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ORIGINAL PAPER

Personality traits and mental health of severe drunk drivers in Sweden

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Abstract The present study was intended to investigate personality characteristics and mental health of severe driving under influence (DUI) offenders in a Swedish cohort. More specifically the aim was to investigate the personality traits as assessed by The NEO personality inventory (NEO-PI-R) and aspects of mental health as assessed by the symptom checklist (SCL-90) as compared to the general population. The subjects were 162 severe DUI offenders (with the BAC >0.099%) with an age range of 18–88 years, 143 males and 19 females. It was found that the openness to experience and conscientiousness scales of NEO-PI-R differentiated Swedish DUI offenders from Swedish norm population. The differences between the DUI group and the general population on the on SCL-90 scales were all significant except on the Hostility scale. Two main subtypes of DUI offenders identified were roughly comparable to types I and II alcoholics, as in Cloninger's typology. Among all the scales used (personality traits, psychiatric comorbidity and alcohol use), the only factor that was predictive for future relapses to drunk driving was the factor of depression.

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Keywords Driving under influence · Blood alcohol concentration · Alcohol use disorders identification test · NEO personality inventory revised · Symptom checklist

Abbreviations

DUI	Driving under influence
BAC	Blood alcohol concentration
AUDIT	Alcohol use disorders identification test
NEO-PI-R	NEO personality inventory revised
SCL-90	Symptom checklist

Background

Driving under the influence (DUI) of alcohol is a serious problem worldwide on our roadways, creating great risks for personal and public safety. There are various factors contributing to drunk driving. Thus, the phenomenon of DUI and of its offenders can be explored on different levels: psychosocial characteristics, alcohol use, driving-related attitudes, personality traits and, occasionally, acute emotional distress. The present study aims at exploring the aspects of personality and mental health among DUI offenders compared with that of the general population in Sweden.

"Personality represents those characteristics of the person that account for consistent patterns of feeling, thinking, and behaving", quoted after Pervin and John [39, p. 4]. Personality is often (and for the present purpose) described in terms of five broad factors discovered through pragmatic research. The NEO personality inventory (NEO-PI-R) assesses "The Big Five" domains of personality: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A) and conscientiousness (C). The World

Health Organization states that there is no one "official" definition of mental health. In this study, mental health is operationalized as an absence of a mental disorder or psychiatric symptoms, as assessed by the SCL-90 (symptom checklist with 90 items).

Drunk driving is, apart from other causes, a symptom of coexisting alcohol problems. The reported proportion of DUI offenders with alcohol problems varies between 4 and 87% in different studies. Reasons for this variability are varying definitions of alcohol problems, different methods of assessment [51, 52], co-varying psychosocial problems, psychiatric comorbidity, criminality, and lastly the selection of samples of investigated DUI offenders. In Sweden, alcohol problems were reported in 58% of drivers suspected of DUI, of whom 24% had severe alcohol problems. Even among drivers suspected of DUI, with a BAC (blood alcohol concentration) below the Swedish legal limit of 0.02%, no <46% had alcohol problems [7]. With regard to sociodemographic characteristics such as employment, formal education, family and social relations, DUI offenders are often reported as underprivileged compared with drivers in general [36, 42, 46].

Two different sets of personality and mental health characteristics attributed to DUI offenders are apparent in previous studies. First, a number of characteristics associated with alcohol problems, e.g. anxiety, depression, inhibition, low assertiveness, neuroticism and introversion are reported. Second, characteristics of an antisocial personality disorder (ASPD), particularly in repeat DUI offenders, such as low social responsiveness, lack of self control, hostility, poor decision-making lifestyle, low emotional adjustment, aggression, sensation seeking and impulsivity are often reported. Mental characteristics reported in previous studies of DUI offenders are presented in Table 1.

In the reports published so far, female DUI offenders have been found to be more underprivileged in sociodemographic characteristics such as employment, formal education, family and social relations, when compared with male DUI offenders and drivers in the general population [36, 42, 46, 53]. More female alcoholics than male have problems with mental and physical health, drug use and family or social life, but fewer have legal problems [34]. Almost half of the female alcoholics had previously attempted to commit suicide, and almost one-third had suffered from anxiety disorder. When assessed by the addiction severity index [21, 25] female DUI offenders were more often unemployed, drug-dependent, had more family problems and more often such psychiatric problems as depression and anxiety when compared with male DUI offenders. DUI offenders with alcohol use disorders—50% of the female and 33% of the male—had at least one additional psychiatric disorder, mainly post-traumatic stress disorder or major depression [22].

One interesting issue is whether there exists a specific DUI personality, or maybe some DUI personality types. The predisposition to DUI involves many different factors: psychological, social, familial and biological. On the basis of previous studies of DUI offenders, two mental profiles can be distinguished: a depressive and, in contrast, an antisocial [30]. Also with regard to alcoholism two distinct subtypes are reported based on the age of onset of alcoholism, the relative contributions of genetic and environmental factors, personality traits, co-occurring psychiatric disorders and antisocial behavior [12]. Male alcoholics with parental alcoholism having more severe alcohol problems had a more complex problem profile, i.e. more legal, psychological, and work-related problems when compared with female alcoholics [35].

A similar alcoholism typology was found by Hauser and Rybakowski [19] except that also a third type was identified, characterized by alcoholism with a high frequency of psychiatric disorders and somatic diseases. In a two-factor model of psychopathy predicting specific alcohol use patterns, Reardon [41] found that a paternal history of alcoholism and antisocial behavior results in the highest rate of alcohol problems and drinking for coping rather than social or enhancement reasons. The antisocial type has the most pronounced alcohol problems and coping motives for drinking. As Cloninger [12] states: earlier in life drinking for enhancement reasons and stimulation seeking, changes later on as a consequence of the antisocial life style. Thus, the alcohol abuse increases and the copying motives begin to dominate. Cloninger's type 2 problem drinkers have more symptoms of an ASPD, more social consequences of drinking; and higher disinhibition scores than type-1 problem drinkers [44]. Vaillant [50] on the other hand stated, on the basis of a 40-year longitudinal study that there is no alcoholic personality type.

Subtypes of DUI offenders became an object of focus to invent more efficient rehabilitation programs. On the basis of attitudinal, personality, and hostility measures Donovan [16], distinguished five subtypes through cluster analysis. Some were characterized by particularly high levels of depression and resentment in combination with low levels of assertiveness, emotional adjustment and perceived control. Other types were characterized by high levels of driving-related aggression, sensation seeking, irritability and hostility. Ball [3] found a two-cluster solution to be optimal for defining clearly separated subtypes of DUI offenders. Type A, 72% of the sample, was characterized by an old age at the onset of alcoholism, a low rate of a family history of substance abuse, few childhood behavioral problems, not particularly severe alcohol problems or physical and social impairment in combination with a comparatively low level of antisociality, anxiety, and depression. Type B, 28% of the sample, on the other hand, had an earlier onset of alcoholism,

Table 1 Personality and psychiatric characteristics of DUI offenders

References	Risk factors for DUI and DUI relapse
Ball et al. [3]	Anti-sociality, anxiety, depression
Bauer et al. [4]	Less socially responsive, lacking of self control, rather dominant, depressive, inhibited in heterosexual relations
Begg et al. [5]	Aggressiveness when 18 and alcohol dependence when 21 years old
Cavaiola et al. [8]	Psychopathic deviation, over-controlled hostility, alcoholism
Cavaiola et al. [9]	Poor decision-making lifestyle, alcohol abuse
Chalmers et al. [10]	Men: emotionality, depressiveness, impulsivity, low self-confidence
	Women: depressiveness, over-control, alienation
Cherpitel et al. [11]	Mexican-Americans: risk taking, impulsivity and sensation seeking
Donovan et al. [16]	Depression, low assertiveness, low emotional adjustment, and low perceived control. Aggression, sensation seeking, assaultiveness, irritability, indirect and verbal hostility
Eensoo et al. [17]	Impulsivity, excitement seeking
Lapham et al. [22]	Psychiatric disorder, depression
Laplante et al. [23]	Psychiatric comorbidity, different for males and females
McLean et al. [27]	Low on responsibility, self-control, socialization, Well being
McMillen et al. [28, 29]	Hostility, sensation seeking, psychopathic deviance, mania and depression, lack of social responsibility
Miller and Windle [30]	Aggression, antisocial personality, depression-group or antisocial group
Moore [31]	Anger, aggression (men), Feelings of low self-worth or dysphoric affect (young women)
Nadeau [33]	Antisocial traits, stimulation seeking
Nielsen et al. [34]	Had (women) previously attempted to suicide, anxiety disorder
Nochajski and Stasiewicz, review [36]	Hostility, sensation seeking, poor emotional adjustment, mania and depression, assertiveness, anti-social personality, psychiatric severity, positive family history for alcohol and/or drug problems, childhood conduct problems
Nolan et al. [37]	Five cluster Hogan personality inventory: impulsive extravert, normal, neurotic introvert, neurotic hostile, unassertive conformist
Parks et al. [38]	Hostility, depression
Rasanen et al. [40]	Violent criminality and mental disorders
Schell et al. [45]	Sensation seeking, trait hostility
Siegal et al. [46]	Depressive, psychiatric comorbidity
Stacy et al. [47]	Aggressiveness, impulsivity, sensation seeking and hyperactivity
Steer et al. [48]	Paranoid, somatic, or obsessive-depressed type
Sutker et al. [49]	Psychopathic deviance, depression or mania, hysteria
Wells-Parker et al. [54]	Antisocial traits
Wieczorek and Nochajski [56]	Depression, sensation seeking, childhood conduct problems, belief in chance events, low self-esteem, and psychiatric severity
Wilson [57]	S seeking, assaultiveness and verbal hostility
Windle and Miller [58]	Depressive symptomatology

scored higher on the subtyping scales, exhibited more premorbid risk factors, had a more severe substance abuse and psychosocial impairment. The study provided evidence for the generalizability of the type A/B alcoholism distinction in a DUI offender sample that was very heterogeneous with regard to level of alcohol involvement. Nolan [37] identified five DUI offender types with the Hogan personality inventory: impulsive extravert, normal, neurotic introvert, neurotic hostile and unassertive conformist.

Wieczorek and Miller [55] derived a typology of DUI offenders from four variables; alcohol dependence severity, psychiatric severity, bad-driving index, and social instability. Five clusters for specific treatment matching were identified; a low problem profile, a moderate-severity group, a high-risk driver group and two high problem-severity groups with high levels of alcohol dependence and psychiatric symptoms, but very different with regard to social instability.

NEO-PI-R, the personality inventory used in the present investigation, has seldom been used in the assessment of DUI offender groups, particularly for finding subgroups. However, a few studies on substance abuse patients have been carried out. Thus, Fisher et al. [18] report that substance

Table 2 Mean age, mean BAC and the share of positive cases assessed by AUDIT for male and female DUI offenders in main sample and the sample of severe DUI offenders

Sample	Men				Women			
	N	Age	BAC (%)	Positive cases	*N*	Age	BAC (%)	Positive cases (%)
Main sample, DUI offenders (2,100)	1,931	40	0.103	58	169	39	0.102	55
Severe DUI offenders (162)	143	42	0.163	75	19	38	0.182	74

abusers scored higher than the NEO-PI-R normative sample on the neuroticism, but lower on the conscientiousness domain. Furthermore, a high level of neuroticism in combination with a low level of conscientiousness significantly increased the risk of relapse in substance abuse. McCormick [26] stated that substance abusers were more neurotic and less agreeable and conscientious than the NEO-PI-R non-clinical normative sample. Ruiz [43] reported that high scores on the neuroticism and conscientiousness domains and most of their facets are associated with alcohol problems. The interactions between gender and traits were not significant. Eensoo [17] found that DUI offenders compared with control groups scored significantly higher on the NEO-PI-R impulsivity facet scale. Arthur and Graziano [2] examined the relationship between conscientiousness and driving accident involvement. They found a significant inverse relation between conscientiousness and driving accident involvement, i.e. low conscientiousness drivers were more often involved in driving accidents than other drivers.

Because many DUI offenders have alcohol problems, it can be assumed that DUI offender groups have similar personality characteristics to substance abusers, but might not be as homogenous and similar despite the substance abuse.

Aims

The study was intended to explore the personality and mental health of severe Swedish drunk drivers, more specifically, to investigate if there are personality traits and mental health aspects that are significantly different in these DUI offenders from those of the general Swedish population. Related aims were to explore a DUI offender typology on the basis of personality, mental health and alcohol problems of potential rehabilitation value and to investigate whether any personality and mental health characteristics could predict DUI relapse.

Methods

Sample and procedure

From a sample of 2,100 drivers suspected of drunk driving (directly after offence and police interrogation, not convicted yet, but convicted in nearest future) and screened for alcohol problems with the alcohol use disorders identification test—AUDIT [7], 224 DUI offenders with a BAC above 0.099% where BAC of 0.1% is Swedish limit for severe DUI, were invited to investigation. They came from nine police districts representatively distributed from the north to the south of Sweden (Umeå, Sundsvall, Stockholm, Östergötland and Gothenburg) and responded to an invitation to take part in the study. Only voluntary participation was approved DUI offenders received info-page at police station but contacted interviewers themselves afterwards. A compensation of 500 SEK (around 80$) was prearranged. After a dropout of unwilling respondents, unidentified drivers, false addresses and foreigners, 162 DUI offenders could be investigated: 143 men (88%) and 19 women (12%). The mean age of the male drivers was 42 years and of the female 38 years. In the original sample of 2,100, the proportion of female DUI offenders increased from 7% in 1996 to 11% in 2001. Main characteristics of both samples are presented in Table 2.

Assessment methods

The alcohol use disorders identification test (AUDIT) was used to assess alcohol problems. The AUDIT form was handed out to the suspected drivers by the staff at the police stations to be responded to at home. AUDIT is recommended by the World Health Organization [1]. Generally, a score of 8 (for women, 6) is used as cutoff point for alcohol problems. Reference values from the general Swedish population in terms of age- and sex corrected non-normalized T-scores ($M = 50$, $SD = 10$) were also used [6].

The NEO-PI-R was administered to assess personality traits. It is a 240-item self-report personality inventory based on the "big five" personality model. The following five domains are assessed: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. The inventory was developed by Costa and McCrae and differentiates between normal personality and atypical [13]. In the Swedish NEO-PI-R version T-score norms show results in comparison to the Swedish general population considering the age group and gender.

Mental health was assessed by the SCL-90. It is a widely used self-rating scale with 90 items, which documents

psychiatric symptoms [15]. The SCL-90 has ten subscales: somatization, obsessions–compulsions, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoia and psychoticism. The global severity index summarizes all subscales. Raw scores were transformed to T-scales showing results in comparison to the Swedish general population with the age group and gender consideration [24]. It has been used to describe DUI samples [32, 48].

Statistical analyses

The Statistical Package for the Social Sciences (SPSS) was used to test differences between group means and group percentages and cluster analyses (ANOVA, t tests, one sample t tests and χ^2 tests, K-means cluster). The t tests analyses concerning personality and health when compared with general population were performed on T-scores binary logistic regression (SPSS) with backwards elimination of insignificant variables was used to achieve quantitative estimates (odds ratios) of the risk of relapse to DUI during the 2-year period after enrollment in the study. The dependent variable was a registered relapse to DUI within 2 years after enrollment in this study taken from Sweden's official crime statistics (The Swedish National Council for Crime Prevention functions as the Swedish Government's body of expertise within the judicial system and also produces Sweden's official crime statistics. Predictors were dichotomized according to the principle problem-/no problem (above/below $T = 50$) for all variables.

Results

Personality characteristics

There were significant differences between the DUI offenders when compared with the normative sample of the Swedish population. The DUI offenders scored significantly lower on the gender-corrected T-scores of the openness to experience and conscientiousness ($P \leq 0.001$) but higher on the agreeableness ($P \leq 0.05$) domains of NEO-PI-R. Apart from these domain differences, there were significant differences ($P \leq 0.001$) in the following facets: higher on depression, vulnerability (to stress), gregariousness, modesty, tender mindedness, but lower on ideas (intellectual curiosity), competence, achievement striving and self discipline.

Some significant differences between the male and female offenders were also observed. The female DUI offenders scored higher than the male on the openness to experience ($P \leq 0.05$) domain. Female DUI offenders scored higher than the male on the following facets of NEO-PI-R; excitement seeking ($P \leq 0.01$), actions ($P \leq 0.05$), ideas

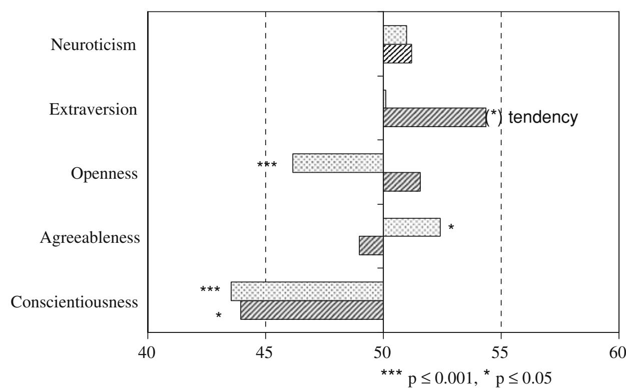

Fig. 1 Personality profile of 162 severe DUI offenders [143 men (*dotted square*)/19 women (*shaded square*)] assessed by NEO-PI-R

($P \leq 0.01$) and values ($P \leq 0.05$). These gender differences were observed despite the fact that all NEO-PI-R scores are gender corrected. The personality profile of the DUI offenders by gender is presented in Fig. 1.

Mental health

The DUI offender sample scored significantly higher ($P < 0.05$ to $P < 0.001$) than the normative value on all SCL-90 subscales except for hostility, particularly with regard to depression (Fig. 2). The female drivers scored insignificantly higher than the male on somatization, interpersonal sensitivity and paranoia. Because there were no significant differences between the male and the female offenders they were put together in the further analyses. The lack of significant subscale gender differences is partly due to the fact that the T-scores are already age and gender corrected. The high inter-subscale correlations indicate that the subscales measure different aspects of one fundamental mental health factor. When considering the small number of female DUI offenders in the sample and that the NEO-PI-R and SCL-90 scores were gender corrected, the results

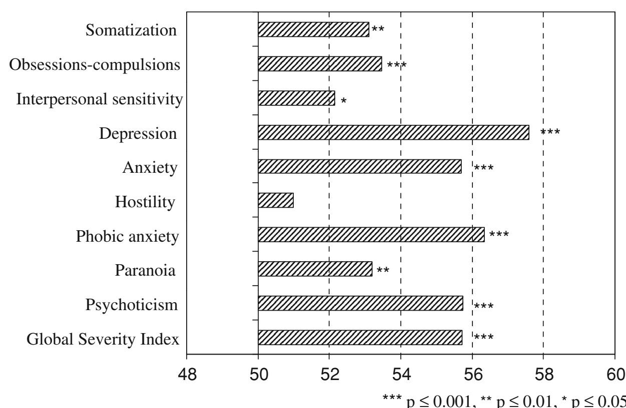

Fig. 2 Mental health profile of 162 severe DUI offenders as assessed by SCL-90

of the two sexes were analyzed together in the further analyses.

Subtypes of DUI offenders as assessed by NEO-PI-R factors and SCL-90 scales and AUDIT

Next, a DUI offender typology was explored on the basis of NEO-PI-R domain scores, the SCL-90 scale scores and the AUDIT results (both sex and age corrected). The cluster analysis indicated that a three-group solution was the most plausible. Group 1 ($n = 104$) was characterized by NEO-PI-R and SCL-90 scores near the normative value of 50 but high alcohol problems according to AUDIT (mean $T = 70$). Group 2 ($n = 50$) and in particular group 3 ($n = 8$) had profiles typical for substance abusers, i.e. high scores on neuroticism and low scores on cconscientiousness in combination with severe alcohol problems. Group 3 differs from group 2 since these DUI offenders had extremely poor mental health with pronounced psychiatric symptoms on all SCL-90 subscales, e.g. all offenders were depressive ($\chi^2 = 0.00$) (See Fig. 3).

Relapse predictors

In the binary logistic regression, the NEO-PI-R domains, the SCL-90 scales and the AUDIT results were used as predictors and relapse to DUI in the 2-year period after investigation was used as outcome variable. The depression scale was found to have prognostic value for future relapses in drunk driving (odds ratio = 6.65, with 95.0% CI lower = 1.38, upper = 32.37). No one person in cluster group 3 ($n = 8$) where all offenders were depressed, relapsed. Interestingly, despite being high in neuroticism and low in conscientiousness in combination with severe alcohol problems the drivers in Group 2 relapsed insignificantly more often than the “normal” drivers in group 1 with less alcohol problems (9.3 vs. 12.6%).

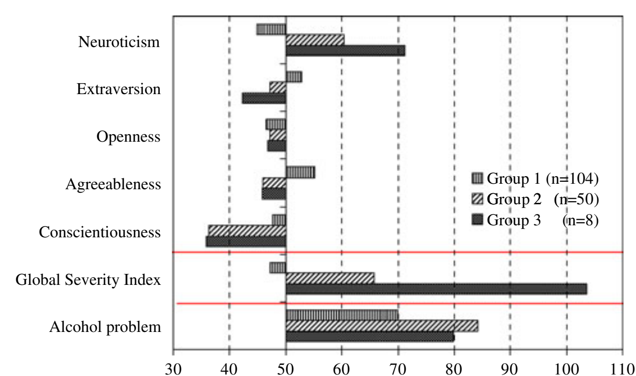

Fig. 3 Subtypes of DUI offenders as constructed by NEO-PI-R factors, SCL-90 scales and AUDIT

Discussion

The results corroborate with the earlier findings in that DUI offenders and alcohol abusers score low on the NEO-PI-R domain of conscientiousness. However, the Swedish DUI offenders did not score high on neuroticism. This finding was somewhat unexpected since mental health as assessed by the SCL-90 was significantly poorer in sample as a whole compared with the general population and in generally, there is an association between neuroticism and poor mental health. A new finding of this study, but not inconsistent with the general picture of DUI offenders, was low scores on the openness to experience domain. This domain includes intellectual curiosity, receptivity to the inner world of fantasy and imagination, appreciation of art and beauty, openness to inner emotions, values and active experiences. However, only the male offenders scored low on openness. Furthermore, the female offenders scored high on the extraversion domain. The reports of impulsivity and excitement seeking among young DUI offenders [17] were also confirmed in Swedish sample of offenders younger than 35 years and among the female drivers, but not in the whole DUI sample.

As expected, the personality profile of Swedish DUI offenders coincided with that reported for substance abusers, i.e. low scores on conscientiousness, with the exception that Swedish offenders did not score high on neuroticism [18, 43]. In another study only some of the facets from domains neuroticism and conscientiousness are reported to have significant relationships to drinking and are related to alcohol-related problems [43]. Facets of extraversion and agreeableness, but not these domains, are also associated with drinking. In addition, McCormick [26] reported that substance abusers also scored low on agreeableness.

Swedish severe DUI offenders seem to differ from persons with an ASPD [14] according to DSM IV (diagnostic and statistical manual of mental disorders) since Swedish sample did not score high on the neuroticism and low on the agreeableness domains. They even scored high on the modesty and tender mindedness facets of NEO-PI-R. Despite these findings, they did resemble persons with an ASPD since they scored high on the depression and vulnerability facets of the neuroticism domain and low on the straightforwardness and compliance facets of the agreeableness domain. On the other hand, Swedish sample of severe DUI offenders did somewhat resemble both substance abusers and persons with an ASPD since they scored low on the conscientiousness domain and all its facets.

On the basis of the age of onset of dependence, a history of family alcoholism, severity of alcohol-related problems and psychiatric and somatic diseases Hauser and Rybakowski [19] delineated three types of alcoholics by cluster

analysis: Type 1—late onset of dependence, low prevalence of family alcoholism and mild a course of alcohol problems; type 2—early onset of dependence, alcoholism in their fathers, an antisocial personality, severe alcohol-related problems; type 3—early onset of dependence, a family history of psychiatric disease, severe alcohol-related problems and a high prevalence of psychiatric disorders and somatic diseases. Type 3 can be characterized as having a severe alcoholism associated with a high such predisposition and generally poor health. Similar results with regard to personality characteristics, mental health and alcohol problems emerged in cluster analysis of Swedish severe DUI offenders, where group 3 had most psychiatric symptoms on SCL-90 combined with high neuroticism and low conscientiousness scores on NEO-PI-R. Merging cluster groups 2 and 3 results demonstrate an agreement with regard to personality, mental health and alcohol problems with those DUI offender types of Ball et al. [3] and in general two subtypes of alcoholics of Cloninger et al. [12]. The first type, A/I, is characterized by late onset of alcoholism without criminality and without an established genetic alcoholism link, and the second type B/II, by an early onset, recurrent social and criminal problems deriving from alcohol use and a possible paternal genetic link.

The obtained cluster/subgroups solution remains concordant to earlier findings on alcoholics, but the present results extend these findings also to DUI offenders and enriched with psychiatric comorbidity area. The group of DUI offenders seems to have greater variance since the alcohol aspects together with antisocial and mental health features are involved.

Among the various predictors (personality characteristics, mental health and alcohol problem severity) depression was found to have prognostic value for future relapses in drunk driving. However in subgroup 3 no one relapsed, and possible explanation is that those eight DUI offenders had so severe psychiatric symptoms that their daily functioning inclusive driving was temporary impossible. On the other hand, in a previous study of a sample of drivers suspected of DUI, previous criminality and family harm index (summarizing drinking, drug use and psychiatric problems calculated for each parent) were significant prognostic factors for relapse to DUI [20, 21].

The limitation of the study is including only severe DUI offenders instead of all DUI offenders, with low BAC as well, since the time factor influences seriously BAC level but not personal characteristics.

The other limitation of the study is demanded by the Ethics Committee which is complete voluntariness to participation which resulted in significant dropout and; in consequence, lower possibility of generalization. The findings can be generalized to the larger population of DUI offenders with restrictions.

In the present sample of severe DUI offenders, a considerably larger proportion of female, as compared to male DUI offenders was detected in traffic accidents. However, more men than women were detected through regular traffic supervision where the police was checking mainly already suspected drivers or vehicles. Twice as many severe DUI offenders were detected through calls from the public, traffic accidents and unlicensed driving, as compared to the drivers from the original sample [20].

A comparatively small sample size, particularly with regard to female DUI offenders makes the results somewhat difficult to generalize to the whole population of severe drunk drivers. The previously reported particularly problematic situation of female DUI offenders [21], their heterogeneity observed in the present study and the fact that the female proportion of DUI offenders is steadily increasing speaks in favor of more studies specifically targeted at female DUI offenders. The Swedish sample was selected according to the complete voluntariness and a reward of about 80$ was given. Selection could be based on economic situation, where underprivileged DUI offenders were more motivated to participate due to the financial compensation. Other possibilities for skew selection are antisocial traits and attitudes ascribed often to DUI offenders. Under such circumstances, many DUI offenders with anti-social personality characteristics were lost and the true results of severe DUI group are more extreme than presented in the study.

Conclusion

The personality, mental health and alcohol problems of both male and female severe DUI offenders are different from that of the general Swedish population, a fact that should have implications for the prevention, treatment and relapse of DUI offenders. Because drunk driving is not only a symptom of alcohol problems, but also of other covarying psychosocial problems, e.g. socioeconomic and mental health problems and criminality, rehabilitation programs ought to take into account the whole situation of the DUI offender. Subgroup 2 and especially 3 emphasizes the need of differentiated approach to DUI offender, highlighting the need for psychological/psychiatric interventions in conjunction to surveillance.

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