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Article Title Page

Knowledge production, communication and utilization: Studying biomedical alcohol research

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Structured Abstract:

Purpose – A growing body of social research analyzes how the biomedical interest in detailed molecular aspects of our bodies (genes, biomarkers, DNA) affect everyday notions of health, risk, and responsibility for health problems. However, this research focus has been largely neglected in social alcohol research. The purpose of this paper is to report on some early findings from a study of media portrayals of biomedical alcohol research and to present a rationale for studying biomedical alcohol research more broadly.

Design/methodology/approach – The empirical discussion is based on textual analysis of 90 newspaper articles published in Swedish newspapers between 1995 and 2010 and one-on-one semi-structured interviews with 24 newspaper readers about their interpretation of the newspaper portrayals. The motives for studying biomedical alcohol research more broadly are discussed in relation to existing research and theories of biomedicalization.

Findings – Firstly, we find that a large majority of the newspapers cite biomedical researchers to explain the mechanisms of addiction, and that biomedical research is often presented as revolutionary in scope. However, journalists also act as storytellers who explain the biomedical research results to readers. The reward system proved to be a central notion among the interviewees, who had their own, different and varying definitions of the concept. Secondly, we suggest a framework for analyzing how biomedical knowledge is produced, communicated and utilized by three types of key actors.

Originality/value - The study presents a novel framework for studying biomedical alcohol research.

Keywords: alcohol, addiction, biomedicine, culture, science studies

Article Classification: Research paper

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Running Heads:

Knowledge production, communication and utilization: Studying biomedical alcohol research

Introduction

As late as 50 years ago, researchers knew absolutely nothing about how alcohol, narcotics and tobacco affect the brain. During the latest 10-15 years in particular, knowledge about this has grown at breakneck speed, not least thanks to new methods within neurochemistry, brain imaging, and molecular genetics. (Agerberg, 2004, p. 7).

In the last few decades, biomedical alcohol research has become more visible in public debate. Popular science publications, like the one quoted above, describe the progress as revolutionary in scope. In addition, biomedical solutions to alcohol-related problems attract increasing public attention (Midanik & Room, 2005). This development is not limited to the addiction field. On the contrary, in Western societies, biomedical research is central in explaining numerous health problems, a shift that is often linked to the start of the U.S. Human Genome Project in 1990.

Internationally, a growing body of research analyses how the shifting focus of medical science and technology affects our notions of the human body, health, and risk (e.g., Burri & Dumit, 2007; Clarke *et al.*, 2010; Ettorre, 2000; Franklin *et al.*, 2000; Rose, 2007). Sociological and anthropological research on biomedicine includes studies of genetic counselling, lay and professional perspectives on genetics, discourses around the new genetics, and the sociocultural meanings and implications of new brain imaging techniques (Burri & Dumit, 2007; Conrad & Gabe, 1999; Dumit, 2004). These studies generally deal with fields such as aging, mental health, cancer, heart disease, reproductive medicine, and women's health (Clarke *et al.*, 2010; Midanik, 2006).

Nevertheless, this research focus has been largely neglected in social alcohol research. Lorraine Midanik's (2006) analysis of the distribution of financial resources to alcohol research in Sweden and the US is one exception, Peter Conrad's (1997) study of British and American press reporting on genes for alcoholism another. Despite these studies, however,

there is a lack of research – in Sweden and internationally – on how the biomedical shift in alcohol research is understood, interpreted and utilized by central actors in the field.

Moreover, biomedical research more broadly lacks larger scale, multidisciplinary projects that address what happens when the shift from medicine to biomedicine co-occurs with simultaneous transformations of specific social policy efforts, such as the current individualization of Swedish alcohol policy.

Aims

This paper provides an overview of our ongoing and planned work in two interrelated projects of biomedicalization in the alcohol field. The first project, initiated 2010, is a sociological study of Swedish media portrayals of biomedical alcohol research, including analyses of the press coverage between 1995 and 2010 and a study of newspaper readers' interpretations of the newspaper articles. The second project will be initiated in 2013 and is an expansion of the media project, including new research questions, materials, and methods. Whereas the media project analyses the production and interpretation of popular(ized) knowledge, the new project shifts the focus to other powerful actors in the field. Although still in its starting phase, the general rationale may be of interest to other researchers, as this can facilitate the design of future international comparative projects.

Accordingly, the paper has two aims. First, it briefly reports on some early findings from the media project. Second, related to the new project, it presents an outline for studying biomedical alcohol research more broadly, suggesting a framework for analyzing how biomedical knowledge is produced, communicated, and utilized by three types of key actors: (a) biomedical alcohol researchers; (b) politicians and other stakeholders, and (c) the new electronic media, represented by websites for patient/interest organizations in the field.

We argue that the Swedish alcohol field is particularly productive for a case study of biomedicalization due to the dilemmas of responsibility brought to the fore by recent developments in Swedish alcohol policy. Biomedical alcohol research has gained its strong position in the middle of a period of transition for Swedish alcohol policy. Traditionally restrictive, state-oriented policy is going through liberalization, and is about to give way to an individualistically oriented policy that emphasizes the individual consumer's choice, responsibility, and rationality (Johansson, 2008; Olsson, 2000). Biomedical alcohol research, in turn, carries a potential for *reinforcing* individualization at the expense of collective responsibility because of the interest in the individual's genetic make-up, and the subsequent foregrounding of solutions tailored to the individual's disease. In the alcohol field, the (old) collective model of social responsibility characteristic of the Swedish welfare state – articulated in the total consumption model of Swedish alcohol policy (Johansson, 2008; Skog, 1985) – is then confronted with a model of genetic responsibility that focuses the individual.

We do not propose that there is a *causal* link between the advent of biomedical alcohol research and the liberalization of Swedish alcohol policy. Instead, we note that these processes of change occur simultaneously. Thus, there is a possibility that these trends will mutually reinforce individualization. At the same time, it has been argued that the biomedical perspective of addiction as a genetic or as a brain disease reduces the moral culpability of the individual – he or she is no longer seen as bad but as sick (Conrad & Schneider, 1980). Accordingly, there are potential contradictions inherent in each trend that may also counteract increasing individualization. This provides a central motive for studying biomedical alcohol research in more detail, both in Sweden and in other countries¹. In general, social research on alcohol policy is concerned with studying specific aspects of policy, such as analysing how control policies affect drinking and alcohol problems in specific population groups (e.g., Paschall *et al.*, 2009), countries (e.g., Bloomfield *et al.*, 2010), or parts of a country (e.g.,

Gustafsson, 2010), or studying one country's position in international policy-making (for Sweden, see Cisneros Örnberg, 2009). Whereas the liberalization of alcohol policy has been the topic for discussion in several studies (e.g., Johansson, 2008; Olsson, 2000; Sulkunen, 2000), biomedical alcohol research has received little attention.

In the Swedish context, there are some recent examples of how the entry of biomedical perspectives might affect alcohol research and policy. Firstly, in 2011, the Swedish Council for Working Life and Social Research – a funding body that generally supports social research – conducted an evaluation of Swedish research on alcohol, narcotics, doping, tobacco, and gambling. The resulting evaluation report describes Swedish biomedical addiction research as world-leading, with high problem-solving potential (Holder *et al.*, 2012). Secondly, the recent governmental report on addiction treatment (SOU 2011:35) defines addiction as a medical problem, and suggests that resources for addiction treatment need to be reallocated to the medical system.

The above discussion outlines some of the most important potential dilemmas brought to the fore with the entry of biomedical perspectives. Whether and how these are played out and in what way the specific Swedish examples mentioned will lead to new policies for understanding and treating addiction, is an empirical question that we hope future research, including our own, can provide some answers to.

To introduce our studies, we first provide a short background on the biomedicalization concept. Next, we present the method and some results from our media project. Finally, we present the rationale behind the new project.

The biomedicalization process

Biomedicalization can be conceptualized either as an extension of a more general medicalization process or as a separate process with its own logic (Midanik, 2006).

Medicalization, as defined by Conrad and Schneider (1980), refers to the increasing impact of medical models for explaining, understanding, and treating what was formerly seen as immoral behaviors. With the advent of the medical model, these are now described as diseases (e.g., alcoholism, sex addiction, sugar addiction). However, medical models are context-dependent; they appear in specific historical and social contexts. As Rose (2007) and Franklin *et al* (2000) point out, ongoing shifts and developments in medicine and medical technology made it possible to talk about and understand the human body in new ways. Talking about a gene for alcoholism is only possible if genes are given a central place in (bio)medical research. To capture the specificities of these latest developments, we choose to follow the recommendation of Clarke *et al* (2010) to use the concept of biomedicalization.

Key components in the shift from medicine to biomedicine are the extension of medical jurisdiction to cover health itself (not only illness and disease), and the new clinical innovations based on computer and information technologies that allow for new ways of organizing information about patients and new ways of doing medical research, treating disease, and producing health (Clarke *et al.*, 2010). For example, visual technologies such as magnetic resonance imaging (MRI) are central for producing knowledge about the brain mechanisms involved in addiction (Ducci & Goldman, 2008). The colourful images of the brain produced via these techniques are also often used in popular science publications explaining the physiological processes behind addiction.

Study 1: Swedish media portrayals of biomedical alcohol research

Media portrayals are not just innocent or peripheral aspects of culture. In fact, researchers discussing the ‘mediatization’ of society argue that “contemporary society is permeated by the media, to an extent that the media may no longer be conceived of as being separate from cultural and other social institutions” (Hjarvard, 2008, p. 105). Moreover, the vast majority of

people have no direct access to the process of scientific knowledge production. The media therefore act as dominant interpreters of science (Oudshoorn, 2003).

Whereas social scientists have taken an interest in the various images of alcohol that the media convey, they have done so largely through analyzing traditional media output; notably, newspaper and magazine reporting about drinking habits and alcohol policy on a general level (e.g., Hansen & Gunter, 2007; Nicholls, 2011; Olsson, 2000; Törrönen, 2003). Moreover, while there are some studies of ordinary citizens' interpretation of media images of alcohol (Baillie, 1996; Törrönen, 2001), these are generally few and concentrate on drinking and alcohol policy rather than on biomedical alcohol research. Conrad's (1997) study of press reports on genetic causes of alcoholism shows that the American and British press depict scientific endeavors as a 'hunt' for a single gene. Findings confirming the existence of a gene were emphasized at the expense of findings that did not. Study 1 was designed to provide further and deeper analysis of the Swedish press reports, and readers' interpretations of these.

Method

We collected 90 newspaper articles published between 1995 and 2010 in four daily Swedish newspapers (*Dagens Nyheter*, *Svenska Dagbladet*, *Aftonbladet* and *Expressen*) from the database *Mediearkivet*. Articles that explain the biochemical mechanisms behind alcohol use and addiction by using keywords such as genes, biomarkers, chromosomes, DNA, hormones, and neurotransmitters were selected. The following analytical questions were used: (1) How are biochemical mechanisms and biomedical research described? (2) How are the causes of alcohol problems, health, and responsibility (re-)defined? (3) Which actors and sources are interviewed and quoted? (4) As discourse on biomedical research includes frequent references to sex differences, we included a sub-study of the constitution of gender in the newspaper articles (Winter & Bogren, under review).

To understand the interpretive processes involved in making sense of the media portrayals, we studied how readers interpreted the stories. We conducted interviews with 24 laypeople of varying sex, age, ethnicity, and occupations to reach as heterogeneous a group as possible. The interviews were organized around two texts drawn from our corpus, which were selected because they are rich and detailed examples of how newspapers discuss biomedical alcohol research (compare Törrönen, 2001). The first news text presents research on the reward system of the brain, discussing how genetic and biochemical mechanisms are involved in addiction. The second text explains alcohol's effects on the level of sex hormones in men's and women's bodies.

The interview starts with the interviewee reading the first text. The interviewer uses open-ended questions, asking the interviewee to reflect on the article; describe the themes, arguments and missing aspects; explain agreements/objections; and relate the article's themes to their own life. This procedure is then repeated for the second text. In the analysis, we study which concepts and arguments the interviewees use, how they interpret the different perspectives presented in the articles, and how they use the news stories in their everyday lives. We also study what discourses (individualistic, health-related, risk-oriented, feminist, etc.) the interviewees draw on when they relate the news stories to their own experiences. Below, some of the results from the media project are presented. For additional analysis and discussion of the newspaper material and the interviews, the reader is referred to Winter (forthcoming) and Winter and Bogren (under review).

Biomedical alcohol research: Revolutionary and complex

The preliminary results show that a large majority of the newspapers cite biomedical researchers to explain the mechanisms of addiction, and that biomedical research is often presented as revolutionary in scope, as in the quotation below. Moreover, the quotation citing

an expert illustrates that the newspapers reproduce rather complex reasoning about genetic and other biochemical mechanisms (e.g., the discussion of the CHR-R1-receptor):

Swedish and American researchers have discovered a mechanism that stops stress-induced alcohol cravings. [...] “This is a big break-through and the most exciting experience I have had in my career as a researcher”, says the Swede Markus Heilig [then head of clinical research at NIAAA]. [...] The fact that long term alcohol intake increases the number of genes that code for the CHR-R1-receptor, at the same time as this increased activity is inherited, can also explain why humans are more or less sensitive to the addictive effects of alcohol. (Hedlund, 2006).

The clause about the CHR-R1-receptor is not a citation from the researcher. Instead, it appears as an objective, factual statement reminiscent of the language in scientific reports. The journalist ‘borrows’ the voice of the expert, a pattern that appears in several articles. That journalists act as interpreters of what the researchers say is not surprising, as it is part of the journalistic task. However, biomedical language and theories are quite distant from the everyday language and theories of laypeople. The journalists thus play a particularly important role in this situation. The interpretive task of newspaper readers is even more intricate due to the complexity of the explanations, as in the citation below:

Two genetic variants that increase the risk of becoming depressed, antisocial, or alcoholic for boys have the opposite effect for girls. And vice versa. This surprising conclusion is drawn by a Swedish research group in a large study of Swedish teenagers. (Lutteman, 2007).

How are we to interpret the clause “And vice versa”, or the clause explaining the effect of the CHR-R1 receptor, for example? In our interviews, we have found that newspaper readers say that they lack the basic knowledge necessary to understand and evaluate biomedical alcohol

research. But – at the same time – they use terms like “genes”, “dopamine”, and “reward system” to explain their own and others’ relation to alcohol.

The reward system: (Re)definitions and use

The reward system of the brain proved to be a central notion among the interviewees, who had their own, different and varying definitions of the concept. Several interviewees relate the newspaper article’s discussion to their own experiences of not being able to stop eating – the reward system is (re-)defined through comparisons with the interviewees’ own feelings of being addicted to sugar, candy, crisps, ice-cream and so on (Winter, forthcoming). These comparisons enable the newspaper readers to understand how *hard* it is for people who are addicted:

It’s the way it would be, if I had a bag of crisps at home. It adds up. Oh yes. When you are on something. It’s very hard to keep away. [IP5]

Yes, here it says [reads from newspaper article]: ‘Alcohol increases the neurotransmitter dopamine’. And, eh, yes, the first parts you recognize. And it’s this crisp thing. To not be able to keep away, it’s exactly like that for me, you cannot buy it because...so that you can understand, that they have... that it is hard for alcoholics and those who smoke, that I can fully understand. [IP4]

In addition, the interviewees’ definitions of the word ‘reward’ dislocate the biomedical definition of the reward system as described in the news text (however, interviewees still refer and relate to the article’s definition during the interview). Newspaper readers dislocate the article’s definition by (re-)defining the word ‘reward’ as a performance (often work or study achievements); i.e., you perform a task and you are then allowed to treat yourself with something (e.g., crisps, ice-cream, a glass of wine). This can be called a ‘treat yourself logic’

(Winter, forthcoming). However, this logic sets off conflicts for the interviewees: how to accept addicts' experiences of alcohol and drugs as treats and at the same time recognize the negative aspects of addiction? Interviewees try to solve these conflicts in varying ways, for example through arguing that the reward system (understood in the article's biomedical terms) disappears, or that the addict can receive reward from treatment instead (Winter, forthcoming).

Altogether, our interviewees clearly interpret the newspaper stories in light of their own experiences with drinking and addiction (e.g., in terms of living with a parent with drinking problems). In this stage, our analysis focuses the interviewees' own definitions of drinking problems. We choose not to relate these to the scientific definitions of addiction and dependence in DSM-IV and ICD-10, mainly because our interviewees do not relate to these manuals. Instead, they use dependence, addiction, and alcoholism alternately (Winter, forthcoming).

The newspaper corpus and the readers together acknowledge and contribute to the knowledge production of biomedical alcohol research. Acknowledging per se does not prove that biomedicalization is a dominant force. Still, several interviewees claim that biomedical research is more "real" than social research (Winter, forthcoming). Further, our analysis shows that the newspapers sometimes describe biomedical alcohol research's *position* at a disadvantage vis-à-vis social research; they put biomedical research in the role of a new, truth-telling challenger (Winter & Bogren, under review). In light of this, it is of particular interest to also include the experts quoted in the media. To sum up, against the background of earlier studies on biomedicalization as a social force (Burri & Dumit, 2007; Clarke *et al.*, 2010; Ettorre, 2000; Franklin *et al.*, 2000; Rose, 2007); the potential societal and political effects of biomedicalization in the alcohol field; and the results from our media project; we consider that if we are to understand the societal effects of the biomedical shift, we need

research that integrates studies of separate sectors of society within a common research framework. Our new project is a first step in this direction.

Study 2: Knowledge production, communication and utilization: Studying biomedical alcohol research

The new project strives for a comprehensive overview of the state of biomedicalization in the Swedish alcohol field through studying three types of central actors: (a) biomedical alcohol researchers; (b) politicians and other stakeholders, i.e., the alcohol and pharmaceutical industries, and NGOs, and (c) the new electronic media. Initially, we have chosen to focus on human actors. Several prominent advocates of Science and Technology Studies (STS) (e.g., Haraway, 2004; Latour, 2007) argue that non-human actors (in our case, e.g., biomarkers and DNA) are central to research projects of this type. Our decision to focus human actors does not mean that we see science as constructed and interpreted by humans *only*. Instead, we take an empirical position on this issue. Non-human actors will be included within the different sub-studies if this is proved to be empirically relevant. The theoretical starting point for the project is in science studies, a perspective that “engages new questions regarding the relation between biomedicine and its cultural context” (Burri & Dumit 2007: 1; see also Clarke *et al*, 2010). This involves a discursive-material approach to culture (Haraway, 2004; Hekman, 2010).

Our main research questions in the new project are structured according to the three types of actors. We ask, firstly, how biomedical alcohol researchers produce knowledge about addiction (this involves studying their research practices, including the epistemologies, assumptions, and values they bring to their research, and how they communicate their research to the wider community). This is examined through an ethnographic account of researchers’ daily research practice, interviews with researchers, and analysis of research

proposals. Secondly, we ask how policymakers and other stakeholders (notably, the alcohol and pharmaceutical industries, and NGO:s) interpret and use results from biomedical alcohol research (this involves studying *their* epistemologies, assumptions, and values, and how they communicate biomedical alcohol research to the wider community). This is examined through content analysis of central policy documents, documents from the Medical Products Agency, and interviews with government officials, industry, and NGO representatives. Thirdly, we ask how the results from biomedical alcohol research are conceptualized and communicated in the new electronic media. This is examined through analysis of the content and dissemination patterns of websites and blogs for patient/interest organizations in the alcohol and drug field (e.g., AA, The Links/Länkarna, and similar organizations).

Through focusing these actors, we aim to create a better understanding of the social processes of knowledge production, communication, and utilization in the field of biomedical alcohol research. However, it is obvious that in late modern society, the boundaries between these processes are not clear-cut – the above-mentioned actors all engage in these processes to varying extents. Yet, this is one of the rationales for including all these actors in the project – in this way, we are able to study how the processes are intertwined and interact, and therefore also to study how politicians and other stakeholders are co-producers of knowledge.

To conclude, the growing interest in biomedical solutions to alcohol-related problems appears at a time when restrictive Swedish alcohol policy finds itself in a period of transition, heading towards an individualistically oriented policy. In this context, the great importance placed on biomedical addiction research, and the hopes and expectations linked to this research, make it even more important to study the field from a social scientific perspective. We hope that our projects will contribute to the public debate about the role of biomedical science in contemporary societies, in particular in relation to issues of social and personal responsibility.

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ⁱ There are, for example, similar tendencies towards liberalization of alcohol policy in the other Nordic countries (Johansson, 2008).