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The association between self-reported mental health status and alcohol and drug abstinence 5 years post-assessment for an addiction disorder in US and Swedish samples

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Introduction

For reasons including differences in treatment systems and methods, philosophies, measures, and samples, few studies compare alcohol and drug treatment outcomes between countries. Further, there is a concern that the majority of addiction focused research efforts today are primarily conducted in the US. Questions have been raised on an ongoing basis, especially in European literature, on the relevance of these US studies to other societies.¹⁻²

Examining alcohol and drug treatment outcomes across countries may illuminate which relationships between individuals with alcohol and drug use disorders and their environments persist crossnationally and which are unique to certain societies. Toward this end, a cross-national treatment research study was funded by the US National Institute on Alcohol Abuse and Alcoholism (R01 AA09750 and P50 AA05595) and by grants from the Swedish Ministry of Health and Social Welfare and the Swedish Council for Working Life and Social Research (FAS grant no 2006-0822). This longitudinal study compared American and Swedish alcohol and drug use patterns based on measures from the Addiction Severity Index (ASI)³⁻⁸ for two countywide samples assessed for an addiction disorder through their various services systems from each country. Specifically, individuals within Stockholm

County in Sweden and within one northern California county in the US were assessed using parts of the Addiction Severity Index (ASI) as well as other measures. Five years after baseline interviews, a random sample of Swedish respondents (N = 469) and US respondents (N=667) were re-interviewed. Already published results on these two samples include Storbjörk and Room⁹, Stenius, Witbrodt, Engdahl¹⁰, and Weisner, Storbjörk and Ullman.¹¹

The study presented in this manuscript examined data from the 5 year follow up interviews to compare the prevalence of self-reported psychiatric symptoms and use of outpatient and inpatient psychiatric treatment for these two samples. The study used logistic regression methods to explore whether self-reports of psychiatric symptoms and history of treatment for mental health problems were associated with current alcohol/drug use 5 years after first assessment for a substance use disorder.

The links between comorbid mental health/substance use disorders and alcohol/drug abstinence

In US studies, psychiatric co-morbidity among individuals with substance use disorders has been associated with worse treatment prognosis and more health, employment, and social problems.^{3, 12–19} Further, the high prevalence of mental health disorders among those with alcohol and drug use disorders has been well established in US treatment samples. For example, the National Institute on Drug Abuse estimates that six out of ten individuals with a substance use disorder also suffer from a mental health disorder (anxiety, depression, manic depression, schizophrenia, psychosis, etc.) and recommends that comorbid disorders be treated in a manner “that identifies, evaluates, and simultaneously treats *both* disorders.”²⁰ Due to this high prevalence of comorbidity in the US, a large number of studies examining changes in substance use among those diagnosed with alcohol and/or illicit drug disorders also control for patient mental health symptoms, diagnosis, and history of mental health treatment when examining changes in substance use patterns post-treatment.^{21–25} For example, between 2001–2003 Swedson and colleagues²⁵ re-interviewed a sample of over 5,000 individuals who had participated in baseline interviews for the National Comorbidity Survey (NCS) from 1990 to 1992 and found that the existence of mental health disorders at baseline was significantly associated with a greater likelihood of substance use during the follow up.

Attention to comorbid mental health and substance use disorders in Swedish treatment policy and research—In Sweden, the substance use treatment system and the mental health treatment system have traditionally been administered separately, with the substance use treatment system being provided and paid for by municipal social services agencies and the mental health system being delivered through county specific council health care systems. However, growing concerns about co-morbid mental health and substance misuse disorders in the country have also led the Swedish government and other stakeholders to increasingly consider how these two systems should appropriately divide labor and responsibilities. In a recent government report for example, co-morbidity was stressed as a major problem²⁶ and significant reforms were suggested to the organization of alcohol and drug treatment. The Statens Offentliga Utredningar (SOU) report claims that up to 30–50% of people seeking alcohol and drug treatment show prevalence of co-occurring mental health problems and that 20–30% of mental health patients has substance use problems.²⁶ Given these high rates, the report proposed to the government that substance use treatment be transferred from the social services sector to the regional healthcare system, which also provides mental health care.²⁶ However, in response to concerns that this proposed policy change may lead ecological factors associated with substance misuse to be downplayed in place of greater attention to psychiatric issues, the SOU report also

advocated for greater collaboration and integration of the country's social services sector and its healthcare institutions to most effectively promote client health.

As in the US, Swedish treatment guidelines state that co-occurring mental disorders and alcohol/drug misuse problems should be treated simultaneously.²⁶⁻²⁷ Further, mental disorders are also increasingly being studied within drug use disorder research in Sweden.²⁸⁻²⁹ For example, Haver and Dahlgren²⁹ mapped patterns of psychiatric co-morbidity among women seeking help for alcohol problems. Further, a number of researchers have investigated the influence of psychiatric disorders in relation to post-treatment outcomes for drug and alcohol use disorders.²⁹⁻³¹ Mental disorders have also been identified as risk factors of premature death among respondents with alcohol use disorders in a long-term Swedish cohort study.³²

Other factors found to be associated with abstinence from alcohol/drugs in samples that have a history of addiction and treatment use

Age: When looking at factors that impacted individuals' abilities to remain abstinent from substance use following treatment, Brown and colleagues³³ found that rates of drug and alcohol relapse among individuals who had completed substance abuse treatment were similar, though adolescents were more likely to relapse as a result of social pressures when compared with their adult counterparts. In another empirical study of over 1,000 individuals who had received substance abuse treatment, Grella and colleagues³⁴ found that younger adults had higher abstinence rates than older adults, controlling for treatment setting (either inpatient or outpatient).

Gender: While some studies find little to no impact of gender on treatment retention and outcomes for drug and alcohol use disorders³⁵⁻³⁸ others suggest that women experience more positive outcomes following treatment use.³⁹ For example, Green and colleagues³⁹ found that women who had completed substance abuse treatment were nine times more likely than women who had not completed treatment to remain abstinent from drugs and alcohol, while men who had completed treatment were only three times as likely as their non-treatment male counterparts to remain abstinent from substances.³⁹ However, findings from studies in Sweden show less pronounced gender differences in drug and alcohol treatment trajectories, although these investigations do not explore abstinence.

Employment/education: Research suggests that higher rates of education and more lucrative forms of employment are positively associated with abstinence among individuals with a history of substance misuse and among those who have received treatment for alcohol/drug dependence.⁴³⁻⁴⁵

Social networks and substance use: Empirical findings on the impact of social networks on abstinence from substance use among individuals with a history of substance use and treatment are mixed. Walton and colleagues⁴⁵ found that exposure to substances or participation in reinforcing activities had no significant impact on an individual's likelihood of remaining abstinent or reusing. However, others have shown differential impacts of social networks on abstinence based on age; for example, Satre et al.⁴⁶ found that younger individuals' abilities to remain abstinent were significantly associated with their social networks, but had little to no impact on abstinence among older adults. Furthermore, Orfrod and colleagues⁴⁷ found various kinds of support (e.g., support for reduced drinking, exercise of control) from family and friends impacted individuals' drinking patterns post-treatment. Participating in social networks where individuals are actively using substances has also been found to be negatively associated with addiction treatment outcomes in both Sweden and the US.⁴⁸

Research Question—Among two regional samples of individuals (Sweden=469, US = 667) assessed for substance use disorders at baseline and five year follow up, this study explored whether having a self-reported history of a co-morbid alcohol/drug use disorder and mental health disorder was associated with being abstinent from alcohol and drugs (not having used in the past 30 days) at the five year assessment interview controlling for age, gender, employment status, and being part of a social network that (mis)uses alcohol and/or drugs.

Methods

Bivariate and logistic regression analyses were used to explore the association between age, gender, employment status (employment in the past 12 months), social network (time spent with people who use drugs or alcohol) in the past 30 days, days experienced any psychological symptoms in the past 30 days, specific mental health symptoms (depression, anxiety) in the past 30 days, self-reported mental health treatment (inpatient and outpatient psychiatric treatment) in the past 12 months, ever having been in inpatient mental health treatment (only available for the Swedish sample from baseline assessment and not follow up), and whether the client was abstinent from drugs and alcohol in the past 30 days when interviewed 5 years after the initial assessment.

Sample Selection

Swedish sample—1865 individuals were recruited to the study and interviewed in person (after providing informed consent, study approved by Central Ethical Review Board of Stockholm) by research staff when entering inpatient and outpatient treatment facilities in the health and social welfare treatment systems between 2000–2002 (initial assessment, T1). The sample was representative of alcohol and drug misusers in the different types of treatment settings available in Stockholm County at that time. In 2001–2004 1210 were re-interviewed (1-year follow-up, T2). Between 2007 and 2008, 698 respondents from the baseline sample were randomly selected to be included in a second follow up and were re-interviewed, approximately 5 years after T1((T3). Follow ups were mainly done by telephone. Of the 1763 eligible respondents, 51 had died by T2 and another 195 by T3 (37 of the 696 randomly selected) – yielding a 71% follow-up rate of live respondents at both follow ups. More information about the study is found elsewhere.^{42,49–50} The Swedish sample for this study was randomly sampled to include 469 clients who completed the five year follow up interview.

US sample—A total of 926 individuals entering a representative sampling of ten countrywide public and private inpatient, outpatient, detoxification, and residential programs were recruited into the study between 1995 and 1996. Drug specialty programs (e.g. methadone maintenance) were excluded. Recruitment and interview methods were the same as the Swedish sample (informed consent and study approval was granted). In the fifth year, 667 individuals were re-interviewed yielding a response rate of 72%. These 667 individuals are the US sample for this study.

Variables

Independent variables—For both the Swedish and US dataset, *age* and *gender* were measured at the baseline interview, with *gender* having two categories, male and female. The Swedish measure of *employment* at the five year follow up initially included 12 answer choices. For the analysis, these categories were reduced to five categories: 1. employed full-time or part-time 2. unemployed, 3. retired or disability pension, 4. sick-list certificate, 5. other, (including parental leave student, househusband or housewife, institution, and other). *Employment* at the five year follow up in the US was initially measured with five categories

including full time work, part-time work, unemployed, retired, and something else. These categories were combined to create three categories including 1. full or part-time employment, 2. unemployed, or 3. retired or something else.

Social network was measured with a question about with whom the respondent spends his or her free time. The Swedish questionnaire asked respondents to describe with whom she or he spends his or her free time and provided four answer choices including 1. spends time primarily with addicts, 2. spends time with both addicts and non-addicts, 3. spends time mainly with non-addicts, and 4. hardly has any relationships with people. For the analysis, data was used from the five year follow up questionnaire. The US five year follow up questionnaire asked respondents “How often you spent time with people who drink or use drugs in past 30 days?” and included four answer choices: 1. all of the time, 2. most of the time, 3. some of the time, 4. never.

Both the US and Swedish questionnaires included questions from the Addiction Severity Index (ASI)³⁻⁸ to measure *psychiatric symptoms*, three of the ASI questions from the five year follow-up interviews were used. At the five year follow up, both the US and Swedish clients were asked whether in the 30 days prior to the interview they had experienced depression and whether in the 30 days prior to the interview they had experienced anxiety. These two questions provided data for the two independent variables measuring self-reported mental health status, i.e., depression and anxiety. In addition, both the US and Swedish five-year follow up questionnaires included the ASI question measuring the number of days in the 30 days prior to the interview the respondent had experienced any psychological or emotional problems. This continuous level measure (number of days) was used in addition to the symptom questions to measure mental health status.

Both the US and Swedish five year follow up questionnaires had two questions about *mental health treatment* in the 12 months prior to the interview: whether the respondent had seen a psychologist, psychiatrist, therapist or social worker (i.e., whether the respondent had outpatient mental health care), and whether the respondent had been admitted to a psychiatric hospital or other psychiatric inpatient or residential program. For both datasets these were coded as: 1. respondent had inpatient mental health treatment in the 12 months prior to the interview, yes or no, and 2. respondent had outpatient mental health treatment in the 12 months prior to the interview, yes or no.

The US sample was not asked a question about lifetime history of outpatient and inpatient psychiatric treatment. However, for the Swedish sample such a question was asked at baseline. Hence, this question was included only for the Swedish sample in an alternative bivariate and multivariate analysis described below.

Dependent variable—The dependent variable, *abstinence from both alcohol and illegal drugs for the 30 days prior to the 5 year follow up interview*, was developed using a number of variables including alcohol use during the past 30 days, and a list of 12 drugs (US) and 10 drugs (Sweden) the respondent may have used in the past 30 days. Any use of alcohol and/or any drug use was coded as non-abstinent, and having not used any alcohol or any drugs in the past 30 days prior to the interview was coded as abstinence.

Analytic Strategy

First, for the Swedish sample and for the US sample, frequency distributions and means were calculated for all independent variables (see Table 1). Second, for each sample, bivariate statistical analyses, specifically Chi-square and one-way ANOVA analyses, were conducted for all independent variables and the dependent variable (see Tables 2 and 3). Third, binomial logistic regression methods were used to examine the relationships between

independent variables significant at the bivariate level and the dichotomous dependent variable, abstinence from alcohol and drugs in the 30 days prior to the five year follow up interview (see Tables 4 and 5). Fourth, an alternative Swedish logistic regression was completed using a lifetime mental health treatment history variable asked at baseline and not contained in the US questionnaire to further assess co-morbid psychiatric status of that sample (see Table 6).

Results

Univariate Results

With respect to the sample characteristics, univariate results for both Sweden and the US are presented in Table 1. At the time of baseline interview, the average age of Swedish respondents was 42.3 years and the average age of US respondents was 43.3 years. Regarding gender, over seventy percent (71.2 %) of the Swedish sample was male and nearly sixty percent (58.0 %) of the US sample was male. Although the variables measuring social networks differ somewhat across the two samples, data from the 5-year follow-up interviews reveal that in both countries, almost half of all respondents were primarily interacting with individuals who were not actively using drugs or alcohol. At the 5-year follow-up interview, 48.6 % of the Swedish respondents reported that they spent ‘mostly all of their time with non-addicts’ and 47.5% of U.S. respondents reported that ‘some of the time’ is spent with non-addicts; in addition, 38.2% of U.S. respondents reported that they never spent time with individuals using drugs or alcohol. In the Swedish sample, 42.0% of participants was abstinent from alcohol and drugs at the time of the interview, whereas only 23.5% of the U.S. sample reported alcohol and drug abstinence at follow up. Housing was not included in the analyses because the majority of the Swedish and the U.S. samples were housed; hence, there was little to no variation on this variable. Regarding employment status, 28.1% of Swedish respondents were employed at the 5-year follow-up interview compared with 54.2% of U.S. respondents. Conversely, although only 11.3% of the Swedish respondents were unemployed at this time, 23.2% of U.S. respondents reported that they were unemployed.

With respect to self-reported mental health status, 16.7% of Swedish respondents reported they had experienced depression in the 30 days prior to the interview, and 18.8% reported experiencing anxiety 30 days prior to the five year follow up interview; these rates were higher for US respondents, as 25.3 % reported depression and 39.6 % reported anxiety 30 days prior to the 5-year follow up. Also, 12.8% of the Swedish sample reported that they received inpatient mental history in the past 12 months at 5-year follow-up, whereas 24.2% reported that they had received outpatient mental health treatment during this same period. Only 5.0% of the U.S. sample reported a history of inpatient mental health treatment in the past 12 months at follow-up, whereas 32.9% reported a history of receiving outpatient mental health treatment at follow-up. At baseline, 12.8 % of the Swedish sample reported a history of inpatient mental health treatment and 24.1 % reported a history of outpatient mental health treatment. Finally, although Swedish respondents reported experiencing mental health symptoms in the 7 of 30 days prior to the follow-up interview, U.S. respondents reported such symptoms in 10 of 30 days prior to the follow-up interview.

Bivariate Results

With respect to bivariate analyses presented in Table 2 and Table 3, several significant associations were common to the Swedish and US samples. However, some key differences persisted in the nature and kind of mental health symptom and treatment variables significantly associated with abstinence from drug and alcohol at the five year follow up. For the Swedish sample, employment and social network were both associated with drug

and alcohol abstinence at the five year follow up interview. Similarly, for the US sample, employment and social network were associated with being abstinent from drugs and alcohol. Self-reported mental health symptoms and treatment histories were also associated with drug and alcohol abstinence in the Swedish and US samples; however, significant variables differed across the datasets. Among Swedish respondents, self-reported depression was significant at the bivariate level, and it was negatively associated with being abstinent from alcohol/drugs. Also, for the Swedish sample, those who reported a lifetime history of inpatient psychiatric treatment at baseline were significantly less likely to report being abstinent from alcohol and drugs. Among US respondents, depression, anxiety, and the number of days having psychiatric problems (measured as a continuous level variable) were all significantly and negatively associated with being abstinent from either drugs or alcohol in the 30 days prior to the five year follow up interview.

Multivariate Results-Comparing Swedish and US Logistic Regression Models

As a next step, all of the variables significant at the bivariate level were entered into a logistic regression model for each country's sample. Criterion categories among the categorical independent variables, odd ratios, and level of significance are indicated in Table 4 and Table 5. In the Swedish model, social network and employment remained significant (Table 4). Specifically, those who primarily spent time with nonaddicts were three times more likely to be drug and alcohol abstinent in the 30 days prior to the 5-year follow-up interview compared to those who were primarily spending time with addicts (or with addicts and non-addicts) or who were spending most of their time alone. Respondents who were employed were 3.6 times more likely to be drug and alcohol abstinent in the 30 days prior to the 5-year follow-up interview compared with those who were unemployed; those who were retired or on disability pensions were nearly five times more likely to be abstinent; respondents who were receiving a sicklist certificate were 3.4 times more likely to be abstinent; students, those on parental leave, and those who elected to stay home were 5.9 times more likely to be abstinent from drugs and alcohol in the 30 days prior to the five year follow up. In the Swedish regression model, self-reported depression in the 30 days prior to the five year follow up was not significantly associated with drug and alcohol abstinence. However, since lifetime history of inpatient mental health treatment at baseline was asked to the Swedish sample and significant at the bivariate level, it was also included in a second logistic regression model for Sweden. In this alternative multivariate analysis, (Table 6) lifetime history of inpatient mental health treatment was significantly associated with abstinence from alcohol and drugs; specifically, individuals reporting a lifetime history of inpatient mental health treatment at baseline were 47 % less likely to be abstinent from alcohol and drugs in the past 30 days at the five year follow up.

For US respondents, social network and employment status remained significantly associated with being abstinent from alcohol and drugs. Specifically, in the U.S. model (Table 5), respondents who reported that they never spent time with people who drink alcohol and use drugs were 3.1 times more likely to be abstinent from alcohol and drugs in the 30 days prior to the 5-year follow-up interview compared with people who spent time with substance users. Individuals who were not active in the labor force (i.e. retired) were 48% *less* likely to be abstinent from alcohol and drugs compared to those who were employed or unemployed. In contrast to the Swedish sample, which showed no significant findings for mental health symptoms or treatment at the multivariate level, US respondents who reported problems with anxiety were 50% *less* likely to be abstinent from alcohol and drugs in the 30 days prior to the five year follow up interview compared to those who did not report anxiety symptoms.

Discussion

Although variable measures differed somewhat in the two samples studied, findings were highly similar for the two samples interviewed 5 years after their baseline assessment for an alcohol or drug disorder. For both samples, social network (who respondents spent their time with) and employment status were significantly associated with drug and alcohol abstinence in the 30 days prior to the five year follow interview. For US respondents, experiencing anxiety during the 30 days prior to the five year follow up interview was highly and negatively associated with drug and alcohol abstinence and for Swedish respondents having a lifetime history of inpatient psychiatric treatment was significantly associated with not being drug or alcohol abstinent. It should be noted that one limitation is that the US database did not include a variable on life time history of inpatient psychiatric treatment. Despite there only being one significant finding among the measures of comorbidity in the multivariate analyses for each sample, univariate analysis showed that respondents in both samples reported similar levels of mental health symptoms and mental health services use, even though the sampling and screening criteria for inclusion in this study did not include any mental health measure; instead sampling criteria was based solely on individuals being screened for a substance use disorder five years prior to the interview and not on any mental health measure.

The most consistent finding was the importance of being part of a social network affording little to no interaction with individuals using alcohol or drugs. This finding suggests that even though there may be different alcohol and drug use norms in these two societies, being part of a network that does not engage in alcohol and drug use activities (even though normatively or socially acceptable) could be a key factor in reducing likelihood of relapse. Although the specific variables measuring an individual's social network varied in the two samples, respondents who interacted primarily with persons who did not use drugs or alcohol in both Sweden and the US were roughly 3 times more likely to be abstinent at the five year follow up.

Second, although employment status was associated with being abstinent from alcohol and drugs, different aspects of employment seemed important for these two samples. Specifically, in the Swedish sample, those individuals who were employed were approximately 3.6 times more likely to not have used either alcohol or drugs in the 30 days prior to the five year follow up interview. However, in this sample, some individuals who were not actively in the labor force were actually more likely than the employed group to report abstinence at the five year follow up; for example, those on disability or retired were nearly 5 times more likely to abstinent while those who were on parental leave, were students, or those who elected to stay home were nearly 6 times as likely to report abstinence at the five year follow up. On the other hand, in the US sample, those who were not active in the labor force were approximately 50% less likely than their employed and unemployed counterparts to be abstinent from alcohol or drugs in the past 30 days.

Implications

While co-morbid psychiatric status was not significantly associated with alcohol and drug abstinence at the five year follow up among Swedish individuals assessed for a substance use disorder, results indicate that across Swedish and US cultures, employment and social networks were significantly and negatively associated with abstinence. For its similarity across samples, the social network finding is quite strong, and it suggests that treatment program clinicians in each country could emphasize sober social network building among clients. Despite the fact that employment was significantly associated with alcohol and drug abstinence, the employment categories significant to alcohol and drug abstinence were different across Swedish and US samples, suggesting that further research should be

conducted to explore explanatory frameworks for these findings. Finally, given that co-morbid psychiatric status was not found to be significant across cultures, and not a major finding for either of the samples, future efforts should examine what factors may influence both the prevalence and self-reporting of co-morbid mental illness among substance misusing individuals post-treatment.

Limitations

There are a number of limitations with this study. First, the current study relies on self-reported alcohol and drug abstinence; future research should be conducted using verifiable abstinence data (e.g., drug testing). Second, the current study cannot explore the associations of the cases that were excluded from analysis due to attrition or loss to follow up. Third, since the current study is exploratory, it is only capable of describing possible associations, not casual relationships between study variables. Finally, since some variation in measures between the two samples exists, comparisons of study factors in each sample were not based on identical variables.

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Table 1

Swedish and US samples: Descriptive statistics

Variable	Swedish sample (n = 469)		US sample (n = 667)	
	N	% Or Mean (SD)	N	% Of Mean (SD)
<u>Age</u>	469	42.3 (12.7)	666	43.3 (10.5)
<u>Gender</u>	469		667	
Male	334	71.2	387	58.0
Female	135	28.8	280	42.0
<u>Social network at 5 year follow up: how often spent time with people who drink or use drugs in past 30 days</u>	469		600	
Spending time primarily with addicts/ <i>all of the time</i> ¹	32	6.8	50	8.3
Spending time with both addicts and non-addicts/ <i>most of the time</i>	163	34.8	36	6.0
Spending time mainly with non-addicts/ <i>some of the time</i>	228	48.6	285	47.5
Hardly any relations with people/ <i>never</i>	46	9.8	229	38.2
<u>Employment (past 12 months) at 5 year follow up</u>	467		603	
Employed full or part time	131	28.1	327	54.2
Unemployed	53	11.3	140	23.2
Retired or disability pension	178	38.1	136	22.6
Sicklist certificate	45	9.6	NA	
Other including parental leave, student status, stay at home	60	12.8	NA	
<u>Mental health treatment</u>				
<i>Inpatient psychiatric treatment past 12 months at five year follow up</i>	468		604	
Yes	60	12.8	30	5.0
No	408	87.2	574	95.0
<i>Outpatient psychiatric treatment past 12 months at five year follow up</i>	467		604	
Yes	113	24.2	199	32.9
No	354	75.8	405	67.1
<u>Mental health symptoms experienced during the past 30 days at 5 year follow up</u>				
<i>Depression past 30 days at 5 year follow up</i>	467		604	
Yes	78	16.7	153	25.3
No	389	83.3	451	74.7
<i>Anxiety past 30 days at 5 year follow up</i>	467		604	
Yes	88	18.8	239	39.6
No	379	81.2	365	60.4
<u>Number of days past 30 days experienced psychiatric problems at five year follow up</u>	453	6.7 (11.1)	598	10.2 (12.3)
<u>Abstinent from alcohol and drugs during the past 30 days at 5 year follow up</u>	438		599	
Yes	184	42.0	141	23.5
No	254	58.0	458	76.5

¹ US value labels

Table 2

Swedish analysis

Bivariate statistics for Swedish respondents who completed a 5 year follow up interview (N =469)

Variable	Abstinent from drugs and alcohol during the past 30 days % or Mean (SD)	Not abstinent from drugs and alcohol during the past 30 days % or Mean (SD)
<u>Age</u>	43.3 (13.3)	42.3 (12.3)
<u>Gender</u>		
Male	39.7	60.3
Female	47.3	52.7
<u>Social network at 5 year follow up how often spent time with people who drink or use drugs in past 30 days***</u>		
Spending time primarily with addicts	25.9	74.1
Spending time with both addicts and non-addicts	30.2	69.8
Spending time mainly with non-addicts	52.8	47.2
Hardly any relations with people	38.6	61.4
<u>Employment (past 12 months) at 5 year follow up**</u>		
Employed full or part time	43.7	56.3
Unemployed	14.6	85.4
Retired or disability pension	45.8	54.2
Sicklist certificate	40.5	59.5
Other including parental leave, student status, stay at home	51.9	48.1
<u>Mental health treatment</u>		
<i>Inpatient psychiatric treatment past 12 months at five year follow up</i>		
Yes	37.5	62.5
No	42.1	57.9
<i>Outpatient psychiatric treatment past 12 months at five year follow up</i>		
Yes	40.6	59.4
No	42.4	57.6
<u>Mental health symptoms experienced during the past 30 days at 5 year follow up</u>		
<i>Depression past 30 days at 5 year follow up*</i>		
Yes	29.6	70.4
No	44.7	55.3
<i>Anxiety past 30 days at 5 year follow up</i>		
Yes	35.0	65.0
No	43.8	56.2
<u>Number of days past 30 days experienced psychiatric problems at five year follow up</u>	5.5 days (10.1)	7.1 days (11.4)
<u>Mental health treatment¹</u>		
<i>Ever been in inpatient psychiatric treatment at baseline* (n = 437)</i>		
Never	44.1	55.9
At least once in lifetime	27.6	72.4

Variable	Abstinent from drugs and alcohol during the past 30 days % or Mean (SD)	Not abstinent from drugs and alcohol during the past 30 days % or Mean (SD)
<i>Ever had outpatient psychiatric treatment at baseline (n = 437)</i>		
Never	42.0	58.0
At least once in lifetime	41.5	58.5

*
p<.05

**
p<.01

p<.001

¹ This alternative mental health treatment independent variable may also be found in the alternative Swedish logistic regression, presented in Table 6.

Table 3

US analysis

Bivariate statistics for US respondents who completed a 5 year follow up interview (n = 667)

Variable	Abstinent from drugs and alcohol during the past 30 days % or Mean (SD)	Not abstinent from drugs and alcohol during the past 30 days % or Mean (SD)
Age)	41.8 years (9.1)	43.2 (10.5)
Gender		
Male	25.2	74.8
FeMale	21.3	78.7
<u>Social network at 5 year follow up: how often spent time with people who drink or use drugs in past 30 days</u> ***		
All of the time	12.0	88.0
Most of the time	11.1	88.9
Some of the time	20.1	79.9
Never	32.7	67.3
<u>Employment (past 12 months) at 5 year follow up</u> *		
Employed full or part time	26.5	73.5
Unemployed	24.5	75.5
Retired or something else	15.7	84.3
<u>Mental health treatment</u>		
<i>Inpatient psychiatric treatment past 12 months at five year follow up</i>		
Yes	13.3	86.7
No	24.1	75.9
<i>Outpatient psychiatric treatment past 12 months at five year follow up</i>		
Yes	21.2	78.8
No	24.7	75.3
<u>Mental health symptoms experienced during the past 30 days at 5 year follow up</u>		
<i>Depression past 30 days at 5 year follow up</i> *		
Yes	16.4	83.6
No	26.0	74.0
<i>Anxiety past 30 days at 5 year follow up</i> ***		
Yes	14.8	85.2
No	29.2	70.8
<u>Number of days past 30 days experienced psychiatric problems at five year follow up</u> ***	6.7 days (10.9)	11.3 days (12.6)

* p<.05

** p<.01

*** p<.001

Table 4
Swedish analysis. Logistic Regression with variables that were significant at the bivariate level

Characteristics significantly associated with likelihood of abstinence from alcohol and illegal drugs in the past 30 days at the 5 year follow up (N= 434)

	<i>Dependent Variable</i>	
	Odds Ratio	(95%CI: lower, upper)
<u>Social network at 12 month follow up</u>		
Spending time primarily with addicts ¹		
Spending time with both addicts and non-addicts	1.20	(.46, 3.17)
Spending time mainly with non-addicts	3.02*	(1.17, 7.80)
Hardly any relations with people	1.87	(.62, 5.63)
<u>Employment (past 12 months) at 5 year follow up</u>		
Employed full or part time	3.56**	(1.45, 8.76)
Unemployed ¹		
Retired or disability pension	4.90***	(2.04, 11.78)
Sicklist certificate	3.38*	(1.20, 9.56)
Other including parental leave, student status, stay at home	5.86**	(2.16, 1.86)
<u>Mental health symptoms</u>		
Depression past 30 days at 5 year follow up	.66	(.36, 1.18)

Model Chi Square $X^2 = 42.43$, $df = 8$, $p < .000$

Nagelkerke R Square = .13

¹Reference group

* $p < .05$

** $p < .01$

*** $p < .001$

Table 5
US analysis. Logistic Regression with variables that were significant at the bivariate level

Characteristics significantly associated with likelihood of abstinence from alcohol and illegal drugs in the past 30 days at the 5 year follow up (N= 589)

	Abstinent from drugs and alcohol during the past 30 days	
	Odds Ratio	(95%CI: lower, upper)
<u>Social network at 5 year follow up: how often spent time with people who drink or use drugs in past 30 days</u>		
All of the time ¹		
Most of the time	.79	(.20, 3.12)
Some of the time	1.49	(.59, 3.73)
Never	3.05*	(1.22, 7.63)
<u>Employment at 5 year follow up</u>		
Employed full or part time	.76	(.46, 1.27)
Unemployed ¹		
Retired or something else	.52*	(.27, .98)
<u>Mental health symptoms experienced during the past 30 days at 5 year follow up</u>		
Depression past 30 days at 5 year follow up	1.14	(.61, 2.12)
Anxiety past 30 days at 5 year follow up	.50*	(.28, .89)
Number of days in past 30 days respondent experienced any psychiatric problems	.98	(.96, 1.00)

Model Chi Square $X^2 = 43.15$ df =8, $p < .000$

Nagelkerke R Square = .106

¹Reference group

*
p<.05

**
p<.01

p<.001

Table 6
Swedish Analysis. Alternative Logistic Regression with variables that were significant at the bivariate level

Characteristics significantly associated with likelihood of abstinence from alcohol and illegal drugs in the past 30 days at the 5 year follow up (N= 433)

	<i>Dependent Variable</i>	
	Odds Ratio	(95%CI: lower, upper)
<u>Social network at 12 month follow up</u>		
Spending time primarily with addicts ^I	0.00	
Spending time with both addicts and non-addicts	.97	(.45, 3.18)
Spending time mainly with non-addicts	3.07*	(1.18, 8.00)
Hardly any relations with people	1.22	(.58, 5.30)
<u>Employment (past 12 months) at 5 year follow up</u>		
Employed full or part time	3.55**	(1.44, 8.75)
Unemployed ^I	0.0	
Retired or disability pension	5.09***	(2.11, 12.28)
Sicklist certificate	3.56**	(1.25, 10.12)
Other including parental leave, student status, stay at home	5.98***	(2.20, 16.26)
<u>Mental health treatment</u>		
Ever had inpatient psychiatric treatment	.43**	(.23, .81)
<u>Mental health symptoms during lifetime</u>		
Depression past 30 days at 5 year follow up	.66	(.37, 1.21)

Model Chi Square $X^2 = 48.99$, $df = 9$, $p < .000$

Nagelkerke R Square = .144

^I Reference group

* $p < .05$

** $p < .01$

*** $p < .001$