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INTRODUCTION: CRAVING AND RELAPSE IN ALCOHOLISM: NEUROBIO-PSYCHOSOCIAL UNDERSTANDING

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Clinicians have known for many years that craving for alcohol is widely accepted to be a major component of alcohol dependence, but the concept of craving is still a poorly understood clinical phenomenon. The main problem is in understanding the subjective nature of the phenomenon of craving. It is known that subjective experiences in clinical medicine, for example feelings of pain in cardiac disease, can have important consequences. We also know that mental disorders, for example anhedonia in depressive disorders, can have important therapeutic consequences and the same could be said for a subjective phenomenon such as craving in alcoholism. Most researchers in the field agree that there are a lot of different concepts of craving, reflecting more the area, where they are working, than a scientific approach to craving. Only if special cognitive states or emotional conditions lead to alcohol intake (whether or not in a compulsive manner), does craving become an important issue in relapse. A better understanding of neurobiological and psychophysiological mechanisms of craving may therefore have important therapeutic consequences for alcoholic patients.

One of the problems with craving is the confusion and misunderstanding about its terminology. Craving is mentioned in the ICD-10 classification as ‘a strong desire or sense of compulsion to take the substance’ and in the DSM-IV classification as ‘a persistent desire or unsuccessful efforts to cut down or control substance abuse’. Clinicians know that many patients with alcohol dependence do not have a persistent desire for alcohol and that craving can be seen as an episodic and dynamic process in addiction.

There is also much controversy regarding the concept of craving and its different components. Firstly, some clinicians and researchers consider craving mainly as a subjective emotional-motivational phenomenon, for example the strong desire and urge to drink. Secondly, others consider craving more as a psychological phenomenon: craving is an expectation and anticipation of a positive reward of alcohol use or a relief of discontent or negative feelings, such as nervousness, tension, and boredom, after alcohol use. Thirdly, still others emphasize the cognitive-behavioural correlates of craving as the intention to use and compulsivity of addictive behaviour as a component of craving. Fourthly, other researchers emphasize that physiological changes are essential elements of craving. Changes in skin conductance and galvanic skin response are examples of these physiological changes related to craving. More specifically measurements to objectify craving using computerized dynamic pupillometry, assessed after the intake of small amounts of alcohol, as a smell or a taste cue, are promising.

Many questions therefore await clarification. Most notable of these are the following. First, is there a consensus regarding the terminology of the word craving? Second, is it possible to measure craving? Is a measurement of a clinical phenomenon such as craving comparable with a multi-dimensional measurement of the severity of alcohol dependence? Are there different types of craving reflecting changes in different transmitter systems? For example craving during sobriety might be seen biologically to be different from craving which develops after the intake of a small amount of alcohol.

When and how is craving related to relapse and are the neurobiological mechanisms of craving the same as in relapse? Is craving a result of a

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dysregulation of the endorphin system or is it a subjective phenomenon of depletion of dopamine in the reward circuit of the brain? Is the mechanism of craving more related to receptor or electrical sensitization in different neural circuits in the brain and is craving coded in the same neural circuits as the alcohol-induced reward in the nucleus accumbens? What are the functions of endorphins, the dopaminergic, serotonergic, glutamate, and GABAergic systems in the brain in relation to craving? and is there a hierarchy in these systems with regard to craving? Also, are there other neurochemical substrates involved in the mechanisms for craving of alcohol? Another clinically relevant question is: do we have to differentiate craving as an anticipation or expectation that alcohol use will yield a positive reward, or that alcohol use will provide relief from withdrawal or a negative emotional state, for example boredom, anhedonia, nervousness or restlessness? Do we need different treatment strategies in these different phenomena of craving?

In this issue of Alcohol and Alcoholism, craving for alcohol is the subject of five papers presented in the Host Symposium entitled 'Craving and Relapse: Neurobio-psychosocial understanding' held during the 1998 ESBRA (European Society for Biomedical Research on Alcoholism)—Nordmann Award Meeting on 7–8 May, 1998, at the University of Amsterdam’s Academic Medical Centre. In the first of these papers, Verheul et al. give a review of the different models of craving and suggest a new three-pathway model, which could be tested experimentally. Sinha and O’Malley, Spanagel and Höltä, and Cicciocioppo report human and animal data from their research on craving as related to the different neuronal circuits, that are thought to be involved in the phenomena of craving and relapse. Finally, Potgieter et al. discuss and summarize the measurement of craving and relapse, with particular emphasis on a few of the currently available craving scales. Craving is a clinical phenomenon that needs a multifactorial and multidimensional approach in clinical and basic research, and it is hoped that its consideration in the pages of this issue will stimulate interest and further research into this clinically important area of alcoholism management.

Editor’s note — All five papers on craving appearing in this issue of Alcohol and Alcoholism have received editorial attention. Additionally, the paper by Verheul et al. underwent a full peer review (AA-BB).