

Neurobehavioral correlates of disinhibitory psychopathology

Akademisk avhandling

Som för avläggande av medicinie doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Carl Kylberg, Medicinargatan 9A, den 10 december, klockan 13:00.

av Carl Delfin

Fakultetsopponent:

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Avhandlingen baseras på följande delarbeten

- I. Delfin, C., Andiné, P., Hofvander, B., Billstedt, E., & Wallinius, M. (2018). Examining associations between psychopathic traits and executive functions in incarcerated violent offenders. *Frontiers in Psychiatry, 9*, 310.
- II. Delfin, C., Krona, H., Andiné, P., Ryding, E., Wallinius, M., & Hofvander, B. (2019). Prediction of recidivism in a long-term follow-up of forensic psychiatric patients: Incremental effects of neuroimaging data. *PLoS ONE, 14* (5), 1–21.
- III. Delfin, C., Ruzich, E., Wallinius, M., Björnsdotter, M., & Andiné, P. Trait disinhibition and NoGo event-related potentials in violent mentally disordered offenders and healthy controls. Submitted.
- IV. Delfin, C., Andiné, P., Wallinius, M., & Björnsdotter, M. Structural brain correlates of the externalizing spectrum in young adults. Submitted.

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Abstract

Disinhibitory psychopathology refers to maladaptive behavioral expressions stemming from problems with impulse control. Despite a robust association with antisocial and criminal behavior, knowledge about the neurobehavioral correlates of disinhibitory psychopathology is still lacking. The aims of this thesis were to (1) quantify the prevalence of disinhibitory psychopathology, (2) examine associations between disinhibitory psychopathology and neurocognitive function as well as (3) brain structure and function, and (4) explore how neurobehavioral variables associated with disinhibitory psychopathology may be used in the prediction of recidivism. Four studies, with participants recruited among offenders, mentally disordered offenders, and young adults of the general population, were conducted. Each study used a different, specific set of methods, including clinical and self-report assessments, file review, and register data, as well as neurocognitive tasks probing inhibitory control and neuroimaging techniques such as electrophysiological recordings and structural brain scans.

The prevalence of disinhibitory psychopathology was similar to or even higher than previous national and international estimates. Disinhibitory psychopathology was associated with neurocognitive impairments, most prominently an impulsive approach to planning and problem-solving and a reduced capacity for inhibitory control, and with neurobiological alterations in regions involved in monitoring and evaluation of behavior, inhibitory control, working memory, and attention. Finally, a set of neurobehavioral variables associated with disinhibitory psychopathology increased the accuracy of recidivism prediction.

In conclusion, this thesis confirms the importance of disinhibitory psychopathology as a clinical construct. It adds to a scarce literature on mentally disordered offenders and provides much needed evidence of specific neurobehavioral correlates that may be used to guide the development of novel diagnostic frameworks and treatment strategies, and that may be useful for targeted interventions in forensic settings.

Keywords: Disinhibition, psychopathology, crime, recidivism, mentally disordered offenders, event-related potentials, magnetic resonance imaging