A Rehabilitation Evaluation Study of Swedish DUI's

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Abstract
In 1994 a number of alterations in the Swedish DUI legislation were implemented towards a tougher attitude against DUI-drivers. The legal consequences for driving while intoxicated were sharpened. The limit for "heavy DUI" was lowered from 1.5 to 1.0 BAC and the maximum penalty was prolonged to two years. The Swedish Prison and Probation Administration decided to start two "special prisons" for DUI convicted inmates where they should be offered rehabilitation instead of just punishment. An independent evaluation was also decided upon, right from the start. This evaluation is done at the Karolinska Institute in Stockholm. The final evaluation will be based on 804 (82%) convicted DUI´s that were randomized to one of three programs while imprisoned and a comparison group of 176 (18%) not randomized clients. Both groups are to be compared with convicted DUI's in ordinary prisons during the same period. In this article we will present the evaluation project design and some results for the first 333 (34 %) clients that were followed up after two years

Introduction
Since 1996 there are three special rehabilitation programs for DUI-drivers at the penal institutions of Rostorp in Malmö and Östragård in Vänersborg, situated in the south part of Sweden. At each institution three alternative rehabilitation programs are running. One educational program is called "*The Hand-wheel Trap*" (HWT), then there is the *Minnesota 12-step model* (12-step) and finally a program labelled *"Dynamic Cognitive Behavior Modification"* (DCB). **The HWT-program** is an educational program. The general goal is to supply knowledge and insight to the client about the connection between DUI, private situation and alcohol use. The program also aims at motivating clients to eliminate stress factors in their personal life facilitating moderate drinking and no DUI. The inmate shall aquire a more realistic view of himself and his relation to alcohol. Finally one tries, if necessary, to mediate contact with help organizations or other facilities to be used after custody. The goal of **the 12-step model** is to persuade clients to handle their alcohol problems through attending meetings arranged by Alcoholics Anonymous (AA) and achieve a lasting sobriety. The work is performed according to the Minnesota model (Reality Therapy) and Rational-Emotive Therapy (RET). A family program has been carried out by information to relatives in conjunction with their visits. One has also tried to cooperate with other authorities in order to create a program for "aftercare". **The DCB-program** is also a program where clients participate in group discussions, engage in role-playing and give one another feedback with the aim of influencing attitudes and alter behavior. In the DCB-program clients discuss their personal background and upbringing of relevance for later alcohol use, drunken driving

and particularly the circumstances of the DUI-incident that led to imprisonment. Positive and negative aspects of themselves getting feed-back from others, ones personal alcohol career, present alcohol habits (when-were-how you drink) and finally personal goals in life – past and present are also discussed.

Methods

General design
At admission all clients were carefully investigated with respect to social situation, personality, psychiatric disorders, alcohol– and drug use and attitude to custody with a number of psychometric assessment tools. After release the clients are beeing followed up six months and two years later, with regard to officially registered relapse in DUI. A telephone interview about present alcohol and drug use, health, social stability and integration is also part of the follow-up procedure. Criminal records from police authorities and the Prison and Probation Service five years in retrospect and four years after leave are also collected. The statistical design involves one experimental group (group 1) where clients are assigned at random to one of the three rehabilitation programs, one comparison group of non-randomized clients (group 2) and one comparison group made up of clients convicted for DUI but sentenced to regular prisons during the same period (group 3).

Assessement tools
The main assessement tool is the *Addiction Severity Index* (ASI). Inmates were, as mentioned before, interviewed by means of ASI at intake. They were then re-interviewed with a follow-up version of ASI six month and two years after leave. The ASI-interview covers seven areas of interest: Physical health, Work, Alcohol use, Drug use, Criminality, Family and relations and Psychiatric health. The problem areas are both summarized in mathematically composed indices and ratings of present problem severity and need for help by the client as well as by the interviewer. A change in life style with respect to alcohol and drug use will generally also be reflected in other areas of life. That is why a global assessment tool like ASI is so valuable in treatment evaluations. Other instruments used at intake were: *The Swedish Alcohol Use Inventory* (AVI-R) comprising 85 questions about alcohol use as well as alcohol related social and psychiatric problems and reasons for drinking. *Alcohol Use Disorders Identification Test* (AUDIT) which is a screening instrument developed by WHO in order to identify persons with hazardous or harmful alcohol use. *Correctional Institutional Environmental Scale* (CIES) is an instruments aimed to capture how a person experiences an institution and its climate. In *DKB-2r* the client is asked about pattern of alcohol use during a typical week during the last six months, what kind of alcohol consumed and in what quantities at each drinking occasion. **NEO-PI-R** comprises 240 questions and gives a personality profile in terms of five domains. the *Sence of Coherence Scale* (SOCS) by Antonowsky (1991) assesses the experience of context, meaning and sentence in life. *Symptom Cheque List* (SCL 90) comprises 90 questions regarding psychiatric symptoms in nine ares. Other instruments were *Knowledge I and II* used in a test-retest administration at intake and leave, measuring knowledge about various aspects of alcohol and alcohol consumption. *Leave I and II* are measures of clients attitude to the programs they have attended and staff performance.
In the present study however, only the mathematically composed indices at intake and at 2-year follow up from the ASI will be presented.

Statistical analysis
Pairwise t-test is used to investigate differences between intake and two years after care the entire group. Follow up results of the rehabilitation programs, repeated measures ANOVA

with the three programs as the between-subjects factor was used taking measures of sphericity into account (ACITS, 1977). The analyses were performed separately for the randomized and the non-randomized groups. In some cases no overall statistically significant interaction effect between program participation and outcome could be found although one or more programs obviously did have some effect. This was due to very heterogenous variances at retest in the groups. In such cases a pairwise t-test for each group, under the assumption of unequal variance, was also performed.

Results

Up to december 1999, 333 clients (34 %) have been reinvestigated two years after discharge from Rostorp and Östragård. As always, clients with the best prerequisites are the most easy to find at follow up. This means that they differ from the group not yet followed up in terms of background characteristics. According to ASI, randomized clients followed up differed from randomized clients not yet followed up in three out of seven problem areas; they had better Physical health (t = 1.73, p<.05) and less severe problems with alcohol (t = 4.65, p < .001) and drugs (t = 2.83, p < .001) at admission. Thus, they are not representative for all clients in the study

Physical health
According to the Physical health ASI-index (varying from 0 to 1.0), the randomized group (n = 288) showed a statistically lower level of distress at follow-up than in the first interview (t = 2.17, Df: 256, p<.05). On the contrary, the non-randomized group (n = 44) showed a non-significant increase in physical problems at follow up (t = -1.41, Df: 35 ,p> .10)
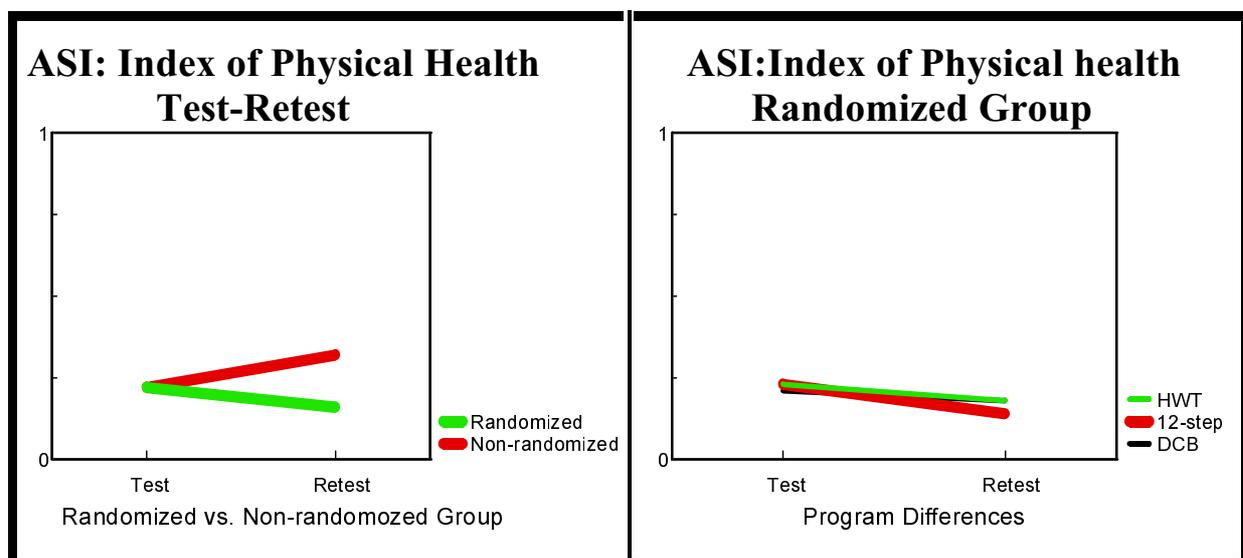

Figure 1: Physical health

In comparing outcome for the rehabilitation programs no interaction between type of program and difference in physical health between test and retest (F = 2.38, Df: 2, p > .10) was found. However, as can be seen in figure 1, the slope of the 12-stepprogram is more steep than for the other two programs, and the difference was also significant using paired samples t-test (t = 1.71, Df: 104, p<.01). Statisticaly significant results could not be found for the other programs.

Work and Income

The index for "work and income" where a high number indicates substantial problems in the problem area and low numbers indicates less problems shows a statistically significant drop of problems for both groups (randomized: t = 2.47, Df: = 196 , p <.05, non-randomized: t = 1.90, Df: 31, p < .05) after two years.
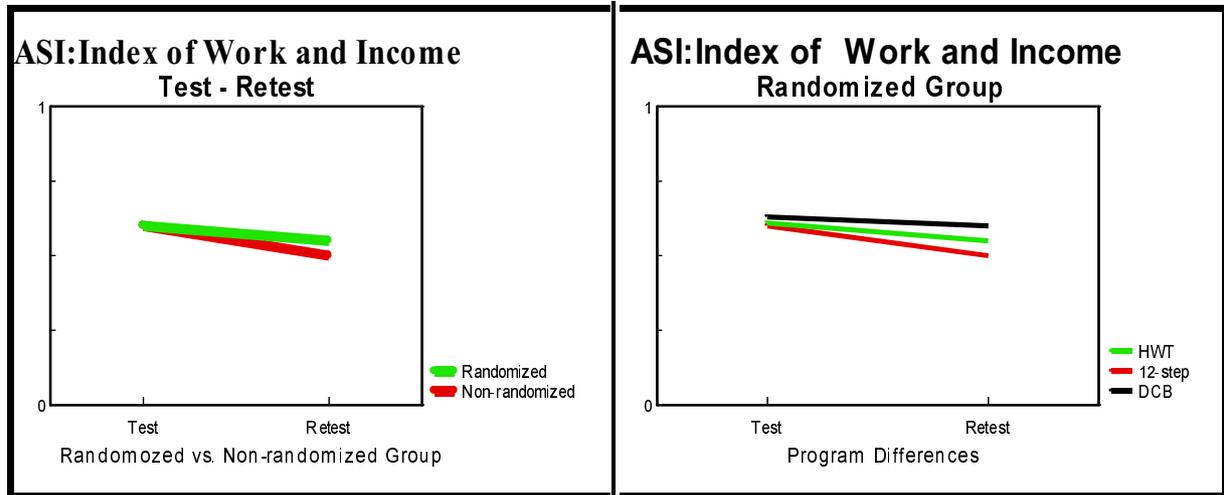

Figure 2: Work and Income

The ANOVA shows a within subject effect for "work and income" (F = 7.70, Df: 1, p < .01) but no interaction between programs and change over time (F = 1.32, Df: 2, p > .10). The slope of the 12-step-program (figure 2) is, however, also here steeper than for the other two programs, and the difference is also significant using paired samples t-test (t = 2.36, DF: 73, p < .05). The same tendencies are also true for the non-randomized group where clients in the 12-step program (Minnesota) showed the greatest gain in problem level. They had a problem index of M = .65 at pretest and a mean post-measure of M = .38 (t = 2.78, Df: 6, p < .10).

Use of Alcohol

The general objective of the programs was to help clients lower their alcohol consumption, and so they did (figure 3). All clients drank less at follow up. The difference is statistically significant for randomized clients (t = 5.15, Df: 244, p < .01) as well as for non-randomized clients (t = 2.75, Df: 34, p < .01).
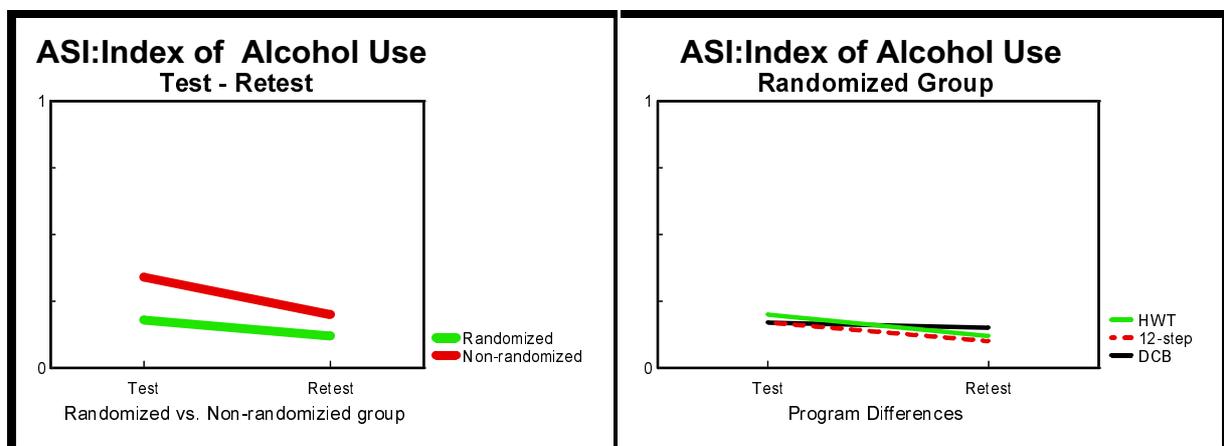

Figure 3: Use of Alcohol

The ANOVA-analysis results both in a "within subjects effect" for alcohol use (F = 29.8, Df: 1, p < .001) and an interaction between program participation and test-retest effects (F = 2.34, Df: 2, p < .01). The main contribution to this interaction comes from the HTW-program (t = 3.31, DF: 71, p < .01) and the 12-step program (t = 4.41, DF: 94, p < .01) but not the DCB-program (t = 1.04, Df: 71, p > .10). Comparing program effects in the non-randomized group also shows a significant decrease in alcohol consumption only in the 12-step program from index M = 0.72 to M = 0.23 (t = 3.75, Df: 6, p < .01). Results indicate program effects for 12-step and HWT-program with respect to less drinking..

Use of Drugs

Although the rate of drug use was quite low at admission (randomized group: 14.6%, non-ran-domized group: 29.5%) a statistically significant decrease in index for drug use for both randomized clients (t = 3.61, Df: 252, p < .01) and non-randomized clients (t = 2.10, Df: 36, p = .05) were found. The ANOVA also shows an overall, within-subjects decrease in drug use (F = 17.5, Df: 1, p < .001) but no interactional program effects (F = 0.62, Df: 2, p > .10). Comparing outcome for treatment programs reveals a drop in drug use for clients in DCB (t = 2.10, Df: 77, p = .05) and 12-step programs (t = 2.92, Df: 90, p = .05) but not for clients in the HTW-program at fullow up.

Family and friends

Most clients (87%, n = 292) experienced problems in relation to family and friends at admission. At follow up the number of clients having relational problems had decreased to 28 percent (n = 93). Change is statistically significant both for the randomized group (t = 17.7, Df: 247, p < .001) and the non-randomized group (t = 4.3, Df: 35, p < .001).
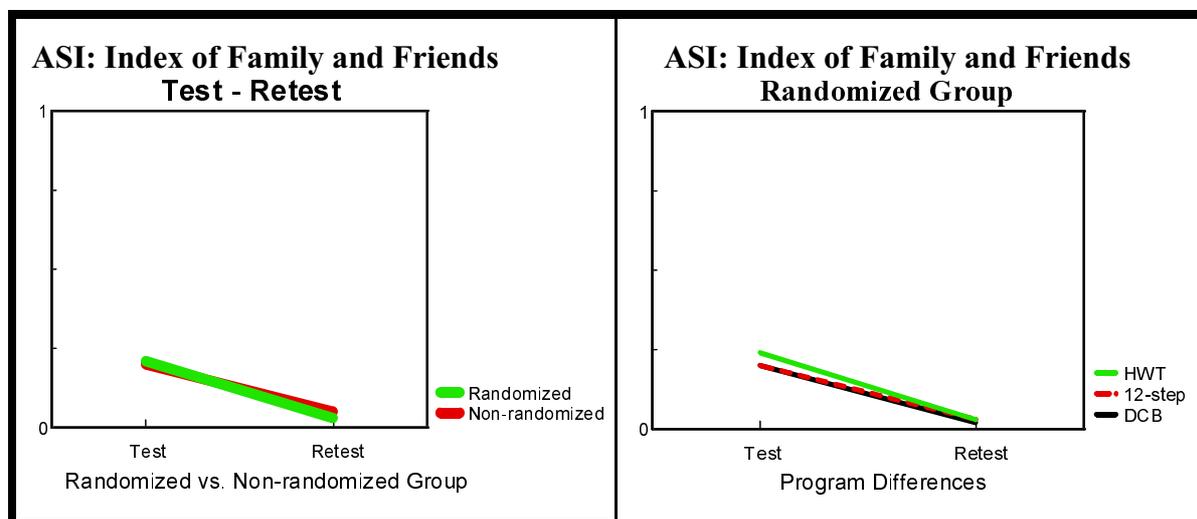

Figure 4: Family and Friends

The ANOVA also shows an overall, within-subjects decrease in family problems (F = 321.4, Df: 1, p < .001) but no inteactional program effects (F = 0.62, Df: 2, p > .10). A significant drop in relational problems for randomized clients does however affect all programs (HTW: t = 10.7, Df: 81, p < .001 DCB: t = 11.9, Df: 70, p < .001, 12-step: t = 9.3, Df: 92, p<.001). In the non-randomized group only the HTW-program and 12-step-program were effective.

Crime
The over all rate of clients having problems with criminal behavior at admission was about 38 percent (n = 126). At follow up after two years a significant drop in delinquency of 27 percent, both in the randomized (t = 5.2, Df: 255, p <.01) and the non-randomized group (t = 2.3, Df: 35, p < .05) was observed. The ANOVA shows an overall, within-subjects decrease in criminality (F = 32.0, Df: 1, p < .001) but no inteactional program effects (F = 0.82, Df: 2, p > .10). In the randomized group there was however statistically significant in all programs (HTW: t = 2.4,Df: 81, p < .05, 12-step: t = 3.4, Df: 95, p < .001, DCB: t = 3.4, Df: 77, p < .001). In the non-randomized group, reduction took place only in the HTW-program (t = 1.9, Df: 22, p <.10).

Psychic health
The last problem area assessed by the ASI interview is psychic health. At admission about 41 percent (n = 137) had problem of a psychiatric/psychological nature. At follow up about 33 percent (n = 111) of clients interwieved admitted some kind of psychological distress. This decrease is however not statistically significant neither in the Randomized nor in the non-randomized group. No interaction between program and alterations in psychic health between pre- and postmeasure was found (F = 1.03, Df: 2, p > .10).

Discussion
Follow up of 333 clients reveals a significant better situation in problem areas like physical health, work, alcohol and drug use, criminality and relational problems with family and friends in the randomized group. The non-randomised group shows significant decrease in problems with work, alcohol- and drug use, criminality, and problems with relations toward family and friends. In the Randomized group, the 12-step program was associated with statistically significant changes to the better in six out of seven problem areas, the HTW- and DCB- program with changes in three problem areas each. The impact of the 12-step model might be due to the fact that this program more than the other two programs, emphasizes after-care and contact with support like AA after leave. This is also in accordance with earlier rehabilitaion knowledge about the necessity to combine treatment with various forms of post-treatment programs, in order to maintain program effects. While clients followed up so far can not be considered representative for all clients participating in this study, the results presented here are only preliminary. Further analysis will confirm if the tendencies reported here are stable or if they will change when more clients are followed up. We will however complete this analysis in order to answer questions about what types of clients who respond well to what type of program and what the best matching factors and assessment tools might be.

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