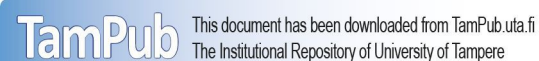Associations between unemployment and heavy episodic drinking from adolescence to midlife in

Sweden and Finland

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Abstract

Background

Unemployment and alcohol use have often been found to correlate and to act as risk factors for each other. However, only few studies have examined these associations at longitudinal settings extending over several life phases. Moreover, previous studies have mostly used total consumption or medical diagnoses as the indicator, whereas subclinical measures of harmful alcohol use, such as heavy episodic drinking (HED), have been used rarely. The aim of this study was to examine the associations between HED and unemployment from adolescence to midlife in two Nordic countries.

Methods

Participants of separate cohort studies from Sweden and Finland were recruited at age 16 in 1981/1983 and followed up at ages 21/22, 30/32 and 43/42, (n=1080/2194) respectively. Cross-lagged autoregressive models were used to determine associations between HED and unemployment.

Results

In the Swedish cohort, HED at ages 16 and 30 in men and HED at age 21 in women were associated with subsequent unemployment. In the Finnish cohort, we found corresponding associations at age 16 in women and at age 22 in men. However, the gender differences were not statistically significant. The associations from unemployment to HED were non-significant in both genders, in both cohorts and at all ages.

Conclusions

Our results suggest that heavy drinkers are more likely to experience unemployment in subsequent years. The associations from HED to unemployment seem to exist through the life course from adolescence to midlife. More emphasis should be put on reducing alcohol related harms in order to improve labour-market outcomes.

Keywords: alcohol, follow-up, heavy episodic drinking, life course, unemployment

Introduction

Unemployment and harmful alcohol use are major risks for public health[1, 2]. Most previous studies have examined either alcohol use as a risk for unemployment or the other way round[3]. Few studies have examined the association's bidirectional nature. Of these few studies one[4] found support for the reciprocal association between unemployment and alcohol use disorder in young adults, whereas other[5] found an association only from binge drinking to long-term unemployment and only in women with a sample of 20-59 year olds. Of those studies that have examined association only regarding one direction some have found an association[6-8], others have not[9-11] or have found it in either gender or in some age group[3, 12-16]. Variation in the measures, adjustments, age groups and follow-up times could explain these contradictory findings.

Most previous longitudinal studies have covered at most two life phases and the transitions through different life phases have not been examined thoroughly [17]. Unemployment is common when young people enter the work life[18], while it might have more detrimental effects on wellbeing later in life. However, early adult unemployment could have a "scarring" i.e. negative long-term effect on subsequent wellbeing[19]. Even though it is not clear which individuals are more likely to be affected by unemployment, long-term unemployment usually has more detrimental effects on subsequent wellbeing than short-term unemployment[3].

Unemployed men use more alcohol than unemployed women[3], but often gender differences regarding longitudinal associations have not been thoroughly tested. The strongest evidence for longitudinal associations between unemployment and alcohol use have been found in (young) men[13, 20]. Regarding women or other age groups the evidence is scarce. In some cross-sectional studies unemployed women have been found to drink less harmfully than employed women[21], whereas in men harmful drinking is usually found to be more common among the unemployed[3].

This study focuses on Nordic countries, Sweden and Finland. Compared with many other e.g. liberal regime countries, they have assumed quite strict alcohol policies (e.g. taxation, retail policy, regulation

of sale) while on the other hand the policies towards the unemployed (social benefits, active re-employment measures) are more generous. Thus previously found longitudinal associations between alcohol use and unemployment from the USA and Great Britain might appear different in the context of the Nordic welfare states[22, 23]. Generous unemployment insurance could moderate harmful economic and psychological consequences of unemployment[24].

Even though both are Nordic welfare states, some essential differences between Sweden and Finland have occurred within the past 30 years. Unemployment level has been higher in Finland than in Sweden throughout the 1980s and 1990s[25] especially during the 1990s recession. Around 2010 the rates have been rather similar[26]. The labour market policies have been more active and the social security system more comprehensive in Sweden than in Finland [27].

Heavy episodic drinking (HED) is an essential part of drinking habits in both countries. In Sweden prevalence of HED (60g in one occasion at least once a month) has been 33% in men and 15% in women, corresponding prevalences in Finland have been 52% and 22%[28].

The aim of this study is to examine the prospective longitudinal associations between unemployment and HED spanning from adolescence to midlife. The specific study questions are: Is HED a risk factor for subsequent unemployment and is unemployment a risk factor for subsequent HED? We examined whether we could replicate similar associations with two different cohorts from Sweden and Finland both covering 26-years of follow-up data.

Methods

Populations

The data consists of two follow-up studies, one from Sweden (Northern Swedish cohort, NoSCo) and the other from Finland (Stress, development and mental health –study, TAM). The studies included all pupils who attended the last year of compulsory school (age 16) in Luleå, a town in the north of Sweden in 1981 or in Tampere, a city in southern Finland in 1983. At age 16 1080 (99.7%) pupils in Sweden and 2194 (96.7%) pupils in Finland completed questionnaires during school hours. The

Swedish participants were followed up collecting survey questionnaires at class reunions or using postal questionnaires in the years 1986, 1995, 2008, at the respective ages of 21 (1060, 97.8%), 30 (1046, 96.7%) and 43 (1010, 93.3%) years. The Finnish participants were followed up using postal questionnaires in 1989, 1999 and 2009, at the respective ages of 22 (1656, 75.5%), 32 (1471, 67.0%) and 42 (1334, 60.8%) years.

While the attrition rate in the Swedish cohort has been extremely low, there is attrition in the Finnish cohort. The comparison of the participants in the age-42 follow-up with the non-participants of the Finnish cohort showed that the non-participants were more frequently men and had poorer school performance at age 16 compared with the participants. The Finnish non-participants also differed from the age-42 participants in the frequency of HED at age 16, but this difference was explained by male preponderance among the non-participants.

Measures

Heavy episodic drinking

United Nations define HED as having at least 60g of pure alcohol on at least one occasion in the past 30 days[29]. This study aimed to form measures that capture this definition as accurately as possible. HED was classified into two categories (yes/no). In the NoSCo-study the respondents reported the frequency of the drinking occasions (a 5-point scale) and average intake of beer (number of bottles), wine (number of glasses) and strong beverages (number of drinks) on each occasion. Respondents who reported drinking on average ≥5 bottles of beer, ≥5 glasses of wine or half a bottle (37cl) or more strong beverages in one occasion and drinking at least a couple of times monthly were classified as heavy drinkers. The respondents who reported drinking the aforementioned amounts more seldom or did not report drinking were classified in no HED group.

In the TAM-study the participants were defined as heavy drinkers at age 16 if they reported being drunk at least four times during the school term (on average once a month) and not heavy drinkers if drinking occurred 0-3 times. At age 22, the participants were defined as heavy drinkers if they

reported heavy drunkenness at least monthly and not heavy drinkers if they reported heavy drunkenness less often. At ages 32 and 42 HED was measured with a question 'How often do you have six or more drinks in a row?' from the Alcohol Use Disorders Identification Test (AUDIT)[30]. Those who reported having six or more drinks in a row at least monthly were classified as heavy drinkers and those not drinking or having the amount in one session less often were classified as not heavy drinkers. The exact alcohol questions are presented in Supplementary table 1.

Unemployment

We used three measures of unemployment in both cohorts each: current unemployment at age 21/22 and long-term unemployment in youth (22/23-30/32) and early adulthood (31/33-43/42). In both cohorts the long-term unemployment was measured as a minimum of 12 months continuous unemployment period (yes/no). In NoSCo-data at age 30 respondents reported labour market positions in a question matrix that consisted of 19 columns representing six months periods over the previous nine years. If the respondents had marked two or more adjacent options 'unemployed', they were classified as long-term unemployed. At age 43 long-term unemployment was measured similarly as at age 30 with a question matrix that consisted of 24 columns representing six months periods over the previous 12 years. In TAM-data at age 32 the respondents reported whether they had been unemployed continuously over a year during the past 10 years (yes/no). At age 42 the participants reported the longest continuous unemployment period during the past 10 years and duration of current unemployment (if applicable) in years and months. The time between years 22-30 and 31-43 in NoSCo and 23-32 and 33-42 in TAM were covered with these questions. At age 22 the TAM survey did not include questions about unemployment covering the first follow-up period between 16-22 years. Thus at age 22/21 current unemployment was measured (yes/no).

Statistical analyses

We used cross-lagged autoregressive models in structural equation framework to determine the longitudinal associations between unemployment and HED. Statistical analyses were carried out using

MPlus 7[31] and IBM SPSS Statistics 22[32]. Autoregressive associations were specified between three unemployment and four HED variables (see Figures 1-2 for model specification). In addition five cross-lagged associations between unemployment and HED were estimated as well as cross-sectional correlations between the variables. Gender differences in the cross-lagged associations between unemployment and HED were tested using multigroup analyses by constraining the parameter of interest to be equal between genders and observing significant changes in model fit using Chi-square change statistics. Model fit was assessed with Chi-square statistic, the comparative fit index (CFI), the Tucker-Lewis index (TLI) and the root-mean-square error of approximation (RMSEA) with reference to standards provided by Hu and Bentler[33]. Analyses were repeated by controlling for parental socioeconomic position at 16 years and education at 30/32 years. The cross-lagged associations were first analysed separately in NoSCo and TAM, then in the pooled data to test any differences between these countries.

Results

Descriptive characteristics of the cohorts are presented in Supplementary table 2. The frequencies of HED and unemployment are presented in Tables 1-2. About 10% (Sweden)/20% (Finland) of women drank heavily. The HED frequencies varied from every fifth (16/43 years Sweden) to half (32/42 years Finland) in men. In all ages in both countries HED was more common among men than among women (although at age 16 marginally significantly in Sweden).

Every fifth Finnish participant had experienced at least one unemployment period of 12 months or longer in youth between years 1989-1999, in Sweden the corresponding proportion (years 1986-1995) was 7%. There were no gender differences in long-term unemployment in either cohort, but at age 22 men reported being currently unemployed more often than women in Finland.

Cross-lagged autoregressive models are presented in Figure 1 (NoSCo-study) and Figure 2 (TAM-study) and the fit indices for these models were good (Fig. 1-2). Almost all autoregressive associations

between adjacent unemployment and HED variables were significant in both genders and cohorts. There were no significant cross-sectional correlations between unemployment and HED in NoSCo. In TAM unemployment and HED correlated at age 22 in women (r=0.42, p<0.001) (not shown in figures).

Regarding the cross-lagged associations in NoSCo HED was a risk factor for subsequent unemployment at ages 16 and 30 in men and at age 21 in women. In TAM age 16 HED was associated with unemployment at age 22 in both genders and HED at age 22 was associated with unemployment between 23-32 years in men. No associations from unemployment to HED were found nor any significant gender differences in the significant cross-lagged associations. Controlling for socioeconomic characteristics did not significantly change the results (data not shown), apart from the attenuating association from HED at 16 years to unemployment at 22 years (0.08, p=0.391) in men in Finland. The analyses with pooled data showed that the country differences in all cross-lagged associations were statistically non-significant.

Discussion

Using two Nordic cohorts this study found HED to be a risk for subsequent unemployment, although evidence for this association varied somewhat by country and examined age phase. Mostly evidence for this association was found among men, while any statistically significant gender differences were not found, however. Unemployment was not found to be a risk for subsequent HED.

Variation in measurements complicates comparisons with previous studies. Many studies have found harmful alcohol use/alcohol disorders to increase the likelihood of unemployment, although only few of them examined HED[3]. Contrary to findings in this study, a previous study from USA did not find youth HED to be a risk for adult unemployment[9]. However, that study did not measure regular HED. The present study might reveal associations between HED and unemployment, because the measure that was used captures more detrimental drinking than occasional HED/average consumption[20, 34]. If

alcohol is used often but in small amounts, it might not have as counter-productive influence on finding and holding a job, than if alcohol is used regularly in large amounts per session. Compared to previous studies mainly from the USA, the results from this study suggest that HED is a risk for unemployment even in the presence of the society's safety nets and strict alcohol control provided by Nordic welfare states.

Few studies have examined the mechanisms behind the association between alcohol use and unemployment, but generally harmful adolescent alcohol use can increase absenteeism at school, risk of dropping out and poor school performance resulting as a low educational attainment, further limiting the possibilities of finding a job[3]. In addition, harmful alcohol use can cause health problems, which further could lower work performance and increase absenteeism acting as risks for unemployment. Future research should pay more attention to these possible mechanisms.

Unlike some previous studies we did not find unemployment to be a risk for HED, but previously the focus has mainly been on alcohol disorders. In previous NoSCo-study accumulated youth unemployment was associated with early adult alcohol use[14], which might have been possible to detect also in this study if accumulated unemployment measure would have been used. It has been suggested that the strength of association between unemployment and harmful alcohol use decrease with age[4]. Although, becoming unemployed has been found to be associated with later harmful drinking also in midlife [8]. Differences may be due to differences in how unemployment (duration and continuation) is operationalized. Most previous studies have measured employment status at most at two time points, and not so much between the measurement points and especially not continuous unemployment. Our measure of continuous unemployment might not similarly indicate a risk for HED. Long-term unemployment usually leads to deteriorated economic situation, which might limit the possibility to buy alcohol more than if unemployment would occur often but temporarily. Also policy differences might operate here. In contrast to Anglo-Saxon countries, in the Nordic context welfare benefits might somewhat protect from detrimental health effects of unemployment. This issue requires study designs more specifically tailored to examine the systemic differences.

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Several studies have found stronger associations between unemployment and alcohol use in men than in women. It has been suggested that, contrary to men, unemployment might decrease drinking in women [15]. We did not find this decreasing effect in women, perhaps because it likely relates to lowered income and thus reduced consumption, while HED is a different type of phenomenon.

In the present study, no differences between countries were found in cross-lagged effects. Country level differences and differences in attrition rates can explain the differences regarding the frequencies of unemployment and HED. The exact impact of changes in policy is difficult to estimate, because the time between the follow-ups was rather long. Higher current unemployment rate at age 21 in Sweden might reflect attrition regarding unemployment in the Finnish data. In Finland the unemployment rates were very high during the 1990s recession, when the participants were aged 23-28, which is also seen in this study as high unemployment rate despite possible attrition. During an economic recession various mechanisms are at interplay [35], for example average alcohol intake decreased but HED increased during a period of economic recession in Spain regardless of employment status. This implies that decrease in daily alcohol consumption might be explained by lower income available to purchase alcohol and increase in HED could be explained by attempts to "self-medicate" stress related to insecurity or job loss [36]. In times of economic recession it could be assumed that job loss and work related stress increase, but on the other hand perhaps being unemployed is not as stigmatising as during times of growth. Thus it is not easy to differentiate these various mechanisms that could also compensate each other, and this could in part explain why in this study no association from unemployment to HED was found. More research with individual level longitudinal data covering several age phases is needed to differentiate age, period, and cohort effects as well as different mechanisms behind the associations [35].

Methodological considerations

In both cohorts there was practically total participation at baseline and the participation rates stayed at almost equally high in the follow-ups in the NoSCo study. Thus, the results regarding Swedish data are not biased due to attrition. There was attrition related to gender and poor school performance (16y)

in TAM. Because success in educational path determines later labour market position [37], the Finnish data was likely lacking information on unemployed participants. Thus the results might not appear as strong in TAM-study as they otherwise would. The attrition was largest at age 42, which might be one reason for not finding an association from age 32 HED to later unemployment in TAM.

The advantages of this study are long prospective follow-up time and the possibility to examine the study questions with two separate but rather similar datasets. However, the measurement of HED differed between the countries and HED in the NoSCo might be underestimated, because it does not consider persons who combine different beverages as heavy episodic drinkers, if the amounts within one beverage type did not exceed the limit used in this study. However, the proportions of heavy episodic drinkers in this study are rather equivalent to other Swedish studies measuring HED more specifically. In addition in the Finnish data, the HED variables varied (perceived drunkenness vs. having $\geq$6 drinks in one occasion). Perceived drunkenness has been shown to correlate with approximately six units of alcohol in adolescence [38]. Thus, despite changes in the measurement of HED, they likely measure the same phenomenon. In addition, it should be noted that the HED group includes variety of different drinking habits (daily, weekly and monthly HED), which likely influence health and social consequences differently. Further, unemployment variables at age 21/22 measure current unemployment and the subsequent variables measure unemployment in approximately a 10-year-period, thus the effects might be stronger in youth, if a longer time period had been covered.

In conclusion the findings of this study suggest that HED is a risk for subsequent unemployment, while we have no results supporting the view that unemployment increases later HED in the Nordic context with strict alcohol policy and generous and active unemployment policy. The effect from HED to later unemployment seems relevant from adolescence to midlife.

Funding

Conflicts of Interests

None declared.

Key points

- This is one of the few studies to examine reciprocal associations between unemployment and heavy episodic drinking

- Heavy drinkers are more likely to experience unemployment in subsequent years in Sweden and Finland.

- The associations from HED to unemployment exist from adolescence to midlife.

- Emphasis should be put on reducing alcohol related harms in order to improve labour-market outcomes.

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Table 1. Heavy episodic drinking (HED) in the Swedish NoSCo and Finnish TAM studies

	Women		Men		Total		Gender difference	
	%	(n)	%	(n)	%	(n)	χ2 df=1	p
NoSCo								
Age 16 (N=1007)								
HED	13.5	(65)	17.3	(91)	15.5	(156)	2.8	0.097
Age 21 (N=1007)								
HED	10.6	(51)	43.5	(229)	27.8	(280)	135.8	<0.001
Age 30 (N=1006)								
HED	11.2	(54)	29.5	(155)	20.8	(209)	51.1	<0.001
Age 43 (N=993)								
HED	7.9	(38)	20.7	(106)	14.5	(144)	33.1	<0.001
TAM								
Age 16 (N=2182)								
HED	23.0	(245)	27.5	(307)	25.3	(552)	5.8	0.016
Age 22 (N=1648)								
HED	13.1	(116)	29.6	(226)	20.8	(342)	67.5	<0.001
Age 32 (N=1466)								
HED	18.2	(146)	51.1	(339)	33.1	(485)	177.1	<0.001
Age 42 (N=1321)								
HED	18.5	(134)	45.6	(272)	30.7	(406)	112.5	<0.001

Table 2. Unemployment in the Swedish NoSCo and Finnish TAM studies

|	Women		Men		Total		Gender differences	
	%	(n)	%	(n)	%	(n)	χ^2 df=1	p
NoSCo								
21 (N=997)								
Currently unemployed	8.6	(41)	8.3	(43)	8.4	(84)	0.04	0.838
22-30 (N=1042)								
Unemployed 12 months or more in a row	5.4	(27)	7.5	(41)	6.5	(68)	1.86	0.172
31-43 (N=1042)								
Unemployed 12 months or more in a row	8.2	(41)	9.5	(52)	8.9	(93)	0.53	0.465
TAM								
22 (N=1656)								
Currently unemployed	2.1	(19)	3.9	(30)	3.0	(49)	4.55	0.033
23-32 (N=1452)								
Unemployed 12 months or more in a row	22.6	(180)	21.7	(142)	22.2	(322)	0.17	0.679
33-42 (N=1325)								
Unemployed 12 months or more in a row	9.5	(69)	7.7	(46)	8.7	(115)	1.23	0.268
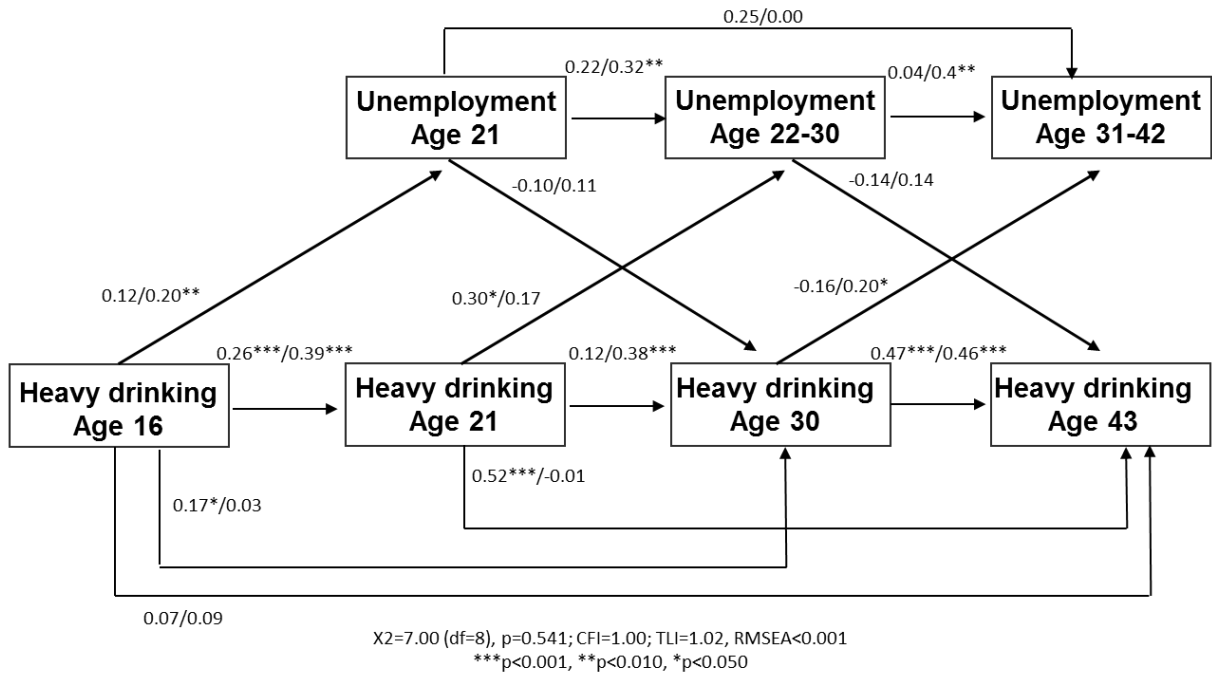
Figure 1 Cross-lagged autoregressive models for unemployment and heavy episodic drinking (HED) in the Swedish NoSCo study. Standardized estimates are shown separately for women (before slash) and in men (after slash). Arrows representing cross-sectional correlations between HED and unemployment were omitted from the figure for clarity.
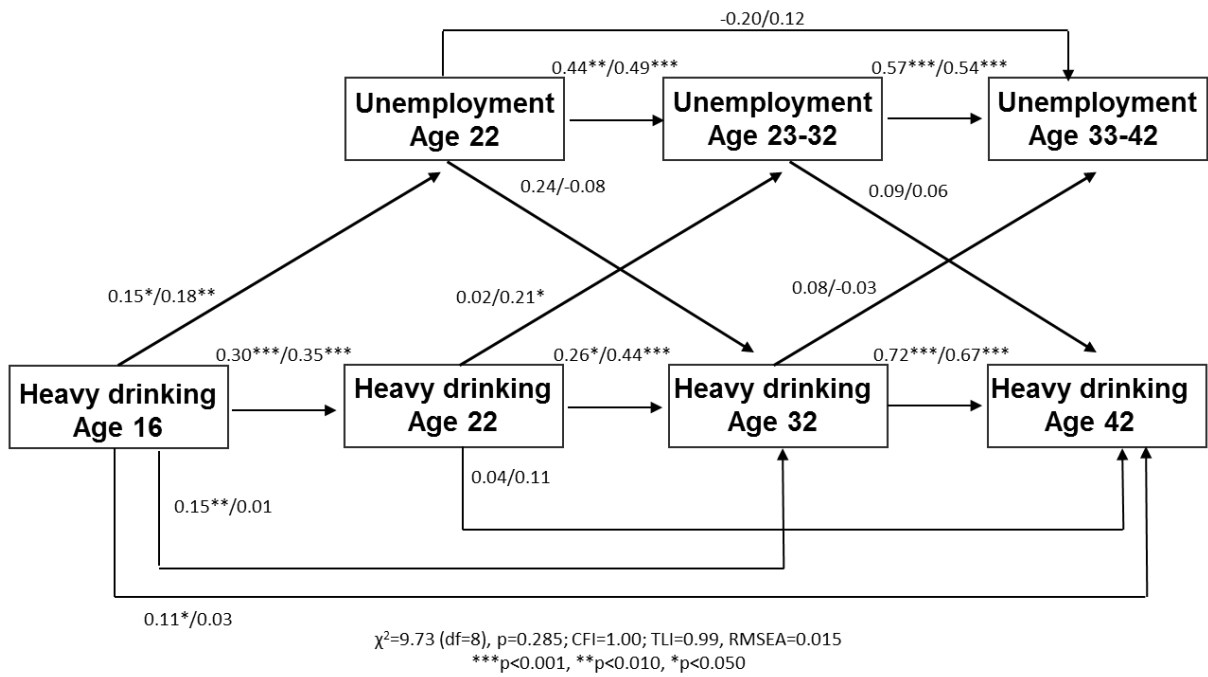
Figure 2 Cross-lagged autoregressive models for unemployment and heavy episodic drinking (HED) in the Finnish TAM study. Standardized estimates are shown separately for women (before slash) and in men (after slash). Arrows representing cross-sectional correlations between HED and unemployment were omitted from the figure for clarity.