Cognitive and neuropsychopharmacological processes in human drug craving
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Overall outline and hypotheses of the present study

The present thesis aims at testing the assumptions of the theoretical model as discussed in chapter 1 and its resulting hypotheses in several separate experimental studies. Because few valid and usable instruments for assessing craving exist, two new craving questionnaires were adapted and translated for use within the present study. The validation of these instruments is the first part of the thesis. The second part comprises four cognitive studies that address issues concerning the cognitive processing bias. The third part contains four studies that examine the neurophysiological and psychopharmacological aspects of the cognitive processing of drug cues. At last, in the fourth part of the study, a general conclusion is drawn and the attentional bias model as outlined in the first chapter will be evaluated. The specific research questions will be addressed below.

In chapter 3, “Initial validation of two opiate craving questionnaires: The Obsessive Compulsive Drug Use Scale (OCDUS) and the Desires for Drug Questionnaire (DDQ)”, the validation of two new opiate craving instruments is described. In contrast to the assessment of alcohol craving, few valid heroin craving instruments are available. An attempt has been made to adapt two existing alcohol questionnaires, the Obsessive Compulsive Drinking Scale (OCDS)\(^2\), and the Desires for Alcohol Questionnaire (DAQ)\(^2\) for use within a clinical (abstinent) opiate dependent population. These two instruments are used to measure craving within two different time frames. The DAQ measures instant craving (now) and can be used for measuring cue-elicited craving. The OCDS measures general craving and can be used for measuring craving when temporal fluctuations have to be ruled out.

In chapter 4, “selective cognitive processing of drug cues in heroin dependence”, is the description of a study addressing the existence of an attentional processing bias within heroin users. Both attentive and pre-attentive bias will be evaluated. Furthermore, the association between this cognitive bias and craving will be discussed.

Chapter 5 discusses the “Influence of individual differences in craving and obsessive cocaine thoughts on attentional processes in cocaine abuse patients”. In this chapter, the association between cocaine craving and attentional bias will be discussed.

In chapter 6, “Behavioral approach system (BAS) sensitivity predicts alcohol craving”, the role of personality and alcohol craving will be studied. Specifically, it reports the relation between sensitivity on Gray’s personality dimensions (Behavioral Inhibition and Behavioral Approach Systems) and cue elicited craving.

Besides attentional bias, memory bias is another important concept within the cognitive information processing. In chapter 7, "Selective memory for alcohol cues in alcoholics and its relation to craving", will be reported on a study that addresses the existence of a memory bias in alcohol dependent subjects and its relation to craving.

In chapter 8, “Electroencephalographic power and coherence analysis in heroin dependence”, it will be discussed whether structural abnormalities in cortical responses are present in heroin dependent subjects and whether these abnormalities are correlated with drug use history or current craving levels.

Chapter 9, “Neurophysiological evidence for abnormal cognitive processing of drug cues in heroin dependence”, discusses the use of Event-related potentials as measure for the cognitive processing of heroin related information. Furthermore, the
relation between self-reported craving and this measure will be evaluated.

Two promising indices of craving will be tested in chapter 10, "Two new physiological indices of cocaine craving: Evoked brain potentials and cue modulated startle reflex". In this chapter it will be studied whether these two neuro-physiological indices are able to differentiate between high and a low cocaine cravers.

Chapter 11, "Dopamine antagonist haloperidol attenuates enhanced cognitive processing of drug cues in heroin dependence" reports on a study that employed a pharmacological agent in order to investigate the pharmacological underpinnings of attentional bias in heroin dependent subjects.

Finally, in chapter 12, "Concluding remarks and future studies", the status of the model as outlined in chapter 1 will be evaluated. Furthermore, unstudied and unanswered hypothesis will be discussed.

References