

Alcohol and Traffic Delinquency: Psychological and criminological aspects of prevention and rehabilitation in Western Pomerania

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1. Abstract

The "Study of Health in Pomerania" (SHIP) was initiated in 1997 in order to assess the general health status of 7000 inhabitants of the region of Pomerania. Associated with this epidemiological project, an interdisciplinary group of researchers in the fields of medicine, psychology, sociology, and criminology, started to investigate the patterns of alcohol consumption and the related problem of drunk driving. In a longitudinal design, our preliminary results are based on the statistical evaluation of the first wave of 353 out of 760 cases. Results confirm assumptions of prior investigations, showing that two factors are of high relevance in the prediction of drunk driving: Drinking habits and behavior control. Further we found out that most of the drunken drivers show a lot of supplementary health problems. Concerning intervention, the present sentencing practice often misses opportunities to use temporarily given readiness of offenders to participate in rehabilitative treatment, as the penal sanctions are not matched with the problem structure of offenders.

2. Introduction

In comparison to other Federal States of Germany, Mecklenburg-Western Pomerania, especially the region of Western Pomerania is characterized by an extremely high level of alcohol consumption (about 16 liters of pure alcohol vs. 9 liters in West-Germany, Kraus & Bauernfeind, 1998). It is assumed that more than 80.000 persons aged over 24 years could be classified as alcohol abusers (about 5,2 %). Pomerania is a structurally rural region with a deficient infrastructure. The possession of an own vehicle is an indispensable prerequisite of mobility. Furthermore it is a symbol of higher social status and personal life-style and fulfills deep psychological needs for power, aggression, fantasy and control. The coincidence of drinking and driving effects a number of alcohol offenses in road traffic. Reconsidering, Mecklenburg-Western Pomerania is the region showing the highest number of alcohol related traffic accidents in Germany (s. Fig. 1).

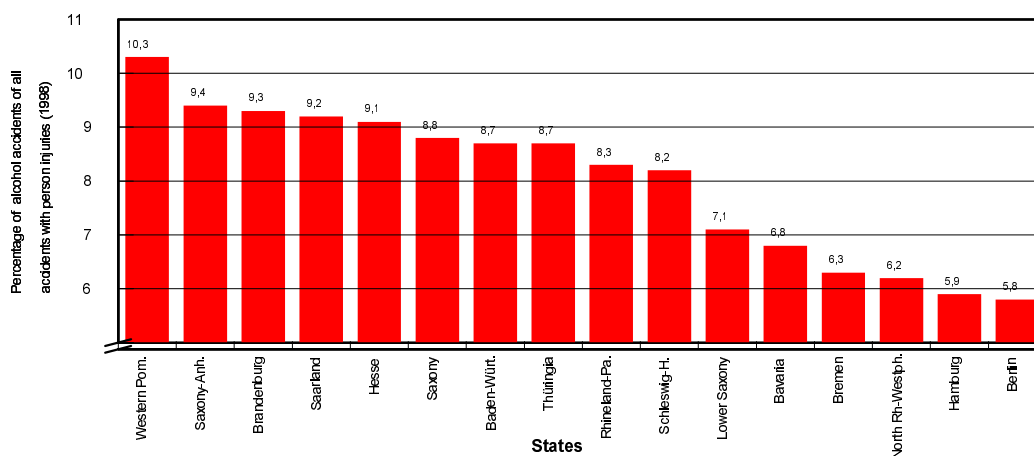


Fig.1: Percentage of alcohol accidents of all accidents with person injuries in Western-Pomerania in comparison to the other federal states

High alcohol consumption, alcohol misuse and alcoholism constitutes a big amount of social and serious health problems in Mecklenburg-Western Pomerania (Mucha & Lignitz, 1998). In order to get an overview concerning prevalence and incidence and to take care for these problems, the "Study of Health in Pomerania" (SHIP) was initiated at the University of Greifswald in 1997. The study refers to a representative sample of 7000 participants. The goal of the project is to obtain epidemiological data on a number of general health and life quality measures. A special part of the medical investigations concerns alcohol and nicotine consumption behavior.

In association with this comprehensive project, which is placed at the department of medicine and managed by Prof. U. John (director of the Institute of epidemiology and social medicine), an interdisciplinary research group (forensic medicine, psychology, sociology and criminology) started to investigate alcohol consumption behavior and the related problem of drunk driving. The study focuses on three main areas:

1. Identification of different groups of consumers by means of biological alcohol markers (GGT, CDT, Methanol), alcohol questionnaires and personality inventories. Additionally data concerning different aspects of usual mobility behavior, including violations of traffic norms are collected.
2. Analyzing relevant social background-variables of inadequate alcohol consumption and drunk driving (social networks, socialization, socio-economic situation critical life events; bonding to norms, attitudes towards drinking and driving, self-control).
3. Developing intervention (rehabilitation and prevention) strategies in consideration of consumption patterns, social context, and personality variables according to the formal requirements of the legal system.

3. Materials and Methods

3.1 Sample and design

The total sample (n=760) to be investigated consists of two sub samples. 400 subjects were selected from the "Study of Health in Pomerania" (SHIP). Another 360 subjects have been recruited on the bases of an official cooperation with the police of the region. Persons officially selected and registered for a blood test by the police (RP) were asked to participate voluntarily in our study. Different consumer groups were identified by means of biological bloodmarkers (Methanol, CDT, GGT), the level of BAC and a conventionally constructed screening instrument (Lübecker Alkoholismus Screening-Test, LAST, John, 1985). Concerning the treatment group an "or"- combination of screening criteria containing CDT >6% *or* GGT >0.82µmol/sl *or* LAST >1 (at minimum two out of five questions have to be answered in the direction of a critical alcohol consumption) has been used. The control group has been constituted on the basis of the identical combination, however with lower values (CDT <6% *or* GGT <0.82 *or* LAST <2). Additionally, methanol measures were taken of those subjects who have been registered by the police (RP). The cutoff for the group of "driving drinkers" (subjects with an extremely high level of daily alcohol consumption) is set at methanol ≥10 mg/l and at 3mg/l for the "drinking drivers"(subjects with normal alcohol consumption pattern). Subjects from the SHIP were further distinguished according to "drivers" or "non drivers". Figure 2 shows the different groups of the two sub-samples.

**Sub sample of subjects
registered by the police (RP)**

Sub-Sample taken from the SHIP (SHIP)

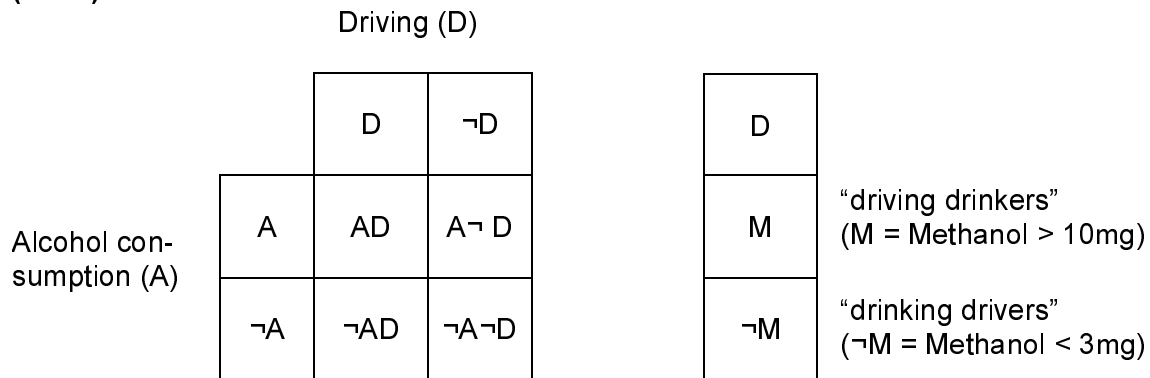


Fig. 2: Different sub-samples taken from SHIP and the registered sample (RP) divided into drivers (D) and non-drivers (¬D) and high (A, M) and low daily alcohol consumption (¬A, ¬M)

The alcohol consumption and drunken driving study is conceptualized as a longitudinal study. The following table shows the complete design of the study for the years 1999-2003.

Tab. 1: Design and number of participants of the study

	study			planned	
	1999	2000	2001	2002	2003
Subjects of the “SHIP” 1 st data collection	TG ₁ n=100 CG ₁ n=100	TG ₂ n=100 CG ₂ n=100	TG ₃ n=100 CG ₃ n=100		
Follow up			TG ₁ F n=60 CG ₁ F n=60	TG ₂ F n=60 CG ₂ F n=60	TG ₃ F n=60 CG ₃ F n=60
Subjects of the police sample 1 st data collection	TG _{RP1} n=180 CG _{RP1} n=180				
Follow up			TG _{RP1} F n=110 CG _{RP1} F n=110		
Σ Interviews	560	200	540		

note: TG= target group, CG= Controls, RP= registered by the police, F= Follow up

It is intended to run an intervention study in 2002 and 2003. For this reason it is planned to select a new sample of driving while impaired offenders and to expose them to a specific treatment intervention. The effects of this treatment will be tested against the RP-group which in the running phase of the data collection does not receive any considerable treatment besides the conventional penal sanctions of fines and the temporary withdrawal of driver license.

3.2 Analysis of main causes of drunk driving

Alcohol consumption (intake and drinking habits) has a strong relation to drunk-driving (Berger & Snortum 1986; Foss & Bud Perrine, 1993; Karstedt 1993; Krüger 1998). An uncontrolled use of alcohol leads to enduring drinking problems and a higher risk for drunk driving. This group of drivers with an abusive alcohol consumption is called the “driving

drinkers”. In blood tests this group often shows BAC levels higher than 1,1 ‰ in combination with elevated bloodmarkers like GGT, Methanol or CDT (Iffland, 1993). It is assumed that this group is predominantly characterized by behavioral problems which result from excessive drinking and which cover other sources of mental and behavioral disorders (Regier et al. 1990).

An alternative group of “drinking drivers” is predominantly characterized by problems of behavior control (low self-control). People who lack self-control tend to be impulsive, highly physical, shortsighted, low norm bonded and relatively nonverbal, they are described as risk takers and thrill-seekers (Gottfredson & Hirschi, 1990; Wiesbeck et al. 1999). Subjects showing this syndrome of features do have difficulties to control their drinking behavior as well as their driving behavior and to separate drinking from driving. In this group BAC levels often do not exceed 1,1‰ with bloodmarkers showing normal values. Well known genetic, social and developmental factors which could be seen as determinants of low self-control and inadequate alcohol consumption cannot be specified in this article. In the following behavioral model of drinking and driving they are summarized as an underlying factor (s. Fig. 3).

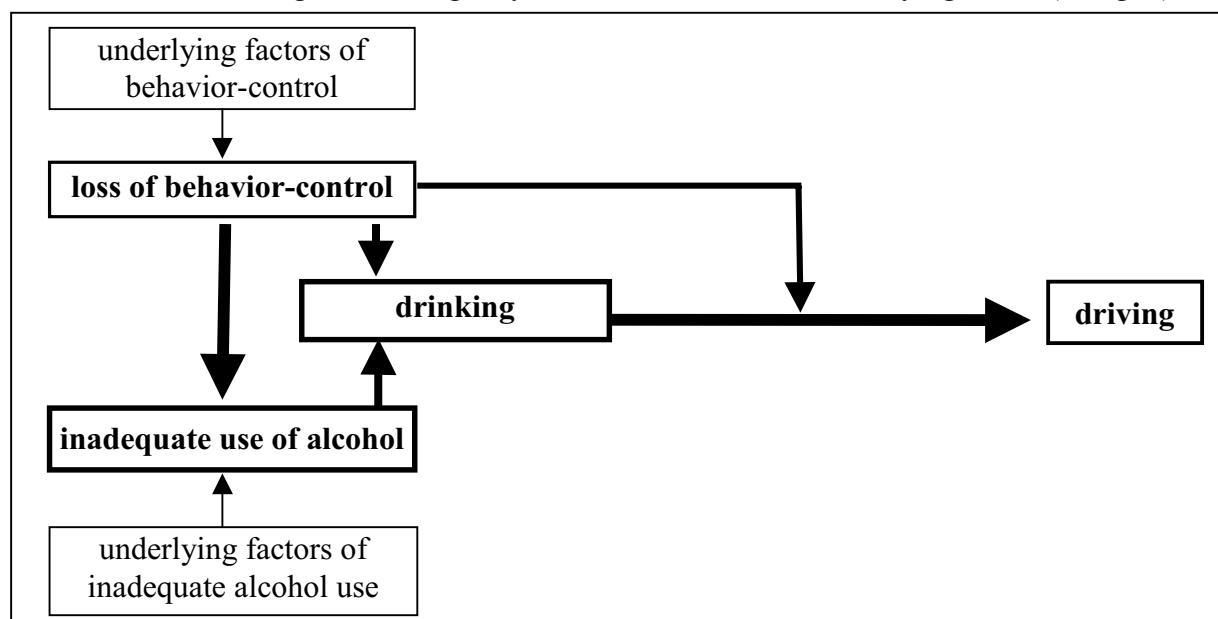


Fig. 3: Drunk driving as a function of inadequate alcohol use and a loss of behavior control

3.3 Hypotheses

In the first approach to evaluate our data we try to test the following hypotheses: The more conspicuous and abusive drinking behavior is, the higher is the risk for drunk driving. The lower self-control is, the higher is the risk for both abusive drinking and drunk driving.

3.4 Methods

Hypotheses are tested by a multiple regression model (stepwise regression) with drunk driving or non drunk driving as criterion and low self-control and weekly alcohol intake as predictors. Path coefficients are interpreted as partial correlation between predictors and the criterion and inter-correlation between alcohol intake and self-control. The Self-control scale consists of nine self-descriptive bipolar statements according to the dimensions of Gottfredson & Hirschi’s (1990) self-control concept, e.g. “careful” vs. “careless”; focused vs. unfocused (scale from -2 to 0 to $+2$). Reliability of this scale is $\alpha = 0,82$. Alcohol consumption is calculated as mean self-reported intake of alcohol in g/day on the questions “How many units (corresponding to glasses of wine, beer or liquor) do you drink over a week on a typical working day?” and “How many units (corresponding to glasses of wine, beer or liquor) do

you drink on a typical weekend?”. The criterion was operationalized by a positive or negative answer to the question “Have you ever been detected by the police after having drunken more than allowed?”. Self reported data of participants of the RP-group were checked against the police data.

The total sample consisted of 353 persons. The mean age of the SHIP- sample (n=182) was 51 years, of the RP- sample (n=171) 35 years. Both sub-samples showed a different percentage of female participants (SHIP: 34%, RP: 12%). Table 1 displays the number of participants of the different target groups.

Tab. 1: Different target groups and the number of participants

SHIP n=182	driving	non driving	m.v.	RP n=171	driving (methanol <3mg)	driving (methanol >3<10mg)	driving (methanol >10mg)	m.v.
Alcohol	42	14	4	driving	10	54	31	86
Non Alcohol	78	44						

The examination of both samples differed, as methanol was not measured in the SHIP-sample. The high number of missing values concerning methanol in the RP-sample is due to technical problems of the analyzing institute.

4. Results

A comparison of both sub-samples concerning alcohol consumption, questionnaire screening (LAST) and bloodmarker values (CDT, GGT) shows some obvious differences between both samples. The mean alcohol intake in the SHIP-sample is 31,9g (median=21,1), vs. 58,6g (median=41,4) in the RP-sample (leading to an annual consumption of 14,6 vs. 26,9 liters of pure alcohol). In total, persons in the SHIP-sample clearly manifest a lower alcohol consumption, show negligible LAST values and a rather low extension of GGT (CDT values of both sub-samples are identical). All these indicators are clearly elevated in the RP-sample. Consequently it could be assumed that subjects in the RP-sample show clear cut indications of an inadequate use of alcohol whereas subjects of the SHIP-sample show average extensions.

Path-coefficients for the causal model show moderate effects of low self-control on alcohol consumption and drunk driving, and only a rather small effect of alcohol intake on drunk driving (s. Fig.5). The whole model is significant with an adjusted R^2 of 0.11.

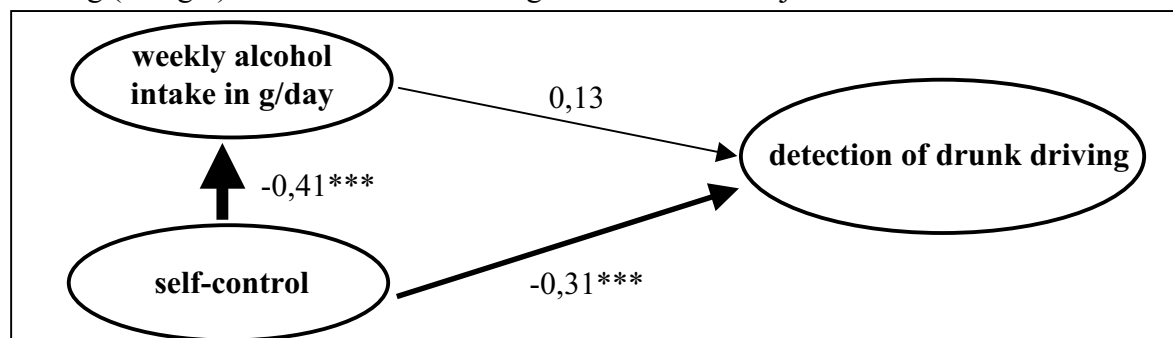


Fig.5: Impact of low self control and inadequate alcohol use on drunk driving.

This result implies that a low self-control has significant influence on both, alcohol intake and drunk driving, whereas alcohol intake has no significant direct impact. This result does not confirm our expectations concerning the relevance of alcohol intake, although all signs of correlation coefficients confirm the expected directions of influence.

5. Conclusion

The present findings corroborate our expectation that a lack of self-control has a strong impact on alcohol consumption and drunk driving. As fig. 5 shows, the impact of intake on drunk driving is surprisingly low. Although persons of the RP-group show clear indications of abusive drinking, the path from mean alcohol intake to drunk driving in the causal model is not very strong and insignificant. This result could be explained as an artifact of measuring validly the alcohol intake by self-reports. It could be assumed that a large number of drunk drivers have changed their alcohol intake in view of the consequences of the offense and the fine to be expected. Additionally, alcohol abusing persons tend to play down or even totally deny their abusive intake. Thus, it could be expected that the true value of consumption is much higher than reported (although a few number of subjects already admit a rather increased amount of consumption). This underreporting is in accordance with other international studies (Nilssen et al. 1992). At the same time it could be assumed that offenders also underreport the frequency of their past drunk driving.

The strong relation of low self-control to a risky use of alcohol and drunk driving confirms theory as well as the opinion of practitioners and experts in the field of diagnostic and interventions. Although it is clear that drunk driving is influenced by a multitude of relevant factors, our model concentrates on two main variables which are seen as the crucial predictors of repeated drunk driving as well as of relapse after intervention and rehabilitation (s. Stephan 1984).

Practice in the field of psychological diagnostic and examination indicates that -contrary to our results - drunk driving is most strongly influenced by an abusive, uncontrolled and inadequate consumption of alcohol. Although this is obviously a fundamental causal factor, our data show that low-self control is more important and has impact on both aspects of drunk driving, namely to control drinking and to separate drinking from driving. A lack of self-control is to be seen as the key problem. Drunk driving and the inappropriate, often pathological pattern of alcohol consumption could be interpreted as a derived symptom of this fundamental problem. Our own examinations show a lot of indications of co-morbidity in different fields of social life and health protection. For this reason it seems to be appropriate on the one hand to integrate all kinds of intervention and rehabilitative measures aimed at a reduction of abusive drinking and drunk driving in a general preventive treatment program concerning the training of effective behavior skills and coping styles. On the other hand the detection of a drunk driving offense could be used as a starting point for an extensive diagnostic and a therapeutic program that is oriented to the diagnostic findings (i.e. alcoholism, low self control, personality disorders, social disintegration). Driving while impaired is only a symptom for a lot of underlying problems, which in the present intervention schedules are not sufficiently medicated or psychologically treated. This symptom can be used as an "entrance into the health system".

Due to several reasons (i.e. loss of job, social prestige) after drunk driving offense and loss of driving license, delinquents usually show a strong need to get back their license. This need creates a temporary motivation to comply to different kinds of intervention. Normally they are ready to pay, but not to engage in any kind of instruction or even psychological treatment. It is easy to pay but it is a difficult and strenuous job to work on ones own problems. In face of the strong need to get back the lost driving license, rehabilitative institutions have a good chance to stimulate the offenders to join courses and accept therapeutic programs. Actually the legal system does not support enough a formal procedure like that and consequently circumvents the opportunity to give *each* offender the *right* treatment at the *best time*. Although the problems of training programs with "mandated clients" are well known, there are several hints, that people profit even from such courses (Stephan 1984). This profit could be in-

creased if the legal system would use its possibilities to match penal sanctions to the offenders fundamental problems and if the incentives to participate become more attractive. Otherwise the system runs the risk to waste the individual's potentials to learn and to change his behavior strategies.

On the other hand we have to face that drunk driving is not the most important reason for traffic accidents with person injuries. More deaths and injured persons result from low self controlled, risk seeking behavior while driving. So focussing only on drunk driving and emphasizing only on alcohol problems overlooks the more general social problems connected with driving in a modern mass society (s. Karstedt, 1993). In our study, too, low self control personality disorders, social disintegration and risky traffic behavior in general seem to be the problematic background that in many cases coincides with alcohol consumption. Treatment and training programs that only focus on alcohol problems hold a systematic deficiency when not dealing with the general behavioral problems of certain groups of drivers.

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