

THE FINNISH FOUNDATION FOR
ALCOHOL STUDIES

REPORT ON ACTIVITIES

2006

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THE FINNISH FOUNDATION FOR ALCOHOL STUDIES

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General overview

The projects funded by the Finnish Foundation for Alcohol Studies resulted in the publication of seven academic doctoral dissertations and 15 peer-reviewed articles in international scientific journals in 2006. In addition, four other scientific papers were published. Eleven ongoing research contract projects received additional funding and two new research contract projects were launched. One new project will search for proteins that might be markers of hazardous alcohol intake. The second new project will study how children of drug addicts in foster homes are able to develop coping skills and build up trust in human relations. Other contract projects will be described below under the title *Research activities*.

Administration

The Board of the Foundation is composed of three members appointed by the Ministry of Social Affairs and Health, three appointed by the Ministry of Education, two appointed by the Federation of Finnish Scientific Societies, and one by the Finnish Alcohol Retail Monopoly. The majority of the Board must consist of academically established scientists with special expertise in alcohol research.

The Foundation's Research Director is the only full-time staff member. A contract between the Foundation and the National Research and Development Centre for Welfare and Health provides administrative and technical support for the Foundation.

An Executive Committee composed of the scientist members of the Board reviews the issues falling within the Board's field of responsibility. The Head of Alcohol and Drug Research, National Research and

Development Centre for Welfare and Health (STAKES) and the Head of Alcohol Research Center, National Public Health Institute (KTL) act as permanent advisory experts to the Executive Committee.

Research activities

The Foundation awards two types of grants: ordinary grants to support projects proposed by the scientific community, and contract grants ensuring the long-term funding of projects deemed to be of major significance. In 2006, Foundation expenditure totalled 774,776 euros; the Foundation's research grant budget amounted to 644,980 euros.

This report reviews the contract grants and other projects included in the Foundation's research programme. It does not cover research funded by ordinary grants.

Research contracts and collaborative projects

The ongoing contract projects progressed as follows:

168 *The Changing Relationship between the Finnish Alcohol System and the Welfare State.*

The project is related to the overall changes in the Finnish social policy system. The scope is international and institutional. The aim of the study is to create a reliable picture of the changes and the reconstruction of the relationship between the Finnish social policy system and Finnish alcohol policy system in the 1980's and 1990's. Alcohol policy is considered from four different perspectives: ideological, institutional, policy field and policy implementation. Research was begun in the year 1998. A draft manuscript has been scrutinized by professors Kyösti Pekonen and Pekka Sulkunen. Researcher: *Mika Alavaikko*, Seurakuntaopisto, Järvenpää.

169 *Brain Histamine and Alcohol-Related Behaviour.*

The existence of histamine in the brain of mammals (including man) has been known for a long time, but the role of histamine in behavior has been unclear. In a previous study we found unusually high histamine levels in the brains of alcohol-preferring AA rats.

This study was initiated to find out the reasons for this abnormality, and to explore the possibility that the same property is found in human alcoholics. In 2006 we studied the influence of histamine and H3 receptor on alcohol-related behaviour in genetically modified mice. Absence of histamine in the brain did not influence behaviour but H3 receptor had an important role. Researchers: *Pertti Panula*, University of Helsinki, *Minnamaija Lintunen*, Åbo Akademi University and University of Helsinki and *Adrian Lozada*, Åbo Akademi University (pertti.panula@helsinki.fi).

170 *Decline of the Temperance Movement and Temperance Ideology since the Second World War in 1945–1993.*

There are only a few studies on the Finnish temperance movement during the post-prohibition era. The research question is how temperance work lost its position in the governing of lifestyle from 1932–1996. The emphasis of the analysis is on the relationships between civic society and the state in the regulation of alcohol markets and harms. The study belongs to the field of historical sociology. The research data consists of the texts of experts on alcohol and temperance issues in the publications and magazines of temperance organisations and Alko, the archives of temperance organisations and the Temperance and Alcohol Department of the Social Ministry, plus interviews with experts. The research started as part of the Studies of Nordic Alcohol Political Systems- project (1998–2000). The study was suspended at different times for a total of 3 years. The research contract ended in 2005. The final report will be completed in 2006. The Finnish temperance movement was centrally organised and promoted a good life for all citizens. It opposed the alcohol political system run by the state alcohol monopoly Alko. Temperance work was a politicized and state-promoted project. There were three interconnected processes that gave rise to the collapse of temperance aims. These were: the erosion of the moral basis of temperance work, the exhaustion of its nature as a social movement and the decentralisation of state administration. Researcher: *Katariina Warpenius*, Finnish Foundation for Alcohol Studies (katariina.warpenius@stakes.fi).

175 *A Randomized, Comparative Study of Evidence-Based Alcohol Dependence Treatments: Disulfiram, Naltrexone, and Acamprosate in the Treatment of Alcohol Dependence.*

Several evidence-based studies have shown the efficiency of disulfiram, naltrexone, and acamprosate in alcohol dependence. There are good methods for treating alcohol-related problems. The difficulty is adapting them to practical work. The study has two objectives: 1) To improve the quality of alcoholism treatment by composing three manual-based treatment methods which are applicable to the level of A-clinics and health care centres and 2) To compare the efficiency of three different medication: disulfiram, naltrexone, and acamprosate when they are used simultaneously with cognitive therapy. The treatment program lasted one year. After three months of medication the drop-out rate was 25 %, after one year 52 % and at the 30 month follow-up examination 58 %. Significant decrease was found in alcohol dependence and craving. Disulfiram was more effective than naltrexone or acamprosate. Researcher: *Esti Laaksonen* Turku City Health Office and University of Turku.

180 *The Effectiveness of Naltrexone and Brief Intervention in the Treatment of Excessive Alcohol Consumption.*

There is no controlled research on the combination of brief intervention and naltrexone in the treatment of risky alcohol consumption. This is a double-blind, placebo-controlled prospective multi-centre clinical trial evaluating the effectiveness of naltrexone in the treatment of excessive alcohol consumption. Three different doses of naltrexone, taken intermittently during high-risk days, will be compared with placebo. All subjects will receive brief intervention. Altogether 160 male and female subjects will be recruited from occupational health care centers. The outcome variables are alcohol consumption, relapses to heavy drinking, retention in treatment, self-reported well-being, functional capacity and alcohol-related biologic markers. Follow-up examination will take place eight months after the start of the treatment. The project was started in December 2000 and the clinical phase has ended in October 2004. The data analysis and reporting goes on. Researcher: *Hannu Alho*, Department of Mental Health and Alcohol Research, National Public Health Institute (hannu.alho@ktl.fi).

182 *The Neurobiological Basis of Relapse to Drug Seeking.*

The characteristics of drug addiction include compulsive drug use despite negative consequences and re-occurring relapses, returns to drug use after a period of abstinence. Relapse can be triggered by stress, re-exposure to the drug itself, and environmental stimuli that have been previously associated with drug use. The aim of the project was to clarify whether relapse triggered by drug-associated conditioned stimuli could be attenuated by dampening glutamatergic neurotransmission. Animal models were employed to study the effects of ionotropic and metabotropic glutamate receptor agonists and antagonists on cocaine and alcohol relapse in rats. The results indicate that glutamatergic neurotransmission is involved in the modulation of drug-seeking behavior. However, ionotropic glutamate receptors differ in their ability to regulate this behavior as AMPA receptor antagonists and an NMDA/glycine, but not a competitive NMDA antagonist, attenuated drug seeking. In addition, diminishing glutamatergic transmission through metabotropic glutamate receptors decreases drug-seeking behavior. Glutamate antagonists attenuated drug seeking also when administered intracerebrally into the nucleus accumbens. This indicates that the accumbens is involved not only in mediating the acute reinforcing properties of drugs, but also drug-seeking behavior induced by conditioned stimuli. The project was completed in 2006 with the publication of an academic dissertation. In addition, results were presented in poster form at an international congress. Researcher: *Pia Bäckström*, National Public Health Institute, Department of Mental Health and Alcohol Research. (pia.backstrom@ktl.fi)

183 *Neurotransmitter Systems in Novel Models of Drug Dependence and Addiction.*

Detailed knowledge on the neurobiology of drugs of abuse opens new possibilities to understand drug dependence and to develop pharmacological treatments. Among the excitatory glutamate receptors the AMPA-type receptors are involved in the mechanisms of dependence and psychomotor activation by various drugs of abuse. The same receptor is also involved in social and aggressive behaviors. Using a knockout mouse line, our results indicate that tolerance to opiates and benzodiazepines develops poorly, if the AMPA receptor system is not functioning properly. We are searching for other neurochemical alterations in the brain to establish correlations to altered behavior. We will also use recombinant

AMPA receptors to find the molecular mechanisms how alcohol reduces the receptor function. A report on interactions between the inhibitory and excitatory neurotransmitter systems has been accepted, and an invited review on the molecular targets of alcohol has been submitted. The project has an important educational value, as it constitutes three PhD projects. The project is partial collaboration with German scientists (Rolf Sprengel, Heidelberg) and with Kari Keinänen's biochemistry group. The project will last at least until through 2007. Researchers: *Esa R. Korpi, Teemu Aitta-aho, Tommi Möykkynen and Anne Heikkinen*. Institute of Biomedicine, University of Helsinki.

184 *Women and Alcohol in Finland 1917–1987.*

The aim of the project is to study the role of women in Finnish alcohol history. Women will not be seen as a uniform group, but divided by e.g. social hierarchy. Consumption of alcohol in Finland was minimal before the 1970s and thus in general other aspects than consumption are more important. In spite of the minimal consumption, alcohol issues were very visible in Finnish public discussion throughout the 20th century. The main interest is on the impact of women on the abolition of the prohibition law in Finland in 1932. Another important topic is the experiences of women of the more tolerant alcohol policy after the 1960s. The project started in 2002 and ends 2007. Aija Kaartinen's maternal leaves have influenced our work. Kaartinen will continue her dissertation *Women and Prohibition* as a personal project in 2008. An anthology of historical research on alcohol, *Alkoholin vuosisata* (ed. by Matti Peltonen, Kaarina Kilpiö & Hanna Kuusi, Finnish Literary Society 2006, 473 p.) written with the co-operation of several other historians working in the University of Helsinki, was published at the beginning of 2006. Researchers: *Aija Kaartinen*, The Finnish Foundation of Alcohol Studies, *Matti Peltonen* and *Hanna Kuusi*, Department of Social Science History, University of Helsinki.

185 *Sense-of-Agency in the Stories of the Repeatedly Convicted Drunk Driver.*

It is possible for a convicted drunk driver to include counselling as a part of community service. From the viewpoint of counselling, drunk drivers' sense of agency and possible sense of disturbed agency are significant questions. The study aims to examine how sense of

agency is constructed in stories of drunk driving and to bring forth possible implications for treatment. The study material consists of five-hour counselling sessions included voluntarily as a part of the community service by 30 drunk drivers. Counselling sessions are video-taped and transcribed. Theoretical and methodological approach in the study is narrative. The analysis found six agency plotlines, in which responsible agency is constructed by using different narrative means. Agency plotlines are considered as different starting points in conversational aims of enhancing sense of responsible agency. One peer-reviewed article has been published and others were in progress. Researcher: *Minna-Leena Pulkkinen*, Department of Psychology, University of Jyväskylä.

187 *The Psychedelic Drug Use and the Philosophy of Life of the User.*

The research focuses on psychedelic drug (mostly hallucinogenic substances) use in contemporary Finland. Psychedelic drug use refers drug taking that fulfils higher motives such as awareness of consciousness, consciousness expansion, heightening experiences, seeking, personality growth and self-actualization. This research will focus closer on the ideology of psychedelic drug taking and the life of the users, their values and attitudes towards life in the 21st century Finland. The data consist of interviews of the drug users and their written reports of their experiences in addition earlier research literature. The psychedelic drug users can be divided in three different classes: 1) a scientist type whose world view is based on natural science, 2) a psychotherapist type who is interested in his or her own psyche and introspection, and 3) a lifestyle (hippie) type for whom ecological questions are important and who is interested in meditation and other spiritual issues. It seems that psychedelic drug use is a more varied and wider phenomenon than it was in the hippie movement in the 1960's. It seems to be more individualistic and the users do not form unified psychedelic culture or share mutual ideology. The research will focus particularly on the issue how the effects of psychedelic drugs are interpreted. According to the collected data and other research material public opinion of the effects of psychedelic drugs seems to be too narrow in range and one-sided. Researcher: *Sari Sjöberg*, Department of Comparative Religion, Åbo Akademi University (sari.sjoberg@abo.fi).

189 *Neurobiology of Alcohol and Drug Addiction.*

Repeated use of drugs of abuse induces permanent changes in the brain that together with environmental factors can promote the development of addiction. This study investigated the neurochemical background of behavioral sensitization, a mechanism connected to drug addiction, and clarified its role on voluntary alcohol drinking behaviour. Alcohol-preferring AA and alcohol-avoiding ANA rat lines were used in the experiments. The experiments included measurements of voluntary alcohol drinking, release of neurotransmitters and expression of glutamate receptor subtypes in the animals sensitized to morphine. The Finnish Foundation for Alcohol Studies funded the project from 2003 to 2006. The project is concluded. During the last year, two scientific articles were published and two presentations were given in international conferences. The results showed that glutamatergic neurotransmission was increased in morphine-sensitized AA rats, but not in ANA rats in the ventral tegmental area, an area suggested to be important in the reinforcing effects of drugs. Moreover, expression of glutamate receptor subunits was found to differ in several brain areas between sensitized and naïve animals and between AA and ANA rats. Researcher *Sami Ojanen*, National Public Health Institute (sami.ojanen@ktl.fi).

190 *Harm Reduction Approach and Low Threshold Services in Finnish Drug Care. An Ethnographic Account of Needle Exchange Services for Intravenous Drug Users.*

This is an ethnographic study of Finnish needle exchange services. The theoretical starting point of the investigation is in the institutional ethnographies carried out in the field of sociology mainly since the 1960's. The purpose is to describe in detail the everyday life of needle exchange program and analyze its meaning to drug use and to overall life situation of the clientele. The data consist of field notes based on the observation made in the three needle exchange services located in the Helsinki metropolitan area, interviews of the clients and workers of the service as well as key informants and various documents that represent the service's ideas and actions. The project was begun in 2003. In 2004 and 2005, the project was temporarily at a standstill because of a maternal leave. The observations show needle exchange programs deliver much more than clean needles and syringes. The staff performs other tasks as well, mainly admitting clients to treatment and support the clients in their everyday life. Much energy is put to raise clients'

self-confidence as normal individuals and citizens and to make them see themselves as valuable persons. The institution has very few rules and the clients can so to speak come and go as they please. This has not led to anarchy or violent outbursts. The clients seem to consider the place as "their" place and trust the staff. The staff in their part seems genuinely appreciate their clients and this creates the atmosphere of mutual respect. Three conference presentations were given in 2006. Researcher: *Riikka Perälä*, Finnish Foundation for Alcohol Studies.

193 *The Role of Transcription Factor Δ FosB in Drug Addiction.*

The regulation of gene expression is considered to be involved in the cerebral mechanisms leading to and maintaining the addictive state. Transcription factor Δ FosB has been suggested to participate in the long-lasting changes induced by addictive drugs. The aim of the project is to clarify the neural mechanisms of the regulation of alcohol drinking. Specifically, the aim is to study the relation to and the mechanisms of the sensitization phenomenon thought to be important in the development of addiction. We will study whether the alcohol-preferring AA and alcohol-avoiding ANA rats differ in regard of the expression of the Δ FosB. Furthermore, we will perform behavioural tests to see whether the expression of Δ FosB correlates with the addictive behaviour. The project began in 2004. At the present moment, we are preparing a second manuscript. The project is estimated to last until year 2008. In 2006 one article about the results of the project was published in an international journal. Furthermore, repeated cocaine treatment increased the Δ FosB expression in the nucleus accumbens of AA rats but not in ANA rats. Now, we are investigating the effects of morphine and nicotine. Researcher: *Kristiina Marttila*, Faculty of Pharmacy, University of Helsinki, supervised *Liisa Ahtee* (kristiina.marttila@helsinki.fi).

194 *Pharmacological Mechanisms of Alcoholism and Alcohol Drinking.*

Dopamine, serotonin and opioid neurotransmitter systems are believed to mediate some of the effects of alcohol drinking. Our aim was to study drugs that act on these neurotransmitter systems by using two different methods. We studied the effects of atypical antipsychotic drugs on alcohol drinking in AA rats. Using PET imaging methodology and [¹¹C]carfentanil as a tracer ligand we explored the brain pharmacokinetics of nalmefene, an opioid antagonist developed for the treatment of alcoholism, in healthy

volunteer subjects. We started this study project in 2004 and have completed all of the experimental work. Olanzapine and aripiprazole decreased the alcohol intake of AA rats, but the effect was not selective for alcohol. Clozapine failed to affect alcohol drinking, though it effectively suppressed locomotor activity in these animals. Nalmefene-induced blockade of the brain μ -opioid receptor system was prolonged when compared with plasma kinetics ($T_{1/2} = 13.4$ h). Extensive μ -opioid receptor occupancy (83–100 %) was detected 26 h after nalmefene dosing. The project has been completed. Researcher: *Kimmo Ingman*, Department of Biomedicine, University of Turku.

195 *Paths to Recovery – A Study of the Past, Recovery and Life Today of Those Recovered from Alcohol Problems through Different Routes.*

Direct or indirect alcohol problems concerns hundreds of thousands of people solely in Finland. Routes to recovery from alcohol problems have been studied only about a decade. In Finnish research on substance abuse treatment these are scarcely any studies which focus is on recovered alcoholics. People recovered from extensive alcohol problems are experts whom we should listen to. This study is a part of a new Finnish basic study and it provides a new comparative perspective to the paths of recovery also internationally. People recover through different routes. Studying the similarities and differences between these different routes is the main focus in this study. Secondly this study focuses on those factors which make a person to look for certain route. The goal is to provide a picture about a process of recovery in a course of life. In this research there is a convenience sample which has been recruited by media. These people have recovered through different routes: self-help groups, professional care and spontaneous remission. The sample includes 104 people who have at least three years of sobriety of modest drinking. Material has been collected by questionnaire, life lines and writings of their recuperation and also by interviews. Material is being analyzed using both qualitative and quantitative methods. The project was started in 2004 and the report is expected to be finalized by the end of 2008. There has been a standstill because of a parental leave. The research is now in phase of analyzing the quantitative data which is will be finalized at the beginning of 2007. After that qualitative data will be taken into analyze and the research report will be written more intensively. Duo to parental leave there were no publications in

2006. Researcher: *Katja Kuusisto*, Department of Social Policy and Social Work, University of Tampere (*katja.n.kuusisto@uta.fi*).

196 *Drugs and Societal Problems.*

The subject is the drug market in Helsinki area. In Finland there hasn't been done ethnographic research about drug markets. Ethnography was chosen because of the nature of the research. It was obvious that the subject needed ethnographic approach. The uses participating and non participating observation, conversations and open interviews with the people who are having different roles in the Helsinki drug markets. The research also uses interviews with the law enforcement and customs officers and the pre-trial phase of the criminal process papers. Actual research was started at the beginning of the year 2004. Still there are to be made a couple of additional interviews but mainly the year 2007 is meant to spend analyzing the data and writing the study. The research is meant to be ready during the year 2008. During 2006 the research has been presented in the A-Clinic Foundation's information seminar with the subject "Drug markets and violence." Researcher: *Jussi Perälä*, Finnish Foundation for Alcohol Studies.

197 *Biomonitoring of Ethanol Consumption.*

Although alcohol abuse is a continuously growing global problem, no single, specific laboratory method has so far been developed for biomonitoring alcohol consumption. The specific mechanisms responsible for ethanol-induced tissue toxicity are also largely unknown. The aim of this project is to develop new methods for detecting excessive alcohol consumption and to compare the usefulness of various currently available methods in clinical materials. Previously, studies have shown that covalent protein-aldehyde adducts may be generated as a result of ethanol metabolism from *acetaldehyde*, the first metabolite of ethanol and from ethanol-induced lipid peroxidation (*malondialdehyde*, *4-hydroxynonenal*). Such adducts are immunogenic and create immunological responses and the production of antibodies *in vivo*. A major objective of this project is to develop new methods for monitoring alcohol abuse based on the detection of ethanol-induced protein adducts and to compare the sensitivity and specificity of such methods with other currently available methods (gamma-GT, MCV, CDT, AST, sialic acid) and their combinations. The aim of this work is also to explore the role of protein adducts as mechanisms of ethanol-

induced tissue damage in the liver, brain, muscle, gut and blood cell formation using immunohistochemical, biochemical and genetic methods. The data has indicated that the generation of protein adducts plays an important role in the pathogenesis of alcoholic liver injury, myopathy, and cardiomyopathy. Based on recent work in this project it also appears that under conditions, which involve enhanced oxidative stress (excess body iron, high fat diet or obesity) or lack of biological protective mechanisms (folate deficiency), alcohol abuse leads to more abundant amounts of adducts and thereby potentiates tissue damage in alcoholics. This project was initiated in 2004 and is closely related to previous work on alcohol research by the principal investigator. Researcher: *Onni Niemelä*, EP Central Hospital Laboratory, Department of Clinical Chemistry and Hematology, and the Department of Medicine, University of Tampere (onni.niemela@epshp.fi).

198 *Local Alcohol and Drug Treatment and Social Citizenship. Compulsory Treatment and Alternative Control and Treatment Measures in Finnish and Swedish Municipalities.*

Local substance abuse treatment and social citizenship Compulsory treatment and alternative measures in Finnish and Swedish municipalities 1935–2000. Finland and Sweden had almost identical alcohol treatment legislations until the late 80s, when Finland ceased using compulsory treatment, while it still has a role in Sweden. By comparing historically and at a local level the two treatment systems' measures against heavily drinking or drug using citizens we try to find political, institutional and professional factors determining the choice of measures – compulsory treatment versus other measures – and analyse the reasons behind national and local differences in these choices. Information about 4 types of clients are collected through client records and board protocols from 1936, 1950, 1966, 1985 and 2000 in 3 Finnish and 3 Swedish municipalities. The year 2000 clients are interviewed and a vignette-study with local decision makers is added. Focus in the analysis of the client data is on the identification and definition of the problem, measures taken and the influence of the client in the process. In 2006 the data collection was finalised. The project has had two meetings during the year to discuss drafts of the chapters. Stenius presented at the yearly KBS-meeting in Maastricht in June a paper entitled "Citizenship, civil society and substance abuse – an exploration of the Finnish and Swedish logic of inclusion and exclusion". In

December, Anette Malinen's master thesis based on the vinjettes, interviews and personal files from 2000–2002 in the Finnish towns was reviewed. Preliminary results show strong similarities between the two countries in the development of civil, political and social rights of substance abusers, in the conceptualisation of the problems and in treatment administration during the first decades of the study period. Thereafter several factors led the countries into different directions. The war prevented a similar continuity and corporatism in the Finnish system as in the Swedish. The successful establishment of the A-clinics had an important role for the subsequently more critical Finnish stand to compulsory treatment. The Finnish treatment policy became less comprehensive and political, but more pragmatic, than the Swedish one. The Swedish part of the study is financed by the National Board of Institutional Care. Researcher: *Kerstin Stenius*, National Research and Development Centre for Welfare and Health (Stakes) and University of Stockholm (kerstin.stenius@stakes.fi).

199 *The impact of changes in pricing and availability of alcohol in 2004 on alcohol-related harm: a unique natural experiment.*

A large reduction in the price of alcohol is a unique event even in the global context, which has been predicted to have a notable impact on alcohol-related harm. The aim of the study is to assess to what extent these changes affect alcohol-related mortality, hospitalisations and crimes in Finland. In this study, the methods include before – after design, time-series analysis, and ecologic analysis. The data will be obtained from Statistics Finland, Stakes and the police. In the second year of the research two studies have been completed: a study on changes in alcohol-related mortality in 1987–2003 in Finland, and a study on the impact of the reduction in the price of alcohol on alcohol-related delinquency. Additionally, we have obtained the data for the sub-study on the impact of the reduction in price of alcohol on alcohol-related mortality, and have performed the preliminary analyses. Preliminary results of the study on the impact of the reduction in the price of alcohol on alcohol-related delinquency were presented in two international conferences. The article has been completed and submitted to an international journal on alcohol studies. The paper on the trends in alcohol-related mortality has been accepted for publication in *Alcohol and Alcoholism*. Researchers: *Kimmo Herttua*, University of Helsinki, Department of Sociology, *Pia Mäkelä*, Stakes, and

Pekka Martikainen, University of Helsinki, Department of Sociology
(kimmo.herttua@helsinki.fi).

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201 *Sociability, gender and drinking. An ethnographic study of young adults' night club behaviour.*

The use of alcohol among young adults, especially women, has become more common and its forms more diverse. This has been explained by structural and cultural changes in society, for example by the strengthening of individualistic values and the changing of the forms of sociability into more individualistic. On the other hand, it has been shown that young adults' bar behaviour is motivated first and foremost by sociability. The study analyses young adults' night club behaviour as action that mediates, combines and shapes both individual and collective values. Ethnographic observation is used as the main data, and it is supported by personal diaries and interviews. The study utilises ethnographic frame analysis and perspectives of semiotic sociology as methods. The study started in 2003 and ends in 2008. In 2006 one article was published and two approvals of publication were received, and four international and two Finnish presentations were held in the project. In the study it has been identified two distinct frames that mediate individual and collective action in night clubs. In the *personal frame* the partygoers highlight individual autonomy and competence but in a gendered way; a big part of the display of competence is the neat articulation of gendered body language. This requires ongoing individual reflection of action which also functions as a restrictive factor for drinking. In the *collective frame* the partygoers prefer collective action with a shared focus (e.g. music or talk) highly over individual purposes. Individual regulation of drinking is thus weaker and bodily action is less individual and gendered. Researcher: *Antti Maunu*, Finnish Foundation for Alcohol Studies (antti.maunu@stakes.fi).

202 *Pattern of drinking and the risk of adverse health outcomes.*

In order to assess the net effect of alcohol consumption to public health it is important to know how alcohol related harms are distributed in population by the level of intake, by the pattern of drinking, and by harm. Recent studies have shown that the health effects of alcohol consumption do not depend only on the average level of intake but also on the pattern of drinking. In this project, the connection between pattern of drinking and global measures of health such as total mortality and morbidity

will be explored. Analyses will provide information for example on how psychosocial factors modify the relationship between pattern of drinking and health. The study data are derived from two large, internationally unique population-based follow-up studies, which represent 20 to 54 years-old (sample size 23 000 persons) and 15 to 69 years-old (sample size 8 400 persons) Finnish men and women. The data is linked with follow-up information from national health registers. The main methods of analysis are survival analysis and regression analysis. The project started in 2005 and it will be closed in 2008. During the year of 2006 two manuscripts were prepared of the connection between pattern of drinking and depression. The results will be published during 2007. Researcher: *Tapio Paljärvi*, University of Helsinki, Department of Public Health (tapio.paljarvi@helsinki.fi).

203 *Drug users in the criminal justice system.*

The penalties for drug offences were reformed in autumn 2001, whereby the police was empowered to impose fines on drug users. Notwithstanding this, it was not assumed that users would be automatically fined, as one purpose of the reform was to place emphasis on alternative measures. Focus was placed on two particular groups of drug users. Instead of imposing fines, young people would be reprimanded, whereas drug abusers in need of treatment would be directed to treatment. The research will focus particularly on sanction practices. The aim is to publish doctoral dissertation in law. During the year 2006 several interviews were made. The study is likely to be completed by the end of the year 2007. Researcher: *Heini Kainulainen*, National Research Institute of Legal Policy (heini.kainulainen@om.fi)

204 *Double-blind, randomized comparison of memantine and escitalopram for the treatment of major depression co-morbid with alcohol dependence.*

Alcohol dependence comorbid with major depression is a significant public health problem and its treatment is shown to be difficult. The aim of the study was to identify a possible new treatment for major depression in patients with comorbid alcohol dependence. The efficacy of memantine, a non-competitive glutamate NMDA-receptor blocker, was compared with escitalopram, a selective serotonin re-uptake inhibitor (SSRI), escitalopram. Additional aim was to compare the effects of these medicines to cognitive functions

and alcohol use. The research was performed in three different A-clinics in Helsinki, total sample of patients being 80. The study was randomized and double-blind. The start was in December 2004 and the last visit was in May 2006. The duration of study flow was 6 months. The data is saved and preliminary analyses are performed. The drop-out in both treatment groups was 27.5%. Both treatments significantly reduced the baseline level of depression and anxiety symptoms measured by outcome measures or by direct patient estimation of changes. Decrease in AUDIT and Obsessive-Compulsive Dinking Scale was significant in both groups. There were no significant differences in efficacy between the memantine and escitalopram groups. Cognitive functions were primarily in the range of normal values and were not changed in either group. Quality of life outcomes were improved in both groups. These data provide new evidence for the safety and efficacy of memantine for patients with major depression and comorbid alcohol dependence. Researcher: *Leea Muhonen*.

205 *Biologic and molecular mechanisms in fetal alcohol disorders.*

Most common clinical features of fetal alcohol syndrome (FAS) are prenatal and/or postnatal growth retardation, mental retardation, facial dysmorphogenesis and cardiac septal defects. Alcohol abuse during pregnancy causes several disorders for the developing embryo. Many of these are related to the central nerve system. The deleterious effects of ethanol to the developing brain may be, at least in part, due to effects on cholesterol homeostasis. Disturbances in lipid metabolism may explain the origin of various defects. The aim of this project is to study the pathways and genes behind FAS disorders by global analysis of consequences of acute alcohol dose in gene expression and protein synthesis of placenta and embryo proper. To study all sources of lipids for the developing embryo, defects in lipid transfer from mother to embryo through placenta were studied. Possible rescue options have been considered as well. Pregnant mice with two intraperitoneal injections of ethanol were used as a model. Embryos exposed to ethanol were analyzed by applying following methods: microarray analysis, 2-D proteomic analysis, Western blot, Northern blot, RT-PCR, hematoxylin staining, wholemount immunostaining, HPLC, mass spectrometry, TLC chromatography and electron microscopy. Our first paper concerning acetyl coenzyme synthetase A was published in 2000. This enzyme is developmentally regulated and engaged in cytosolic

lipid synthesis. Our recent results showed downregulation of this gene in brain in response to ethanol (manuscript in preparation) together with perturbation of LDL-related protein receptor ligands in brain. A large series of experiments has enabled us to construct a detailed time table of the ethanol-induced alterations in gene expression. Ethanol perturbs several thousand genes, not only in embryo proper but also in extra embryonic supporting tissues such as yolk sac and placenta. The most dramatic changes in gene expression take place, however, in genes that belong to pathways involved with nutrition supply to placenta and the embryo proper. Furthermore, cholesterol synthesis and metabolism as indicated by changes in genes of lipid metabolizing enzymes, apolipoproteins and lipoprotein receptors are suffered most dramatically. Interestingly, our results show also perturbed neural crest migration in FAS. Furthermore, we have found at least one way to rescue the ethanol-induced defects of the neural crest migration. The main goal in our future studies is to discover the specific compound in the lipid mixture responsible for the rescue. Researchers: *Markku Savolainen, Saeid Haghighi Poodeh and Tuire Salonurmi*, Department of Internal Medicine, University of Oulu (markku.savolainen@oulu.fi).

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