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Measuring Pedophilic Preference

Implicit Assessment of Pedophilic Sexual Preference Using a Modified Picture Stroop Task in Combination with fMRI

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Child sexual abuse (CSA) constitutes a serious problem worldwide with devastating and outlasting consequences for victims and society. Since pedophilia represents a major risk factor for committing CSA, the valid assessment of deviant sexual interests is of high preventive as well as clinical relevance and several methods have been developed for this purpose. Among them, latency-based measures are considered to be promising tools in the classification of sexual preference but further research is warranted to improve validity. The present study aimed to test the ability of a modified version of the picture stroop task (mPST) to distinguish between pedophiles ($n=43$) and healthy controls ($n=31$) incorporating both, behavioral (latency-based) and functional magnet resonance imaging (fMRI) parameters. During mPST performance, participants were presented with semi-nude images of adults and children and instructed to indicate as fast as possible the respective color the images were superimposed with.

Corroborating previous research on the mPST, groups showed slower response latencies towards their sexual preference ($F_{1,72}=11.50$; $p=.001$). Neuroimaging revealed significant group differences in brain areas indicative of sexual salience processing comprising posterior parts of the middle and inferior temporal gyrus, middle occipital gyrus, posterior fusiform gyrus and ventromedial prefrontal cortex. Reaction times (RTs) were significantly correlated with brain activation in these areas. Including RTs and fMRI contrast estimates to a binary logistic regression model, an overall classification accuracy of 81% was achieved. Splitting the analyses with respect to sexual orientation, 96% of classification accuracy was achieved in homosexual participants, while 76% of heterosexual participants were correctly classified regarding their sexual preference. The present results demonstrate the promising utility of fMRI in combination with latency-based measures in the clinical assessment of sexual preference diagnostics but further research is needed to improve overall sensitivity/specificity for valid application.

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Learning Goals:

- Provide an overview of the specific measures used in sexual preference diagnostics
- Demonstrating the important association between behavioral and neurobiological parameters that may increase diagnostic accuracy
- Discussing the opportunities including fMRI in combination with latency-based measures in the clinical assessment of deviant sexual preference diagnostics.

Christian Kärge studied psychology at the University of Wuppertal, Germany, with special focus on clinical psychology. From 2010 to 2012, he was employed at the clinic for psychiatry and psychotherapy, University of Duisburg-Essen, Germany, as a research associate and PhD student, focusing on the evaluation of a cognitive remediation program on event-related potentials in schizophrenia patients (PhD received April 2016). From 2012 until now he is serving as a member of the working group of Boris Schiffer at the university of Duisburg-Essen and Bochum, Germany, respectively. There, in the context of research projects on the neural mechanisms of pedophilia and/or sexual offense against children, he is responsible for the MRI assessments and subsequent analysis. Moreover, within this framework he is involved in the execution of clinical interviews and neuropsychological measures. Beyond that, since April 2015 he is working as a clinical psychologist in a forensic hospital focusing on the treatment of (child) sexual abusers. In addition, he is completing his master-degree in *Cognitive Behavioral Psychotherapy* at the *German Association of Behavioral Therapy (DGVT)* in Dortmund, Germany.

A New Viewing Time Approach: Assessing Pedophilic Sexual Preference Using a Combination of Behavioral and fMRI Data

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Each year thousands of children become victims of child sexual offending, causing enormous suffering, commonly resulting in mental disorders and finally leading to vast costs for the health care system. Since only about 50% of child sexual offenders are pedophilic but especially their rate of recidivism is with 40-50% tremendously high, detecting a person's main sexual preference is of high clinical interest. Due to attempts to deceive therapists or tendencies of social desirability as well as using insufficient measurements on the other side, it is still necessary to develop reliable sexual preference diagnostic tools.

Therefore, the purpose of this study was to identify sexual preference in males using a Viewing Time (VT) paradigm while lying in a magnetic resonance tomography (MRT) scanner and combining for the first time behavioral results as well as group-by-condition

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specific brain activation pattern to predict whether or not a person is sexually attracted to children.

40 male participants holding DSM-IV-TR criteria for pedophilia and 33 healthy male controls (HC) were included in this study. Each subject took part in the VT task showing pictures of half-naked persons varying in their sexual maturity (Tanner stages 1-5). Behavioral results showed significant differences regarding reaction times (RTs) and attractiveness ratings for teleiophiles but no significant differences regarding both measures could be detected in pedophiles. For binary regression including RTs for prepubescent stimuli (Tanner stages 1-3) group membership predicted 86.3% correct classification in total. Being pedophilic was especially associated with higher odds for Tanner category 1 RTs. Neuroimaging results revealed significant differences in activity patterns in the occipital cortex, an area known to be involved in sexual arousal processing. Adding this data to the model, correct classification of group membership increased to 90.4%.

To conclude, a combination of behavioral and fMRI VT data for predicting males' sexual preference in a sample of pedophiles and HCs lead to promising classification accuracy and a growth in sensitivity of 8.8% compared to simply including behavioral VT data. Results, possible explanations for our findings, limitations of this study and recommendations for future investigations are discussed.

Learning Goals:

- Presenting a short overview of the currently available approaches to detect sexual preferences as well as to promote an understanding of their pros and cons.
- To gain an in-depth understanding of the findings and its implications regarding this Viewing Time study.
- To recognize the importance of developing objective measures of sexual preferences as well as to discuss their limits.

Claudia Massau graduated in 2012 with the majors neuropsychology, clinical psychology and psychological assessment from the University of Constance, Germany. She completed different internships, where she gained experience in applied forensic research with special focus on the development and evaluation of forensic risk assessment instruments. She has been working as a research assistant at the Division of Forensic Psychiatry, Department of Psychiatry, Psychotherapy and Preventive Medicine, LWL-University Hospital Bochum, Germany since 2012. Her research foci are the neuronal and neurocognitive deficiencies in deviant sexual behavior and persons suffering from ASPD where she is funded by the German research foundation (DFG). In her doctoral dissertation she focuses on the neuronal mechanisms of moral judgment and executive functions in pedophilic men as well as child sexual abusers (advisor: Professor Boris Schiffer, University of Bochum, Germany).

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Besides she is now completing her Master degree in Behavioral Psychotherapy at the German Association of Behavioral Therapy (DGVT) in Bonn, Germany and the University of Bern, Switzerland as well as a postgradual training program in applied forensic psychology at the Germany Psychologist Academy, Berlin, Germany.