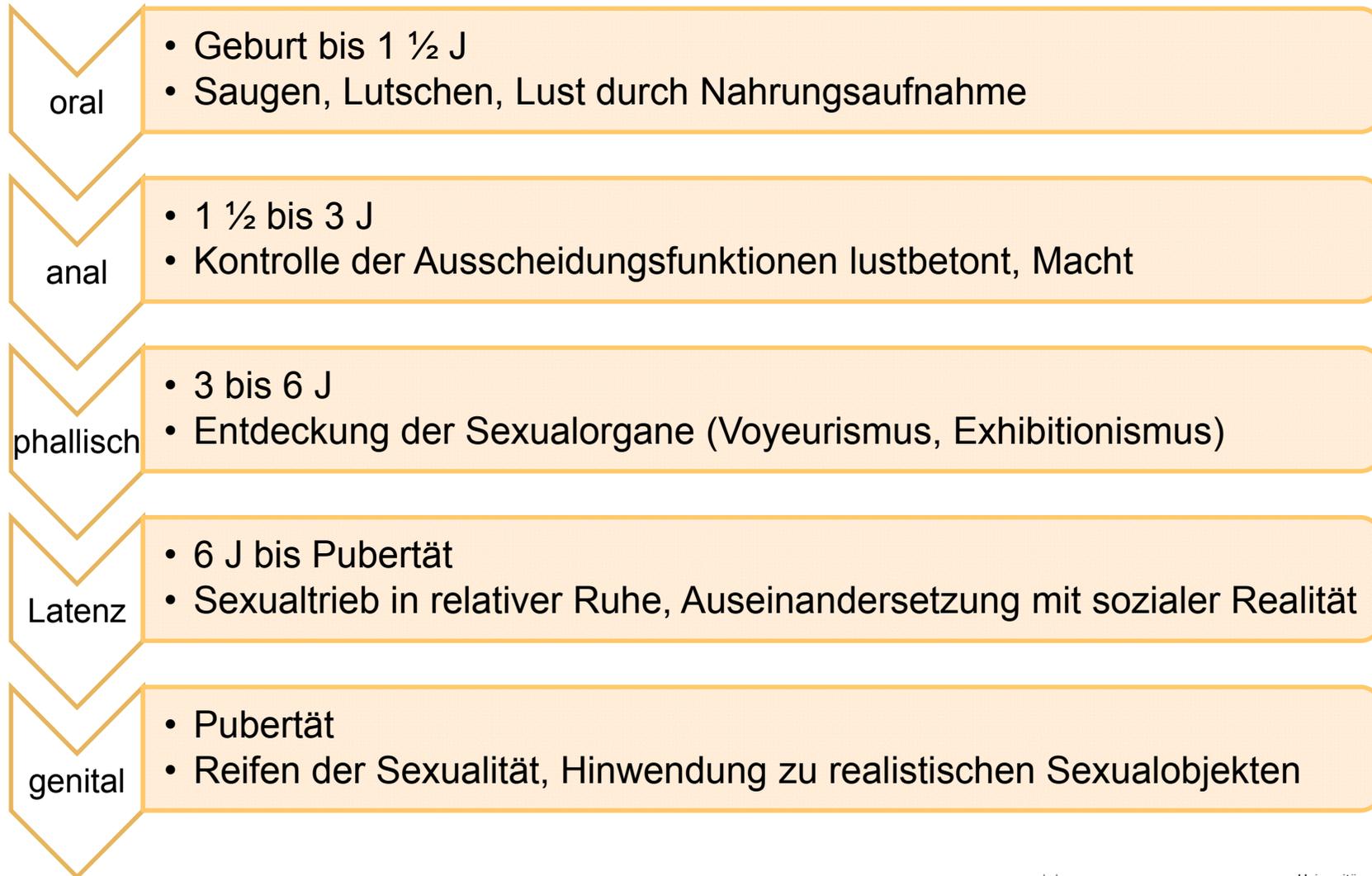
Situationen ungewollter sexueller Handlungen

"Sind folgende Situationen aufgetreten:"
in % Frauen ab 16 Jahren



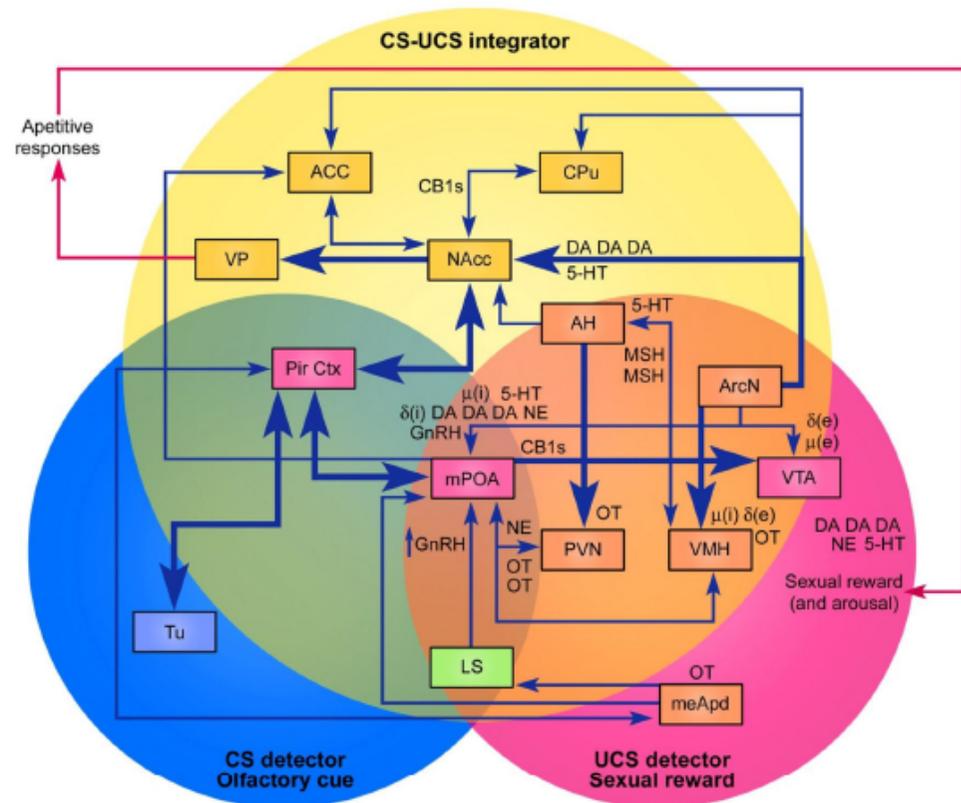
© gfs.bern, Befragung sexuelle Gewalt, April 2019 (N = 4495)

Psychosexuelle Entwicklung nach Freud



The neural correlates for the sensory inputs and learned behavior affecting sexual desire

- CS = conditioned stimulus
- UCS = unconditioned stimulus
- ACC = anterior cingulate cortex
- AH = anterior hypothalamus
- ArcN = arcuate nucleus of the hypothalamus
- Cpu = caudate putamen (striatum)
- LS = lateral septum
- MeApd = posterior-dorsal nucleus of the medial amygdala
- mPOA = medial preoptic area
- Nacc = nucleus accumbens
- Pir Ctx = piriform cortex
- PVN = paraventricular nucleus of the hypothalamus
- Tu = olfactory tubercle
- VMH = ventromedial nucleus of the hypothalamus
- VP = ventral pallidum
- VTA = ventral tegmental area



Excitatory

- DA - dopamine
- NE - norepinephrine
- MSH - melanocyte stimulating hormone
- OT - oxytocin
- GnRH - gonadotropin releasing hormone
- $\mu(e)$ - mu opioid receptors
- $\delta(e)$ - delta opioid receptors

Inhibitory

- CB1s - cannabinoid type 1 receptors
- 5-HT - 5-hydroxytryptamine
- $\mu(i)$ - mu opioid receptors
- $\delta(i)$ - delta opioid receptors

Sexualität:

Was ist noch normal und wo beginnt die Störung?

Normalität

Normvariante

Störung

Pedophilic Disorder DSM-5 302.2

- A. Over a period of at least 6 months, recurrent, intense sexually arousing fantasies, sexual urges, or behaviors involving sexual activity with a prepubescent child or children (generally age 13 years or younger).
- B. The individual has acted on these sexual urges, or the sexual urges or fantasies cause marked distress or interpersonal difficulty.
- C. The individual is at least age 16 years and at least 5 years older than the child or children in Criterion A.

Note: Do not include an individual in late adolescence involved in an ongoing sexual relationship with a 12- or 13-year old.

Specify whether:

Exclusive type (attracted only to children)

Nonexclusive type

Specify if:

Sexually attracted to males

Sexually attracted to females

Sexually attracted to both

Specify if:

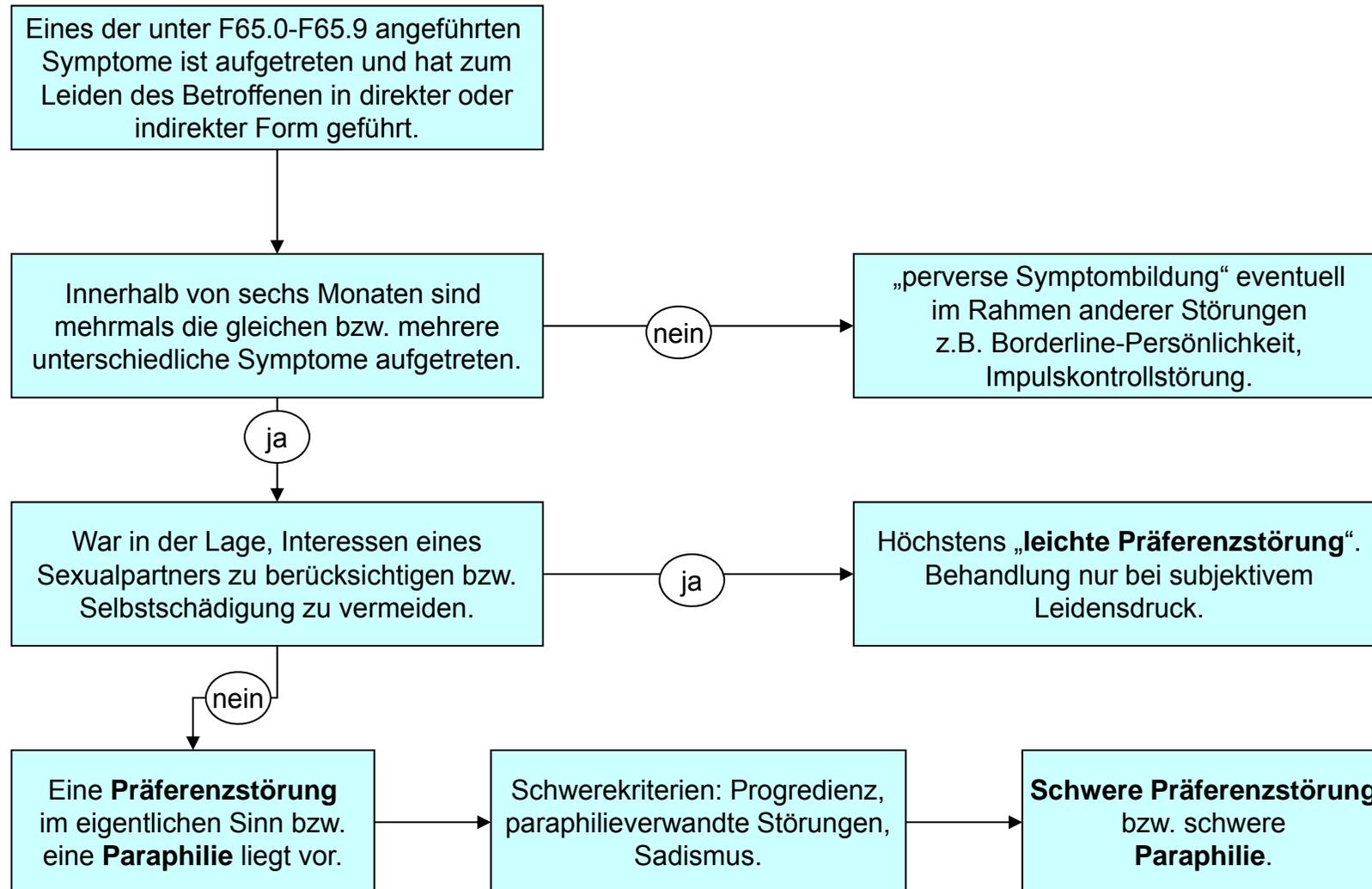
Limited to incest



Krafft-Ebing;

Psychopathia Sexualis 1886

Algorithmus zur Differenzierung der „Störung der Sexualpräferenz“



F65 Störungen der Sexualpräferenz

- › F65.0 Fetischismus
- › F65.1 fetischistischer Transvestitismus
- › F65.2 Exhibitionismus
- › F65.3 Voyeurismus
- › F65.4 Pädophilie
- › F65.5 Sadomasochismus
- › F65.6 multiple Störung der Sexualpräferenz
- › F65.8 sonstige Störung der Sexualpräferenz
 - › Frotteurismus
 - › Nekrophilie
 - › Sodomie
- › F65.9 nicht näher bezeichnete Störung der Sexualpräferenz

zeitlicher Beginn von Paraphilien

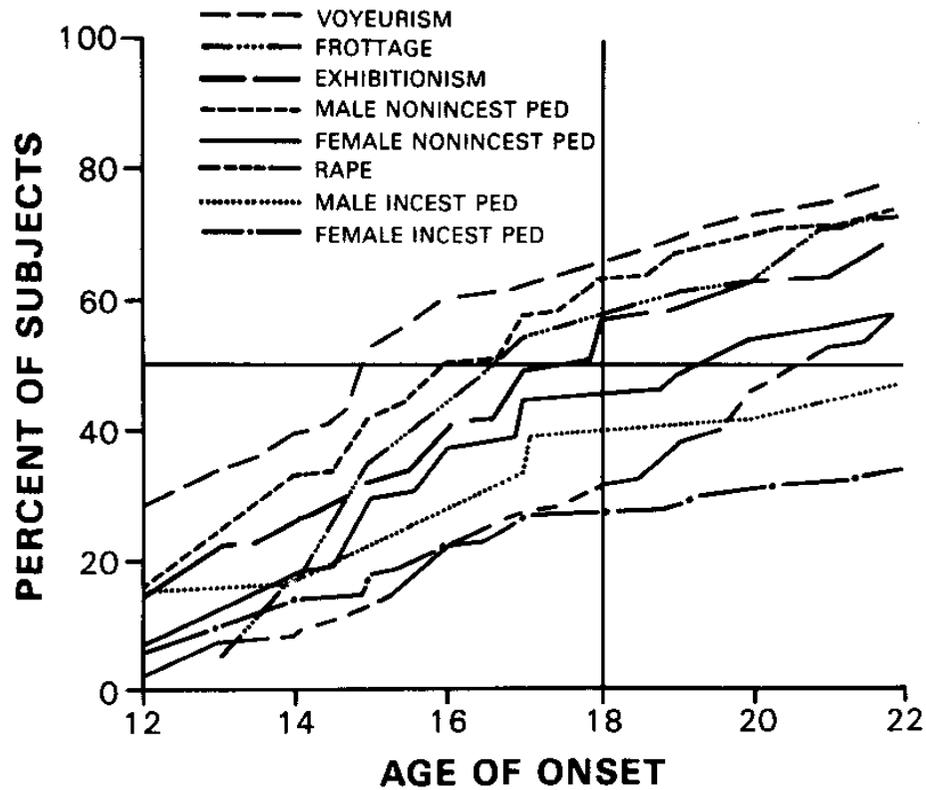
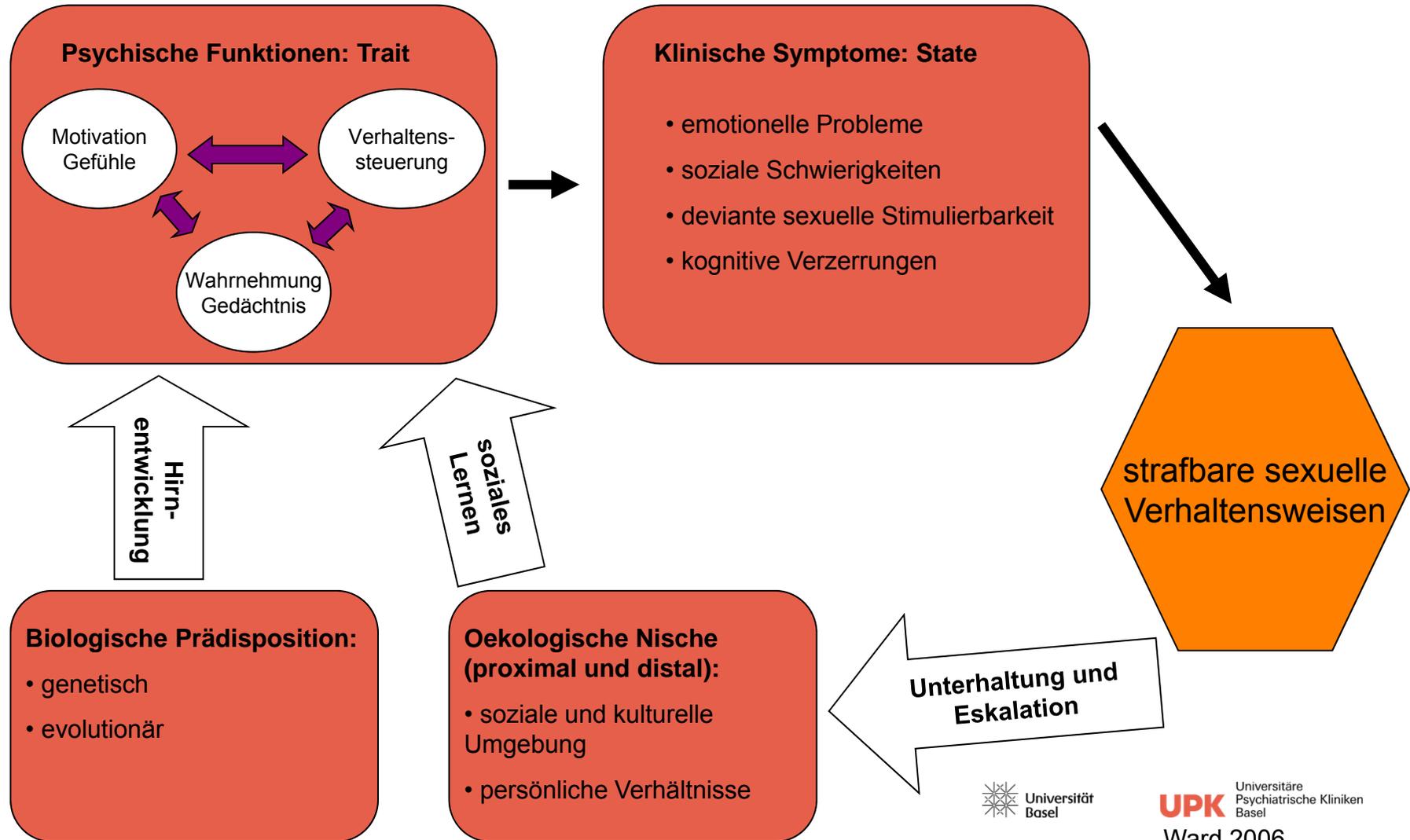


FIGURE 1. Age of onset of first paraphilia.

Abel 1990

Theorie zur Entstehung von sexueller Straffälligkeit

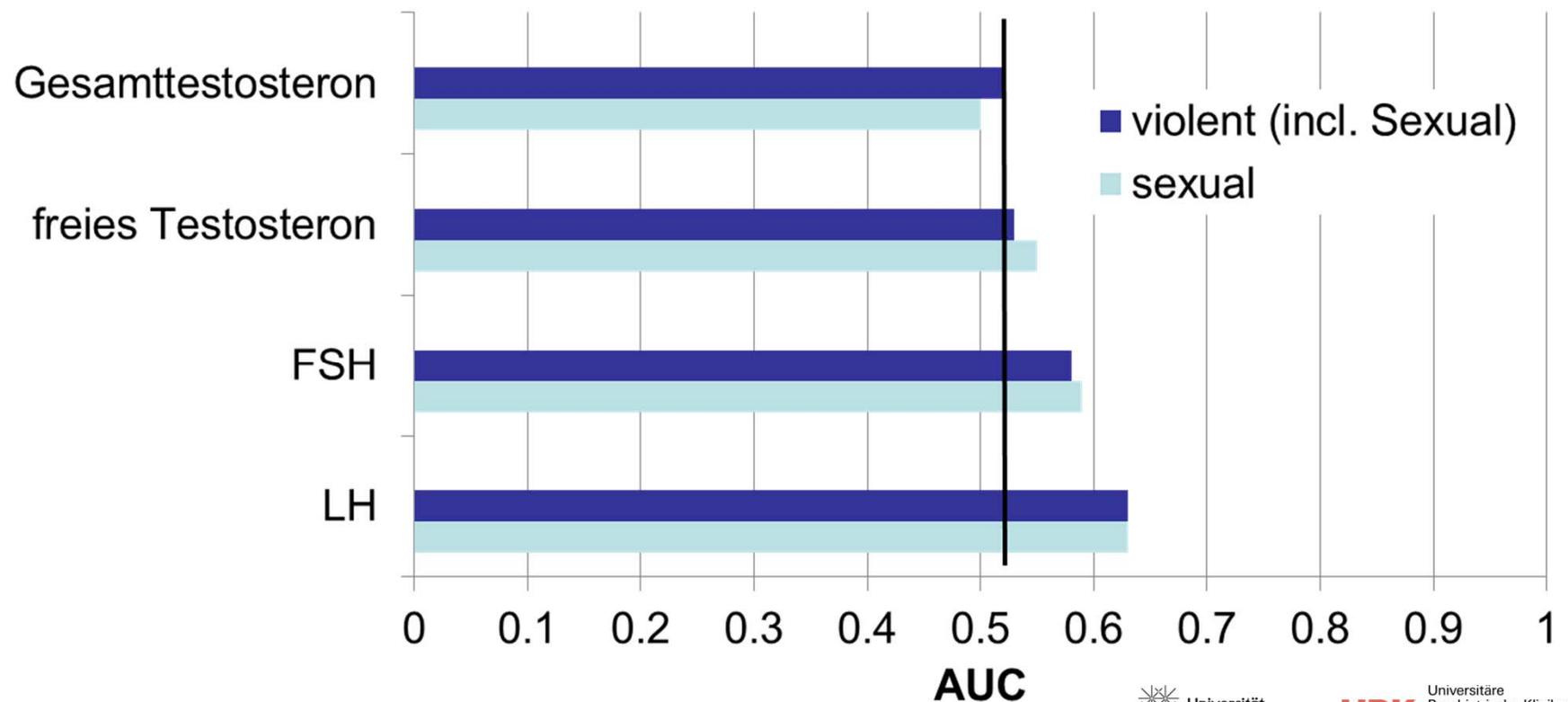


The Role of Central and Peripheral Hormones in Sexual and Violent Recidivism in Sex Offenders

Drew A. Kingston, PhD, Michael C. Seto, PhD, Adekunle G. Ahmed, MB, BS, Paul Fedoroff, MD, Phillip Firestone, PhD, and John M. Bradford, MB, ChB

J Am Acad Psychiatry Law 40:476–85, 2012

N = 771 erwachsene Sexualstraftäter, erfasst 1982-1996, \emptyset time-at-risk = 10.9y



Association between brain structure and phenotypic characteristics in pedophilia

Timm B. Poeppel^{a,*}, Joachim Nitschke^b, Pekka Santtila^c, Martin Schecklmann^a, Berthold Langguth^a, Mark W. Greenlee^d, Michael Osterheider^e, Andreas Mokros^{e,f}

Journal of Psychiatric Research 47 (2013) 678–685

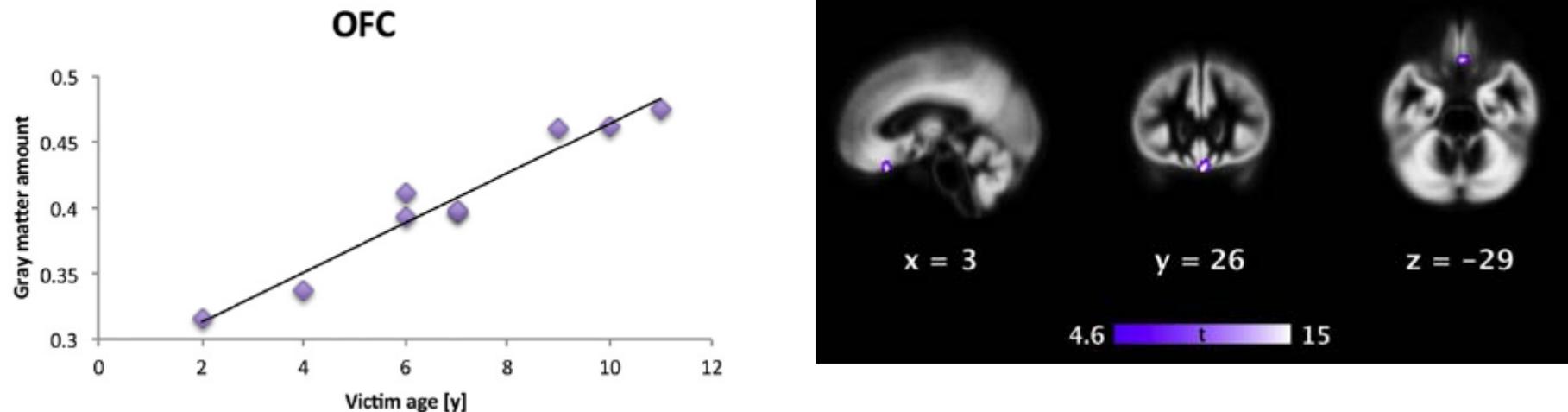
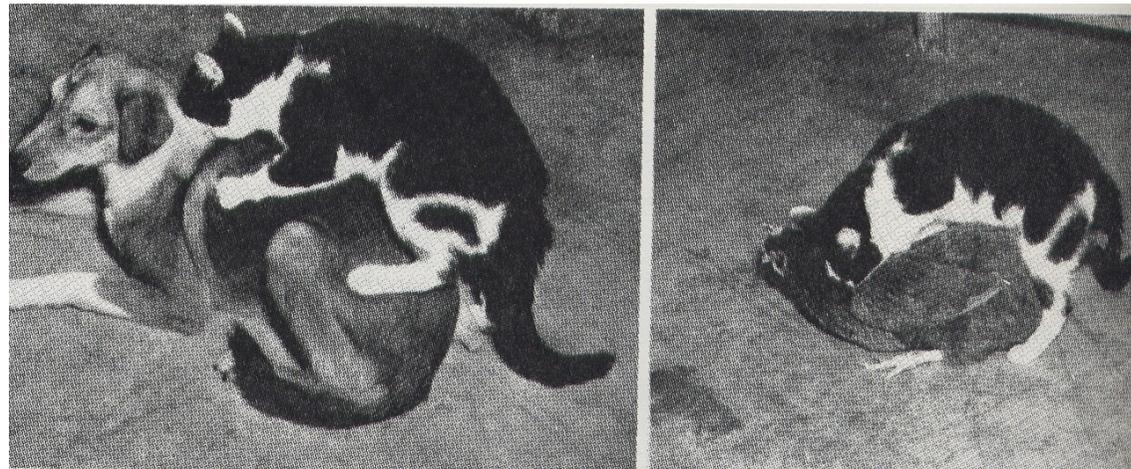
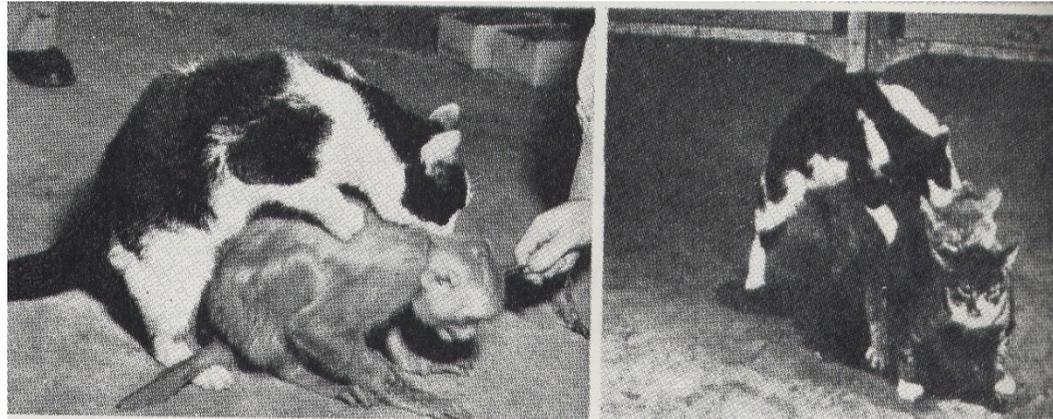


Fig. 3. Linear relationship between victim age and gray matter (GM) in the orbito-frontal cortex (OFC) of pedophilic offenders. Statistical parametric map (SPM) is superimposed on an average GM template in Montreal Neurological Institute (MNI) space. Brain slices are shown at local maxima of the respective cluster at MNI coordinates (x, y, z). Thresholded at $p < .005$, uncorrected. The scatter plot exemplifies the positive correlation between GM amount in the OFC ($r = .98$) and victim age.

Läsions-Studien im Tierversuch



Childhood sexual victimization, pedophilic interest, and sexual recidivism[☆]

Kevin L. Nunes^{*}, Chantal A. Hermann, J. Renee Malcom, Kayla Lavoie

Department of Psychology, Carleton University, Canada

Child Abuse & Neglect 37 (2013) 703–711

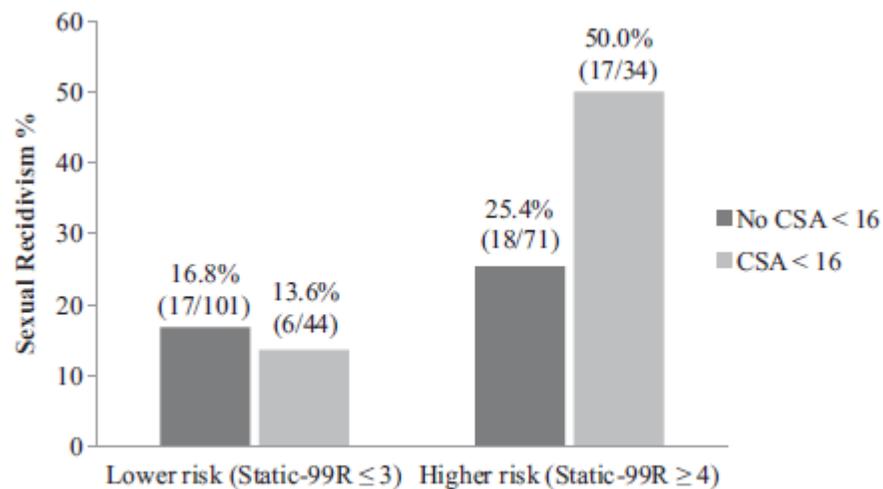


Fig. 1. Sexual recidivism rates by childhood sexual abuse for lower risk and higher risk sexual offenders.

Zudem: stärker ausgeprägte pädophile Neigung bei Missbrauch durch ♂ als durch ♀

Neuroticism as a risk factor for child abuse in victims of childhood sexual abuse

Coralie Boillat, Nathalie Schwab, Matthias Stutz, Marlon O. Pflueger, Marc Graf, Timm Rosburg*

C. Boillat et al. / Child Abuse & Neglect 68 (2017) 44–54

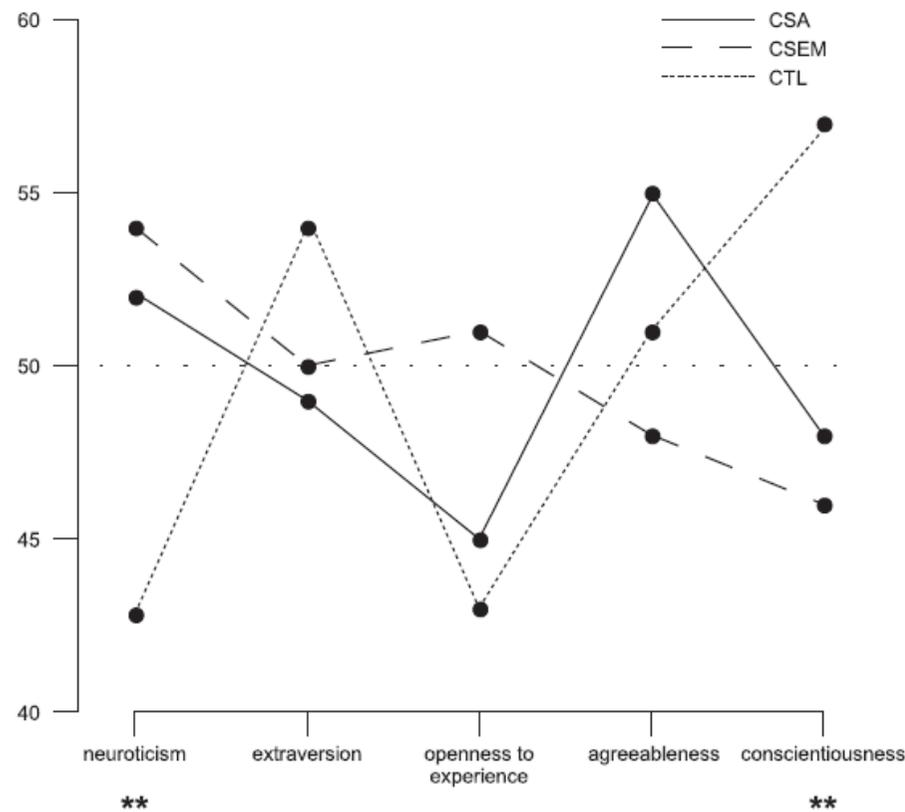
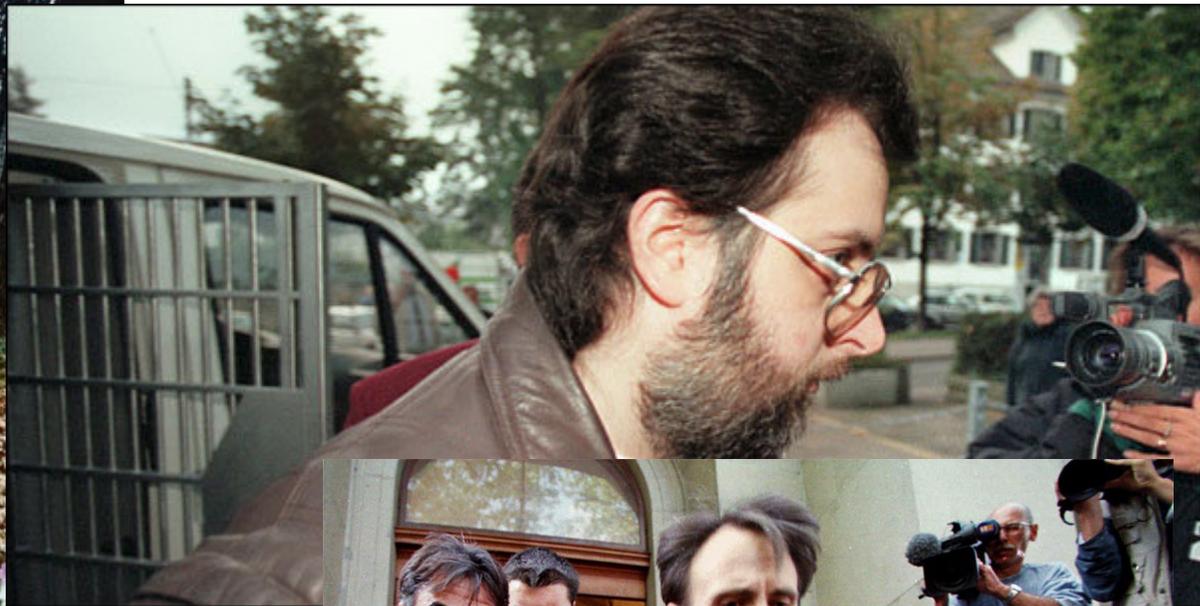
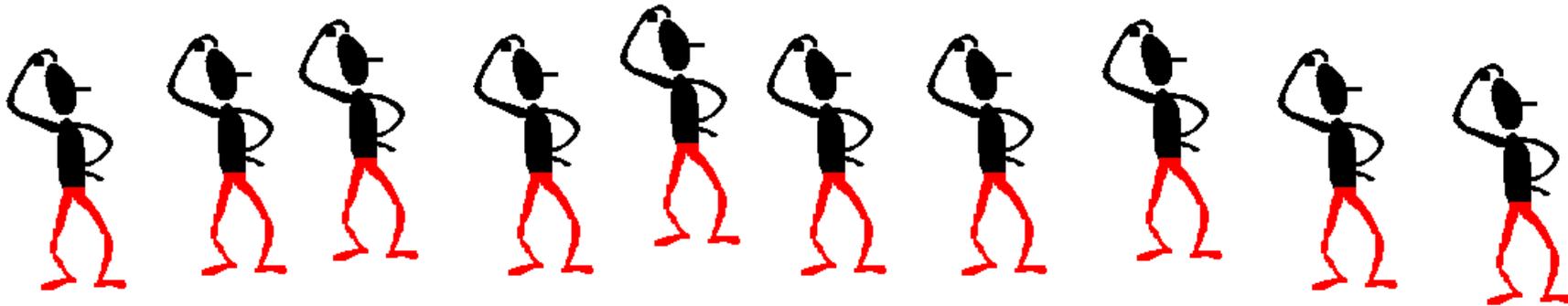


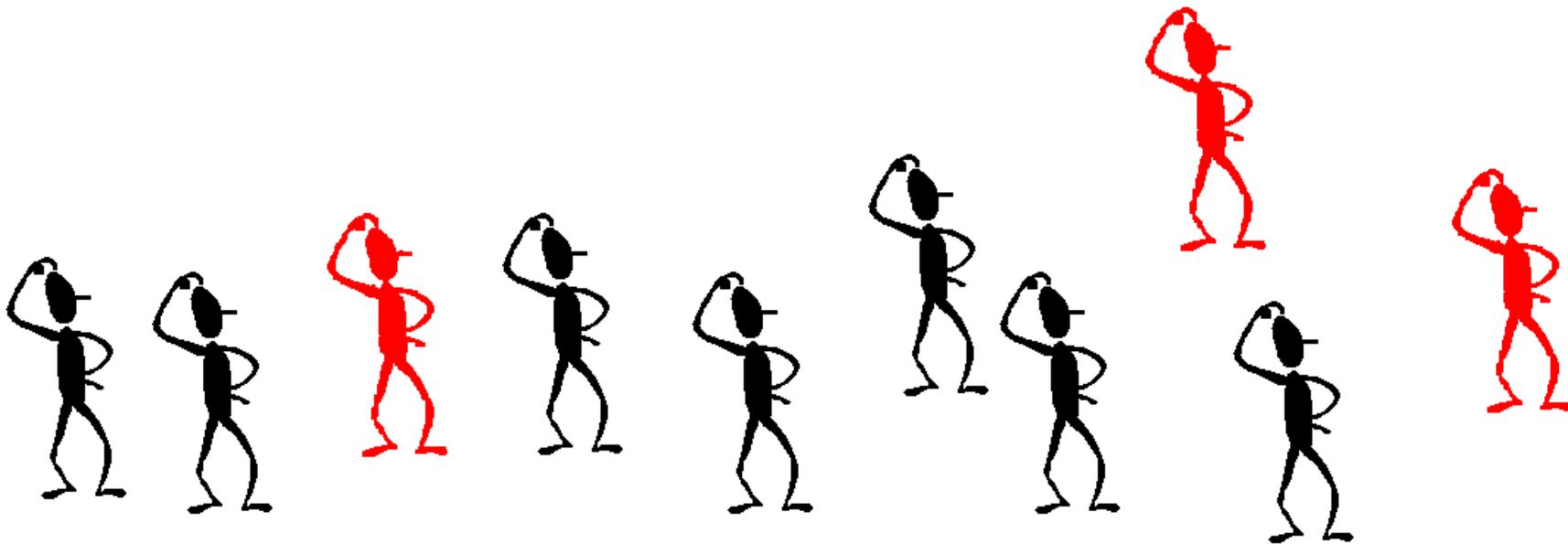
Fig. 1. NEO Personality Inventory Revised (NEO-PI-R). Age-corrected profiles of the three groups in the five personality factors. The T-transformed group median values are stated. Significant group differences are marked by asterisks.



Rückfallwahrscheinlichkeit 30%



oder



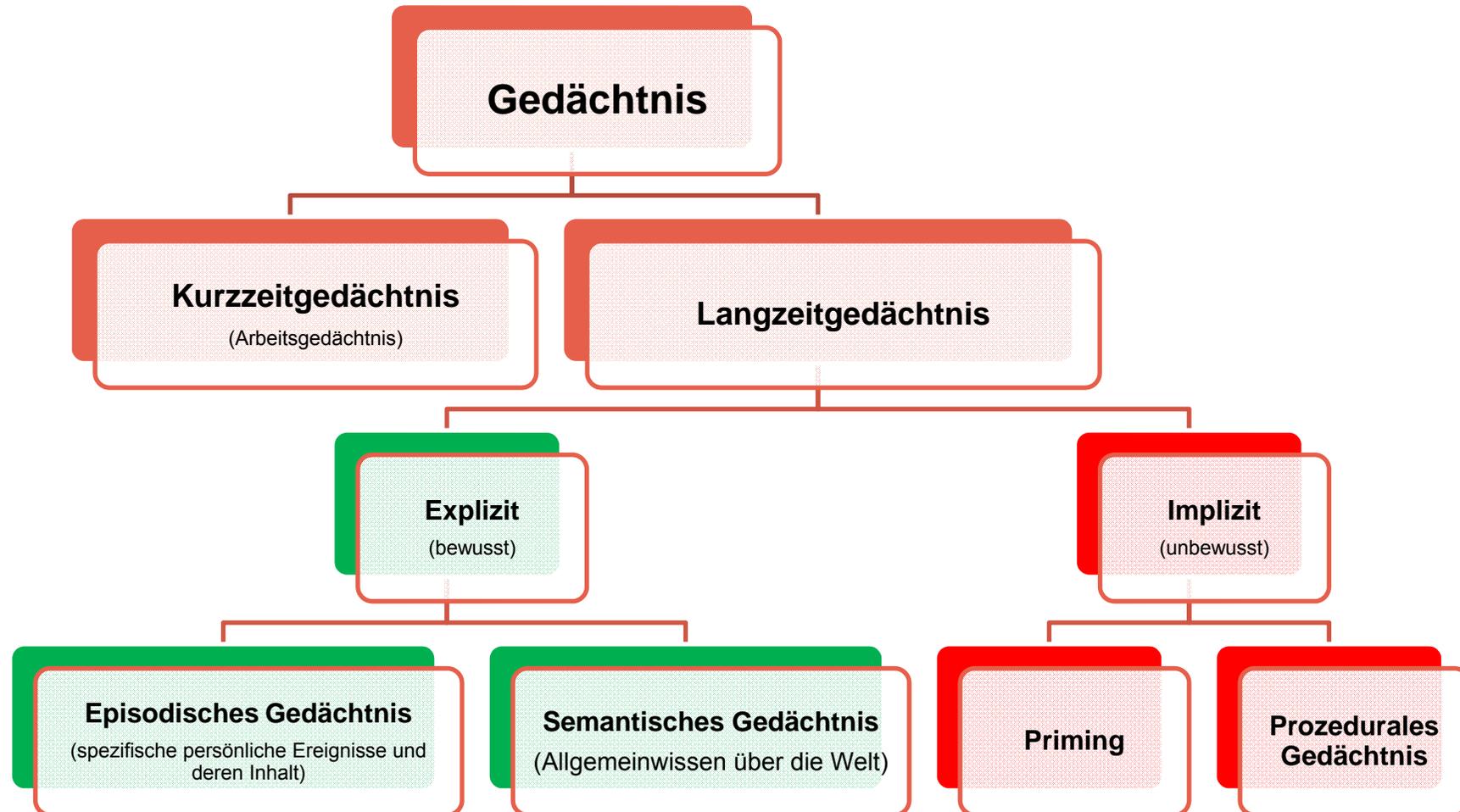
Abwehrmechanismen

- › Verdrängen
- › Verleugnen
- › Regression
- › Spaltung
- › Projektive Identifikation
- › Sublimation



Pinterest

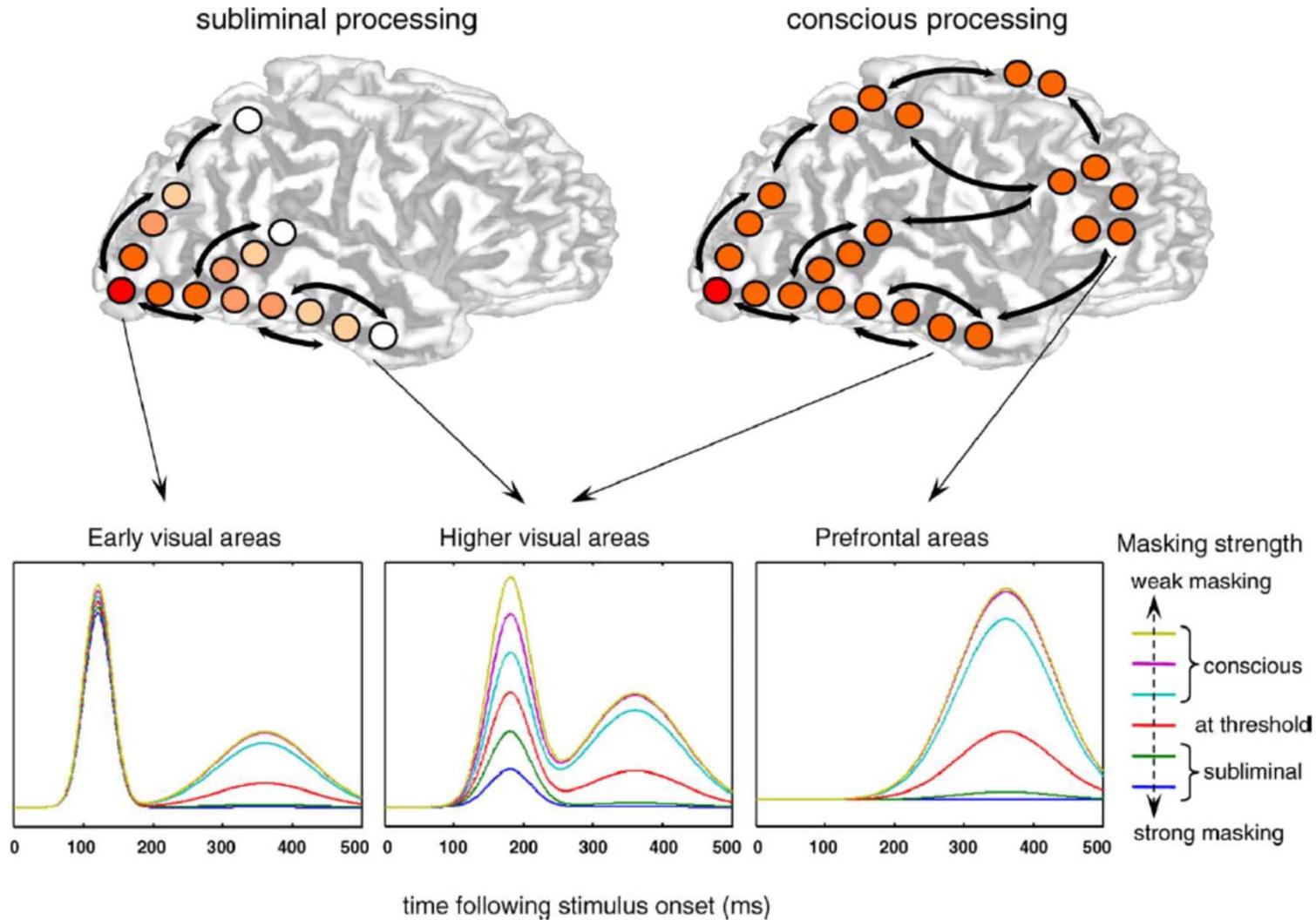
Die zwei Gedächtnissysteme



Virtual Reality

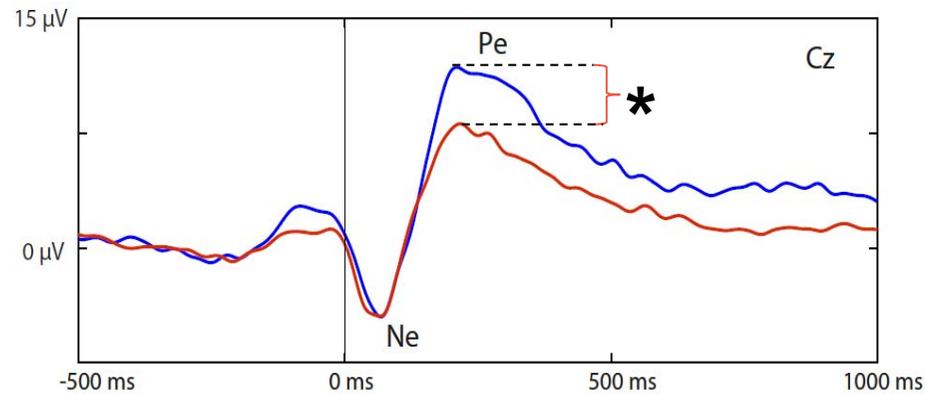
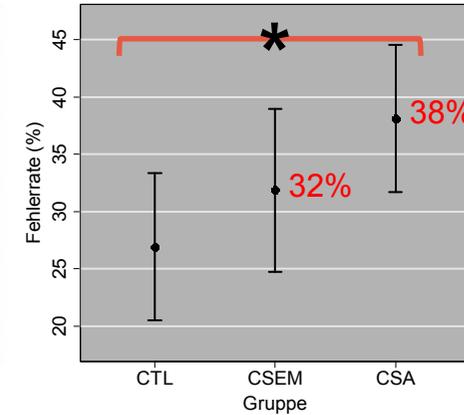
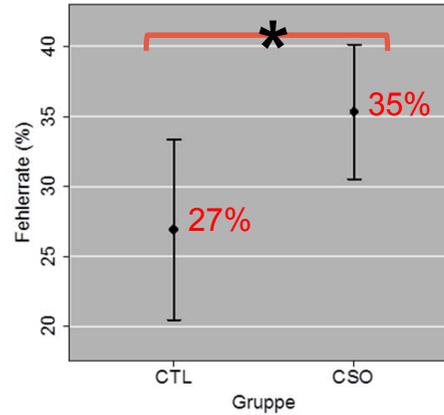
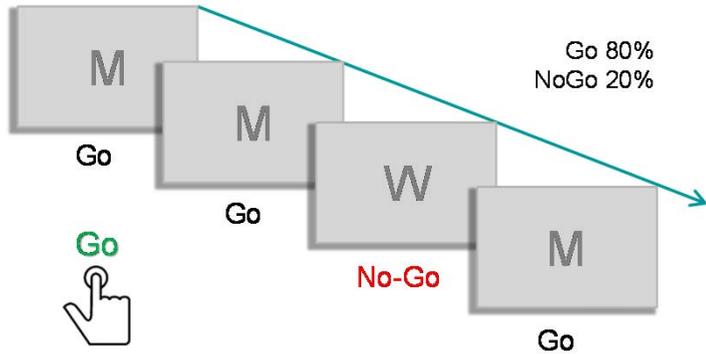


SMP – Signalverlauf



Del Cul, Antoine, Sylvain Baillet, and Stanislas Dehaene. "Brain Dynamics Underlying the Nonlinear Threshold for Access to Consciousness." *PLoS Biol* 5, no. 10 (September 25, 2007): e260. doi:10.1371/journal.pbio.0050260.

Verhaltenshemmung/Neurophysiologie



↑ fehlerhafter
Tastendruck

■ CSO
■ CTL

Fehlerrate: CSA > CTL
Pe Amplitude: CSA < CTL

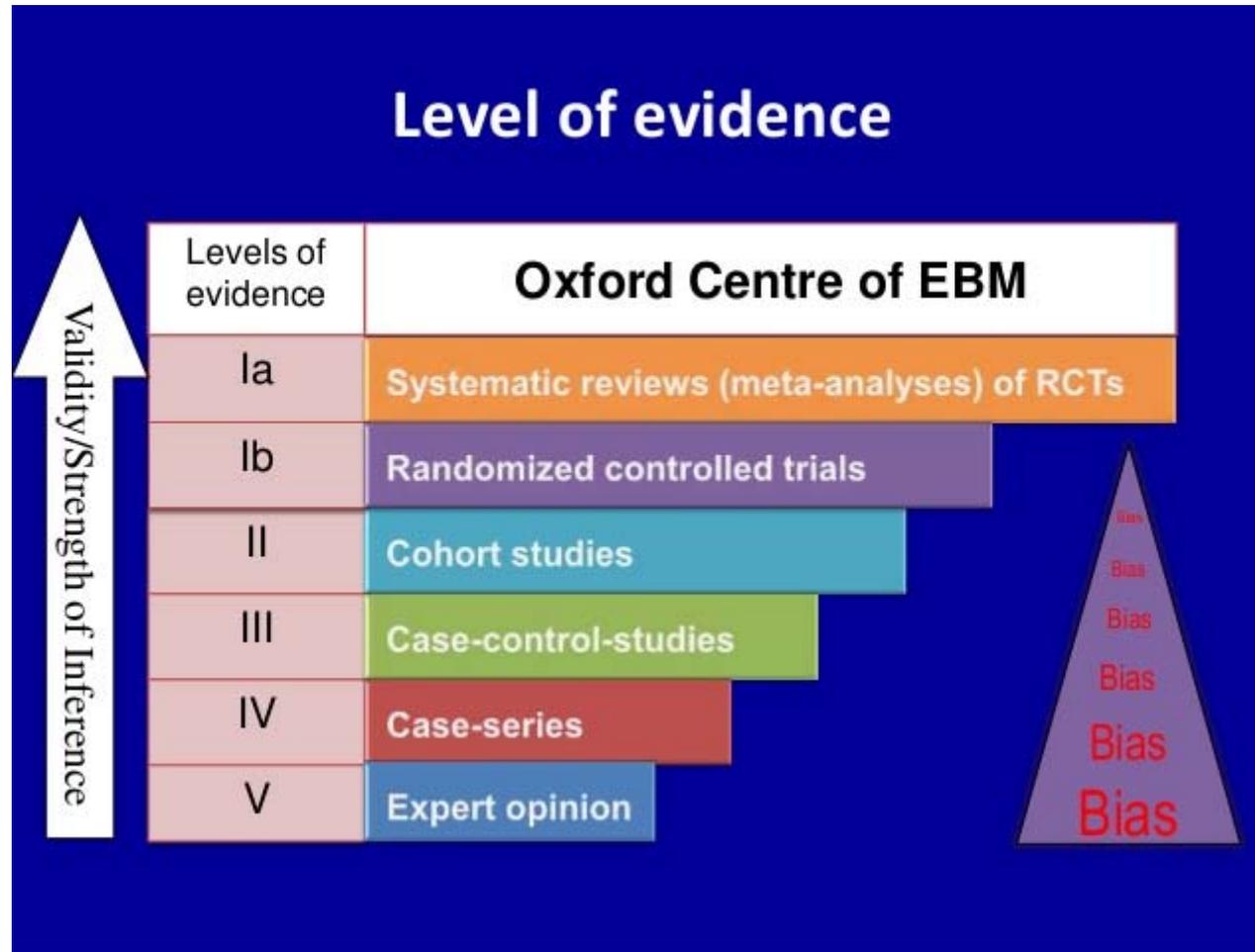
➤ Fehlerwahrnehmung
 ➤ reduziertes Fehlerbewusstsein

Medizinisch-psychologischer Befund

Beweiswürdigung

Rechtlicher Beweis

Evidenz-Levels in der Medizin



Art. 140 StPO

¹ Zwangsmittel, Gewaltanwendung, Drohungen, Versprechungen, Täuschungen und Mittel, welche die Denkfähigkeit oder die Willensfreiheit einer Person beeinträchtigen können, sind in der Beweiserhebung untersagt.

² Solche Methoden sind auch dann unzulässig, wenn die betroffene Person ihrer Anwendung zustimmt.

LH-RH agonists modulate amygdala response to visual sexual stimulation: A single case fMRI study in pedophilia

Benedikt Habermeyer¹, Nadja Händel¹, Patrick Lemoine¹, Markus Klarhöfer²,
Erich Seifritz³, Volker Dittmann¹, and Marc Graf¹

¹Department of Forensic Psychiatry, University of Basel, Basel, Switzerland

²Department of Medical Radiology, MR-Physics, University of Basel, Basel, Switzerland

³Clinic for Affective Disorders and General Psychiatry, Psychiatric University Hospital, Zurich, Switzerland

