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The gendered effects of substance use on employment stability in transitional China

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ABSTRACT

Substance use is often thought to harm employment prospects, an assumption challenged by the anomaly that people who use licit substances such as alcohol and tobacco are sometimes at a lower risk of unemployment. We argue that employment stability may benefit from the socialisation afforded through using licit substances, particularly in a context where licit substance use is encouraged. Furthermore, because the norms associated with substance use often reflect the gender hierarchy in a society, the impact of substance use on employment stability may be contingent on an individual's gender. Applying Cox proportional hazard modelling to a panel dataset during the critical two decades of China's market-based transition (1991–2011), we found that the impact of substance use on unemployment hazards varies depending on the dosage of the use and the gender of the users. Compared to abstinence, moderate alcohol-drinking reduces the risk of unemployment, and the reduction benefits especially men. The standalone effect of tobacco-smoking is to elevate unemployment hazards; however, this effect is heavily moderated by gender so that female smokers were penalised while male smokers were rewarded in the labour market. Such patterns cannot be explained by community-level modernisation progress and individual-level covariates.

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Employment; work; substance use; gender; survival analysis

Introduction

Employment stability and conversely, unemployment risks, are shaped by both the structure of labor-capital relation and an individual's work performance. Focusing on the individual-level, much research has shown how the risk of unemployment is affected by factors beyond formal qualifications and credentials such as the composition of social networks, social and cultural capital, race, and gender (Bian, 1997; McDonald, 2011; Podolny & Baron, 1997). One overlooked but widespread individual-level factor that may significantly affect employment stability is substance use.

As much as above 60% of the world's population uses various types of licit and illicit substances, with tobacco and alcohol being the most widely consumed (Winstock, 2014). However, there is a paradox regarding how substance use affects employment stability. While substance use is known to have the potential to adversely affect employment

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stability by reducing cognitive function and ascribing stigma to the users, recent studies have provided counterevidence that substance use may actually promote social mobility and employment stability. Some have shown that licit substances are used by people to expand social networks and build social capital, furthering their position in the occupational hierarchy and ensuring employment stability (Collins, 2014; Lye & Hirschberg, 2010; Bethany L Peters & Stringham, 2006; Rich & Xiao, 2011), particularly in contexts where substance use is tolerated or even encouraged. More research is needed in order to better make sense of these seemingly contradictory findings.

Even less understood is how the impact of substance use on employment and social mobility depends on a user's gender. The impact of substance use on employment stability for men may be absent for women, given how widely differed are the socially constructed perceptions about the symbolic meanings of substances for men and women. For example, it is not uncommon to see women being discouraged from at-risk health behaviours while men can claim credit for being risk-taking (Kandel, Chen, & Gill, 1995; Kandel & Yamaguchi, 1987). Overall, these findings challenge the argument that substance use has a net negative impact on employment while suggesting that gender norms have more complicated implications for substance use. The purpose of the current study is to demonstrate whether licit substance use (tobacco smoking and alcohol drinking) increases the hazards of unemployment for workers in the context of transitional China (since the 1990s) and whether the substance use effect on employment is gender-specific.

Employment stability endangered by substance use

Problematic substance use directly relates to difficulties holding a stable job, which then can recursively worsen the level of substance use (Janlert, 1997). Studies have laid out several mechanisms linking substance use, an individual's work performance, and their employment stability. For example, chronic exposure to alcohol and tobacco can alter certain neurological functions and the way the endocrine system responds to stimuli, making substance use a potential co-morbidity of mental illness including obsessive-compulsive disorder, mood disorder, and psychosis (Agrawal, Heath, & Lynskey, 2011; Sher, Martinez, & Littlefield, 2010). Workplace tobacco bans elevate the risk of being laid off among smokers when the urge to fulfill another intake of nicotine is now a major source of violation against workplace regulations in countries with comprehensive tobacco bans (Fichtenberg & Glantz, 2002).

Meanwhile, labelling theory posits that using substances may be of no real consequence, yet still block upward mobility because influential gatekeepers perceive and define it as a serious problem (Howard S Becker, 1963). For example, some religious institutions may heavily regulate the use of substances, exclude users from the right of working in various occupations, and repress their upward social mobility, such as in countries practicing Sharia law or during the years of the Temperance movement (Hamarneh, 1972; Jenkins, 2003). Even in secular situations, smokers often become indirectly stigmatised by anti-smoking public health campaigns conducted for the sake of the public good (Stuber, Galea, & Link, 2009). Scholars argue that substance users often face poverty and mental health issues due to the marginal position they are relegated to (De Vogli & Santinello, 2005). These marginalised substance users may then turn to deviant

subcultures for self-affirmation (Bayer & Stuber, 2006; Room, 2005), which further encumbers their employment stability.

Employment stability facilitated by substance use

Although the negative impact of substance use on employment may at first appear to be obvious, there is emerging evidence that substance use may not always be harmful for one's productivity and employment stability. This counterintuitive phenomenon is especially notable when considering licit substances such as alcohol and tobacco, whose purposes for and settings of use may differ qualitatively from illicit substance use (Pacula, 2011). Some studies have shown that alcohol-drinking is associated with moderate to high social standing and higher income. Such an effect has been found through both cross-person comparison (Bethany L Peters & Stringham, 2006) and within-person longitudinal change (Peters, 2004). Several meta-analyses and general reviews have shown that drinking is associated with higher wages, while those who abstain are at a higher risk of earning less. Studies have found that even heavy drinkers enjoy as much as a 12% premium in wages (Auld, 2005; Hamilton & Hamilton, 1997). This relationship also operates at the macro-level, as suggested by findings that economic recession is sometimes associated with less drinking (Lye & Hirschberg, 2010; Pacula, 2011; Srivastava, 2013).

Although in certain western countries, smoking has been found to be associated with a penalty in wages and employment (Auld, 2005; Brook, Zhang, Burke, & Brook, 2014; Lee, 1999), this is only a result of the stigma that tobacco smoking has gained in these societies since the end of the last century (Poland, 1998; Warner, 2009). How smoking affects job stability in countries where tobacco use holds critical social significance is a more complicated but unexplored question. Smoking and drinking are both commonly associated with higher income in China (Yang, Anderson, & Yang, 2014; Zhang, Chan, Fong, Malone, & Lam, 2012). Studies over diverse geographical areas in East Asia also indicate that drinking, at least in its moderate form, is associated with higher income and educational achievement for both men and women (Millwood et al., 2013; Wu, Mao, Rockett, & Yue, 2008). It is typical to encounter smokers and drinkers among the well-educated and financially established populace of China, especially official cadres, intellectuals, and businessmen. Even among male Chinese physicians, smoking prevalence is as high as nearly 40% (Jiang et al., 2007; Yao, Ong, Lee, Jiang, & Mao, 2009). Given these associations between substance use and earnings, it is now important to consider the facilitative role of substance use in employment stability.

How employment stability may be facilitated by substance use

One important mechanism through which substance use may promote employment stability and prevent unemployment is the informal capital-building opportunities that substance use provides to its users. The important socialisation functions provided by substance use can have an even greater positive impact on employment stability in contexts where economic and social transitions have created ambiguous or conflicting evaluation criteria of one's potential productivity so that informal factors involving one's social capital and personal networks receive greater importance than formal credentials. As Becker demonstrated, a drug's recreational value and somatic pleasure need to be

learned and appreciated in a gradual process of socialisation within user circles (Becker, 1953). Drinking and smoking are social activities that can be used to build solidarity and improve (or flaunt) one's social standing. Enjoying a night out at a bar may forge a bond between two former strangers, for example, and offering a lighter to another smoker can foster or signal emotional closeness and mutual trust (Collins, 2014). Bringing high-end cigarettes as a gift may be rewarded in turn with the recipient's appreciation and potential resources (Rich & Xiao, 2011). Those who are not invited or who choose not to participate in social activities involving drinking and/or smoking may miss out on these potentially career-enhancing opportunities.

Scholars have made a convincing case that social networking activities are important for employment and upward mobility. Connections with high-status others can generate valuable information for job seekers, reserve opportunities for certain insiders, and boost workers' productivity (Burt, 2001; Granovetter, 1973; Lin, 2002). Smoking and drinking create the occasions to develop this sort of capital. In fact, one study has demonstrated that marginal increases in purchasing tobacco and alcohol lead to a surge in social activities (Wang, Sindelar, & Busch, 2006). Meta-analyses have also showed that drinking is associated with higher wages primarily because people who drink have larger social networks and more social capital (Lye & Hirschberg, 2010; Srivastava, 2013). Compared to drinkers, abstainers are reported to have lower social skills and are more likely to be isolated. Consequently, their employment prospects may be harmed if employers evaluate candidates and/or employees based on perceived 'collegiality'(Leifman, Kühlhorn, Allebeck, Andreasson, & Romelsjö, 1995; Bethany L Peters & Stringham, 2006). Informal factors such as 'collegiality' and personal networks can have an even greater impact on employment stability, even being more important than formal credentials, in contexts (such as transitional China) wherein major economic and social changes have created ambiguity regarding appropriate worker evaluation criteria.

As a caveat, it is important to distinguish the moderate use of substances for socialising purposes from heavy use. While the use of tobacco and alcohol may deliver the networking and social exchange benefits discussed in detail above, people often only need to consume a limited quantity of these substances in order to obtain these rewards. When cost surpasses benefit, heavy users no longer enjoy the premium that moderate users do (Pacula, 2011). Likewise, there is evidence that heavy drinkers do not earn more than abstainers, they may actually do worse. Studies found that a wage premium for drinkers only exists for moderate drinkers (Auld, 2005; MacDonald & Shields, 2001; Peters & Stringham, 2006). Other research has found that heavy drinkers earn less than moderate drinkers, yet, heavy drinkers attain lower educational returns on wages than abstainers (Hamilton & Hamilton, 1997). Skog (1980) found larger social network sizes among moderate drinkers, compared to both abstainers and heavy drinkers.

The normative and gendered patterns of substance use in transitional China

As we have discussed, most of the mechanisms linking substance use and employment stability relate to how social norms may sanction a substance. For substance use to effectively facilitate social interactions, individuals must understand when the use is permissible and when it becomes transgressive in different contexts. Had the normative acceptance of smoking and drinking not been established, it would be impossible for

people to utilise the substance for social promotion. Gender is one of the distinct social identities that harbour different standards and norms regarding the sanctions of the same behaviour. What is normatively acceptable and encouraged for males may be negatively sanctioned for females (Eriksen, 1999; Yang, 2017). The norms regarding substance use serve as a clear example of such differential treatment.

During the economic and social transition of China in the 1990s and the early twenty first century, dramatic reshaping of both the occupational structure and gender norms took place. The mass lay-off of over 30 million workers in state-owned enterprises, the extensive replacement of centralised productive units by private firms, and the widespread privatisation of public services created a tumultuous environment in which informal criteria such as cultural and social capital often overrode the significance of formal credentials and qualifications (Bian, 1997; Zhou, Tuma, & Moen, 1996) – a thematic phenomenon also observed in other post-communist countries (Howard, 2003; Walder, 2003). Meanwhile, as the state retreated, traditional gender norms started to become reestablished in the labour market, relegating women to more traditional roles and lower-paying positions (Cao & Hu, 2007). In this transitional context, licit substance use became one of the primary means for building and leveraging social capital in the labour market. Yet, the simultaneous return to traditional gender norms also meant that men and women were held to different expectations regarding their substance use.

China is a country where drinking and smoking are considered normative in numerous informal and formal settings, but a considerable gap between genders exists in terms of the quantity and nature of drinking and smoking. Only approximately 5% of women smoke in China compared to 30–60% of men, and Chinese women are half as likely as men to drink (Millwood et al., 2013; Yang et al., 1999). A study on self-exempting beliefs among Chinese showed that the most common argument for smoking among Chinese males was the importance of tobacco-smoking and cigarette-exchange as a social and cultural etiquette (Yang, Kelly, & Yang, 2014). As customs woven into a system of patriarchy, courtesy smoking and cigarette-gifting are routinely practiced by Chinese men (Ma et al., 2008; Rich & Xiao, 2011). Similar to smoking, drinking alcohol serves as means to foster friendship, to facilitate cooperation, and to celebrate at various ceremonial occasions. In fact, a complicated set of drinking etiquettes has existed since antiquity to regulate how men and women, hierarchical superiors and subordinates, and elders and youngsters, should drink. Still today, in contemporary China, both men and women recognise that they often have to use alcohol to meet the expectations of workplaces and family (Cochrane, Chen, Conigrave, & Hao, 2003; Hao, Chen, & Su, 2005).

As patriarchal society, China has clearly defined and distinct sets of gender roles that expect men and women to differently perform their normative behaviours and also differently interpret their experiences in the workplace (Bailey, 2012). With regard to substance use, women may not benefit from the same behaviours that, for men, yield rewards due to their associations with bravery, risk-taking, and non-conformity. Rather, women are often seen as vulnerable subjects who need to be rescued from public smoking and are even used as a justification for tighter social control over licit substances (Campbell, 2000; Yang, Anderson, et al., 2014). Women's drinking also bears a different set of connotations from that of men, including ritual submission, companionship provision, or the display of traditional spousal roles. Contrary to the West,where the interactions between

gender and substance use may be less significant due to a converging pattern of substance use between the two genders (Colell, Sanchez-Niubo, Ferrer, & Domingo-Salvany, 2016), we strongly suspect that in China, drinking and smoking may benefit men while presenting little benefit or even penalising women.

Research hypotheses

This study analyzes whether substance use facilitates employment stability over the long term in contemporary China, where both smoking and drinking carry strong symbolic connotations in the labour market and workplace. We will distinguish whether substance use affects employment differently for heavy users, moderate users, and for men and women. Specifically, ***H1: tobacco smokers or alcohol drinkers have a lower risk of being laid off, as compared to abstainers.*** However, ***H2: heavy users of tobacco and alcohol have a higher risk of being laid off, as compared to abstainers.*** We also predict a significant gendered pattern in the effect of substance use on employment, such that ***H3: the enhancive effect of using tobacco and alcohol on employment stability is greater for men compared to women, namely, there is a negative interaction effect between gender and substance use.***

Methodology

Dataset

This study uses a panel dataset--China Health and Nutrition Survey (CHNS)--between the years of 1991 and 2011. The CHNS is a continuing collaborative project conducted by multiple institutions between China and the United States since 1989. Since the first wave in 1989 with individual, household and community surveys, subsequently CHNS panels were collected in 1991, 1993, 1997, 2000, 2004, 2006, 2009, and 2011. This period of twenty years covered by CHNS featured dramatic social changes that impacted the landscape of employment stability. After the 1989 market-based reforms, scores of public employers who previously promised jobs as secure as the 'iron bowl' started to lay off close to 30 million surplus workers (Cao, Qian, & Weingast, 1999). This dataset offers us a great opportunity to test how unemployment hazards are affected by individuals' substance use behaviour where human resource decisions in firms were relatively idiosyncratic and informal. Due to the potential illegality of smoking and drinking among minors, this study focuses solely on the adult population and thus uses the survey answers from household heads and their spouses. The sample contains 4920 individuals from a 1989 cohort.

According to the survey project, 'a multistage, random cluster process was used to draw the sample surveyed in each of the provinces. Counties in the nine provinces were stratified by income (low, middle, and high) and a weighted sampling scheme was used to randomly select four counties in each province. In addition, the provincial capital and a lower income city were selected when feasible, except that other large cities rather than provincial capitals had to be selected in two provinces. Villages and townships within the counties and urban/suburban neighbourhoods within the cities were selected randomly'. The sample was further weighted by the authors through a post-stratification weighting

method, using a combination of the year-specific size of gender and household in the sample relative to the real population size in each city. Post-stratification weight w is the inversed probability p of being randomly chosen in a sampling unit, and p equals $\sum \frac{n_{jk}}{N_{jk}}$.

Measurement

In consultation with literature on classifying occupations and social classes, the authors sorted the CHNS's list of occupations into eight broader occupational categories based on the relationship of production and market value (Wright, 1997; Wu & Treiman, 2007). The eight occupational statuses are: 1) white-collar workers that include senior and junior professionals, administrators and managers, and office staff; 2) blue-collar workers including technical workers, non-skilled labourers, police officers, drivers, service workers, and others; 3) the self-employed who own a means of production but hire less than 20 employees; 4) owners who hire at least 20 people; 5) farmers; 6) soldiers, 7) retirees, 8) the unemployed. For the survival analysis to be elaborated in the next section, the transition from any one of those occupational groups (except for retirement) to unemployment at a survey wave is considered an unemployment event.

Cigarette smoking was measured by the quantity smoked per day, coding zero for non-smokers and capping the maximum at 50 cigarettes per day. Drinking was measured by the survey as a six-point ordinal question of 'how often did you drink beer or any alcoholic beverage?' Answers to this question range from not drinking, 'less than once a month', 'once or twice a month', 'once or twice a week', 'three to four times a week', to 'drink every day'. Smoking more than 20 cigarettes (a pack) per day or drinking alcohol every day were designated as heavy use, while the quantities below those amounts were considered to be moderate use.

Both time-lagged substance use status and contemporaneous substance use status are used in the same models to predict unemployment hazards because treating the independent variable with time lags prevents temporal auto-correlation. Control variables included income deflated to 1991 nominal Yuan, gender, highest completed degree of education, ethnicity (Han or non-Han), a modernisation index for the survey site, urban residency, and Body Mass Index (BMI). The adoption of these control variables came after consulting the literature on the prevalent risk factors for unemployment. People with higher BMI, for example, are at increased risk of being laid off and often have worse mental health that can impede their job performance (Marcus & Wildes, 2009; Montgomery, Cook, Bartley, & Wadsworth, 1998). For missing data management, we applied Chained Multiple Imputation (Rubin, 1996) and created five imputed samples before the analyses.

Statistical analysis

We employed survival analysis, also known as event-history analysis, on the unemployment events reported in a respondent's follow-up surveys. Survival analysis is a special case of log-linear modelling, in which the time-to-event counts are the dependent variable. Impermanence is at the root of all natural and social phenomena. Unemployment, divorce, illness, and death, are all events that will happen to some people but not others

at a given time, depending on their background characteristics. With survival analysis, we are able to test what characteristics effectively influence the hazard rate of meeting such an event. The hazard rate of having an event at time t is: $h(t) = -\frac{\frac{dS(t)}{dt}}{S(t)}$, where S is a cumulative probability of surviving that event at time t: $S(t) = \exp[-\int_0^t h(u)du]$. In this study, a hazard event is a report of unemployment in any survey wave for a respondent, if s/he had not reported unemployment before. People reporting retirement in a wave are considered right-censored and removed from the pool.

Cox proportional hazard model is the specific survival analytical model adopted in this study for its generalizability and compatibility with discrete time event (Kleinbaum & Klein, 2006). Cox proportional model is a favourite tool used by scholars to implement survival analysis, which is specified as: $h(t, \boldsymbol{X}) = h_0(t)e^{\sum_i \beta_i X_i}$, where X is a vector of covariates, $h_0(t)$ is the baseline hazard. It is also possible to use time-dependent covariates by extending the above model to: $h(t, X(t)) = h_0(t)e^{\sum_i \beta_i X_i + \sum_j \delta_j X_j(t)}$. Hence, the hazard of unemployment is a function of the baseline hazard determined by covariates and a time-varying hazard contingent on the interaction between time and covariates. We mainly utilised the R package 'survival' for Cox proportional hazard models. Although rampant unemployment among Chinese farmers has attracted increasing attention from scholars and governors (Knight & Song, 2003; Solinger, 2001), farmers as an occupational group may not experience the same type of unemployment as urban workers do, given the farmland distribution regulations in China. Therefore, each Cox proportional hazard model is conducted separately for all populations and the non-agricultural population to highlight any differences between the two populations that may distinguish the unique labour market impact of substance use.

Empirical results

Tables 1 and 2 illustrate the cross-time changes in occupational status between 1991 and 2000, as well as between 2000 and 2011. One can see a tremendous amount of movement between different occupational statuses. For example, a total of 113

Table 1. Cross-change of occupational class between 1991 and 2000.

	Year 2000								
Year 1991	Unemployed	Blue-collar worker	White-collar worker	Self-employed	Owner	Soldier	Farmer	Retired	Total
Unemploy	131	37	1	6	2	2	58	24	261
Blue-collar	113	408	55	17	38	4	116	137	888
White-collar	9	31	101	1	18	0	7	44	211
Self-employ	35	59	1	8	6	1	26	2	138
Owner	22	43	21	2	46	2	47	42	225
Soldier	1	3	0	0	0	0	0	1	5
Farmer	407	251	25	30	22	2	2172	27	2937
Retired	25	3	1	2	0	1	5	218	255
Total	743	835	205	66	132	12	2431	495	4920

Table 2. Cross-change of occupational class between 2000 and 2011.

	Year 2011								
Year 2000	Unemployed	Blue-collar worker	White-collar worker	Self-employed	Owner	Soldier	Farmer	Retired	Total
Unemploy	376	83	4	14	3	0	91	85	656
Blue-collar	180	343	31	29	24	1	90	153	853
White-collar	22	45	124	1	15	0	15	86	309
Self-employ	32	14	1	3	0	0	4	5	59
Owner	10	27	12	1	17	0	18	30	115
Soldier	4	4	0	0	1	2	0	3	14
Farmer	697	317	21	27	17	0	1385	43	2507
Retired	48	4	2	0	0	0	5	297	356
Total	1369	837	195	75	77	3	1609	702	4870

people who worked as blue-collar workers in 1991 became unemployed in 2000, while 37 unemployed people in 1991 joined the labour force as blue-collar workers in 2000. These two tables also reveal a considerable level of unemployment among farmers, who were assumed to be a secure labour force tenured by their holdings of farmland. Indeed, 407 out of 2937 farmers in 1991 claimed unemployment in 2000, and another 697 farmers claimed unemployment in 2011. Farmers are second only to the self-employed in terms of cumulative unemployment rate. This finding lends support to the suspicion that land transference, urbanisation and migration, and diminished farmland areas have contributed to a high level of unemployment among China's farmers that has gone unnoticed (Rozelle, Guo, Shen, Hughart, & Giles, 2009; Solinger,

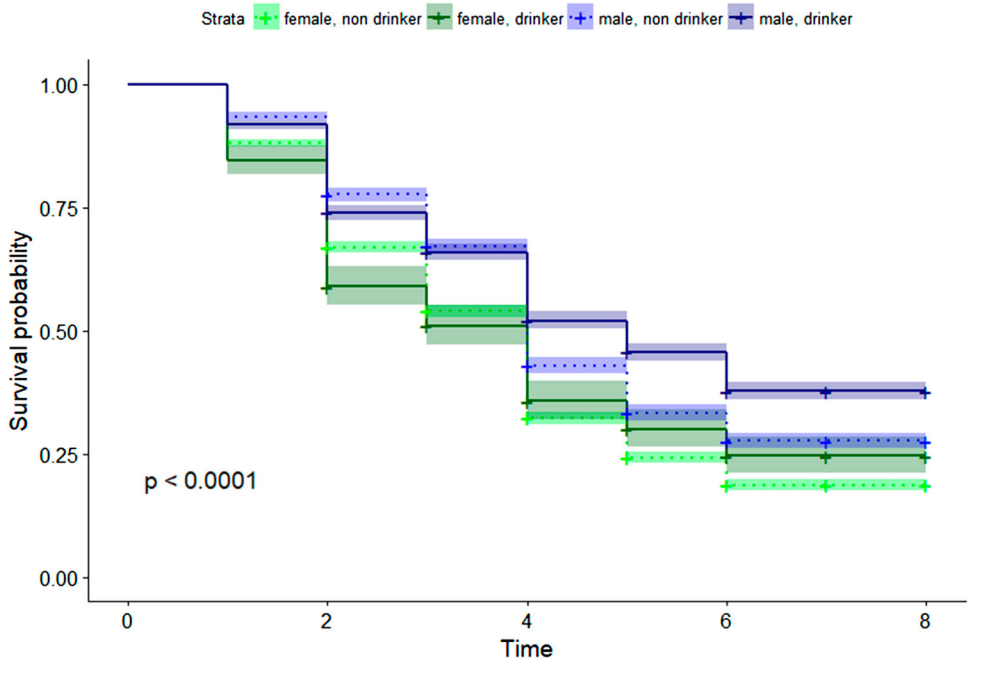

Figure 1. Survival curve by drinking status and gender. Shaded areas are 95% confidence intervals.

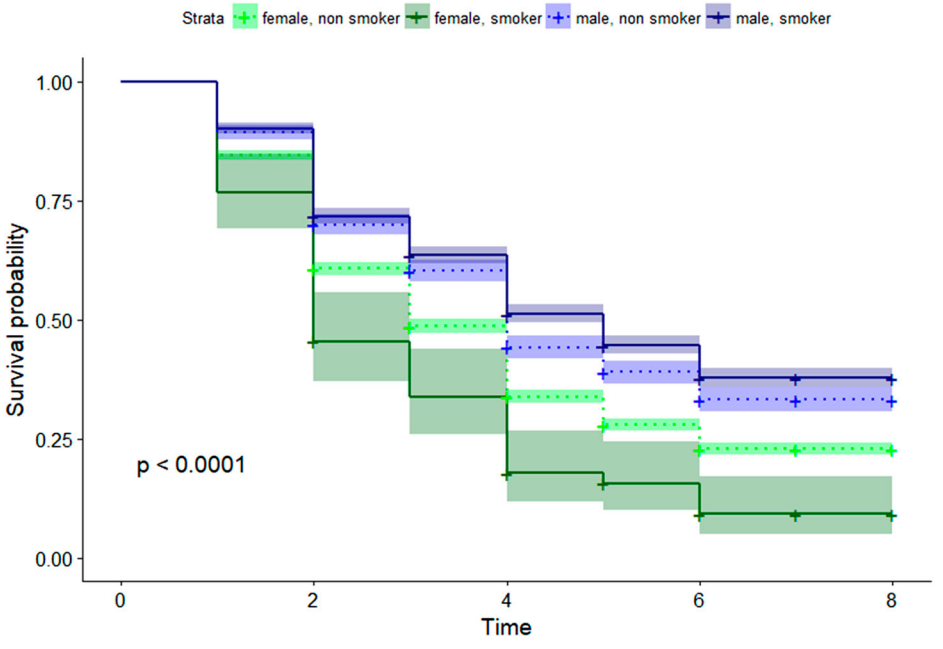

Figure 2. Survival curve by smoking status and gender. Shaded areas are 95% confidence intervals.

2001). Seeing the high levels of unemployment among many occupational groups during China's transition, we now turn to explore how the unemployment rate differs across substance use statuses and genders.

Figures 1 and 2 depict the unemployment survival history of all respondents followed through the panel study over two decades, stratified by substance use status and gender. Overall, the chance of never becoming unemployed diminished over time. Figure 1 shows that this chance is elevated for non-drinkers, females and males alike, during the first three periods. But the gap between non-drinkers and drinkers got smaller and ultimately reversed at period 4, when both female and male drinkers became less likely to get laid off than abstainers. In the end, the cumulative survival rate (i.e. never becoming unemployed) is higher for drinkers of both genders. The final survival rate is about 25% for drinking women versus less than 20% for non-drinking women, and the survival rate is close to 40% for drinking men yet only 28% for non-drinking men. Compared to abstinence, drinking appears to be a protective factor against the long-term risk of unemployment for both genders.

In contrast to drinkers, smokers did not all enjoy a higher cumulative survival rate due to a gender discrepancy. Male smokers had a higher survival rate during all periods compared to male non-smokers, but female smokers had a lower survival rate than their non-smoking counterparts. In Figure 2, the survival rate of male smokers (solid blue line) is significantly higher than that of male non-smokers (dotted blue line), while female smokers (solid green line) consistently had a much lower survival rate compared to non-smoking females (dotted green line). We can infer from this survival history that while smoking men were less likely to be laid off, smoking women had a much higher risk of unemployment compared to non-smoking women.

Table 3. Cox proportional hazards model of unemployment and alcohol-drinking among all populations. Missing values imputed by Chained Multiple Imputations.

N = 47951, imputations = 5	Model 1	Model 2	Model 3
Drinking			
Moderate	−.33***	−.23**	−.18**
Heavy	−.16*	.14	−.06
Male	−.63***	−.55***	−.62***
Previous drinking (t-1)			
Moderate	−.15**	−.15**	−.11*
Heavy	.13	.15*	.06
Male X Drinking			
Male X moderate		−.23*	−.11
Male X heavy		−.44***	−.11
Income			−.06***
Han			.18
Education			−.11***
Urban residency			.09
Modernisation index			.001***
BMI			.07***
Wave			.002
Age			.002***

Symbols of significance test: *$p < .05$, **$p < .01$, ***$p < .001$, standard errors were cluster-robust across surveyed communities.

To systematically test the observations above, we used the Cox proportional hazard model to treat the hazard event history (unemployment) as the dependent variable and substance use status as the focal independent variable, together with a series of relevant control covariates. Each set of models is conducted separately among the non-farming population and the entire populations. The first model in Table 3 shows that, after controlling for drinking behaviour at the previous survey wave, drinking in both regular (−.33, $p < .001$) and heavy forms (−.16, $p < .05$) are negatively associated with unemployment hazards. Men are much less likely to lose their job than women (−.63, $p < .001$). Adding the gender-drinking interaction term into model 2, we can also see a significant interactive effect between gender and drinking status. Drinking moderately and drinking heavily decrease men's unemployment hazards much more than they do for women. Model 1 and 2 have not taken into account the important demographic and contextual covariates, whose inclusion in model 3 has confounded the interactive effect between gender and drinking. The final model in Table 3 indicates that moderate drinking at a previous wave leads to lower risk of unemployment (−.18, $p < .01$), a pattern that exists equally for men and women alike.

Models in Table 4 excluded all farmers from the analyses. The findings remain similar to those in Table 3, but now a gender-specific effect of substance use has emerged. Moderate drinking still leads to lower risk of unemployment in all models, but men reap greater benefits from moderate drinking than do women. Net of the effects of all other variables, a man drinking moderately has a suppressed hazard of unemployment of −.84 (=−12−.59−.13), while a moderate-drinking woman has a reduced unemployment hazard of −.12 (= −.12 + 0+0) compared to the baseline hazard of 0 for a non-drinking woman.

Unlike drinking, smoking in both moderate and heavy forms increase the hazards of unemployment, and the smoking effects are significantly contingent on gender. Turning to model 1 in Table 5, we can see that men are still significantly less at risk for unemployment than women (−.93, $p < .001$). Unlike in the drinking models, moderate smoking is

Table 4. Cox proportional hazards model of unemployment and alcohol-drinking among non-farming populations. Missing values imputed by Chained Multiple Imputations.

N = 27593, imputations = 5	Model 1	Model 2	Model 3
Drinking			
Moderate	−.31***	−.22***	−.12*
Heavy	−.11*	.14	−.04
Male	−.65***	−.58***	−.59***
Previous drinking (t-1)			
Moderate	−.16**	−.16**	−.12**
Heavy	.06	.07	.01
Male X Drinking			
Male X moderate		−.20*	−.13*
Male X heavy		−.38***	−.07
Income			−.05***
Han			.04
Education			−.23***
Urban residency			−.24**
Modernisation index			.001**
BMI			.05***
Wave			−.003**
Age			.001***

Symbols of significance test: *$p < .05$, **$p < .01$, ***$p < .001$, standard errors were cluster-robust across surveyed communities.

positively associated with unemployment hazards (.21, $p < .001$) even after taking out the impact of previous smoking, which itself exerted an incremental effect on unemployment (.15, $p < .05$). Model 2 shows significant interactive effects between gender and smoking, which indicate that both moderate and heavy smoking reduce men's unemployment hazards compared to women. Adding demographic and contextual covariates to model 3 does not confound this finding. While moderate (.28, $p < .001$) and heavy (.45, $p < .001$) smoking still increase the overall unemployment hazards, moderate (−.27,

Table 5. Cox proportional hazards model of unemployment and tobacco-smoking among all populations. Missing values imputed by Chained Multiple Imputations.

N = 47951, imputations = 5	Model 1	Model 2	Model 3
Smoking			
Moderate	.21***	.47***	.28***
Heavy	.06	.62***	.45***
Male	−.93***	−.76***	−.77***
Previous smoking (t-1)			
Moderate	.15*	.12	.04
Heavy	.07	.08	.05
Male X Smoking			
Male X moderate		−.45***	−.27**
Male X heavy		-.76***	−.47***
Income			−.06***
Han			.19
Education			−.11***
Urban residency			−.09
Modernisation index			.001***
BMI			.07***
Wave			.002
Age			.002

Symbols of significance test: *$p < .05$, **$p < .01$, ***$p < .001$, standard errors were cluster-robust across surveyed communities.

Table 6. Cox proportional hazards model of unemployment and tobacco-smoking among non-farming populations. Missing values imputed by Chained Multiple Imputations.

N = 27593, imputations = 5	Model 1	Model 2	Model 3
Smoking			
Moderate	.22***	.40***	.18*
Heavy	.09	.46**	.25*
Male	−.95***	−.83***	−.73***
Previous smoking (t-1)			
Moderate	.12*	.10*	.002
Heavy	.05	.06	−.01
Male X Smoking			
Male X moderate		−.32**	−.11
Male X heavy		−.51***	−.24†
Income			−.05***
Han			.04
Education			−.22***
Urban residency			−.25**
Modernisation index			.003*
BMI			.05**
Wave			−.003**
Age			.001***

Symbols of significance test: *$p < .05$, **$p < .01$, ***$p < .001$, † = .056, standard errors were cluster-robust across surveyed communities.

$p < .01$) and heavy-smoking (−.47, $p < .001$) men are less likely to be laid off than their female counterparts. Compared to a non-smoking woman, which is set as having the baseline hazard of 0, a heavy-smoking man has a suppressed hazard of −.79 (= .45−.77−.47) while a heavy-smoking woman has higher hazard of .45 (= .45 + 0+0). Compared to a smoking man, a non-smoking man has a hazard of unemployment of −.77, not very different from moderate or heavy-smoking men, suggesting that the smoking penalty in the labour market is effectively counteracted by the male privilege in smoking.

However, when restricted to the non-farming population, the moderating effect of gender weakens for smoking. In model 3 in Table 6, there is no significant interaction between moderate smoking and gender. This result suggests that perhaps gender norms regarding moderate smoking have diminished among non-farming populations, or at least, no one gender is singled out by being penalised or rewarded in the labour market. At the same time, gender does still interact with heavy smoking at a marginally significant alpha level of 0.056. The hazard of unemployment for a heavy-smoking male is −.72 (= .25−.73−.24), while for a heavy-smoking female it is .25 (.25 + 0+0).

Discussion

This study sets out to ask how substance use affects subsequent employment stability in post-Reform China between 1991 and 2011. The two most commonly used licit substances, alcohol and tobacco, are widely consumed and circulated in Chinese society, but scholars have come to conflicting conclusions regarding their impact on employment stability. On the one hand, some argue that consuming substances can potentially interfere with decision making, forcing individuals to choose immediate gratification and short-term reward over continuing investment in career and productivity (Agrawal et al., 2011; Sher et al., 2010). Substance use is also often an integrative component of certain

non-conforming subcultures, and most of these subcultures are not compatible with mainstream work ethics (Young, 1971).

However, there is emerging evidence that using substances may improve employment stability because substance use often plays a central role in socialising. Sharing drinks with others can provide social networking opportunities, exchanging cigarettes builds symbolic solidarity with formerly distant others, and abiding by drinking and smoking rituals can strengthen existing social and symbolic hierarchies, proffering the benefits thereof (Collins, 2014; Dikötter, Laamann, & Xun, 2002). Many studies have shown that drinkers and smokers tend to have larger social networks than abstinent people (Lye & Hirschberg, 2010; Peters & Stringham, 2006; Srivastava, 2013). Because social capital and networks are extremely important for job searching and employment stability, substance use may improve employment stability. In contemporary China, exchanging expensive alcoholic and tobacco products as gifts can also act as a less explicit form of bribery between hierarchical superiors and subordinates, an ice breaker between strangers, and a desirable form of showing hospitality between kin (Rich & Xiao, 2011).

In this study, we have demonstrated through a series of survival analyses that moderate alcohol drinking, even after controlling for the time-lagged drinking records in the previous wave, reduces the risk of unemployment. The protective effect of moderate drinking works for both men and women alike, but it bestows greater protection for non-farming men. In the non-farming population, moderate-drinking men are even less likely to become unemployed than moderate-drinking women and non-drinking men.

Of course, it is essential to distinguish between moderate substance use and heavy substance use. While substances may reward the users with more opportunities to accumulate social capital, there may come a point at which the costs surpass the benefits. In the current study, while moderate drinking reduces the subsequent likelihood of unemployment, such a suppressive effect does not exist for heavy drinking. The beneficial impact of moderate drinking on employment stability in the next wave does not hold true for heavy drinkers. Drinking, in other words, has distinctively different effects on employment based on gender as well as dosage.

Smoking also exhibits a strong gender-specific pattern for employment stability. Scholars have intensively argued for the importance of gender in determining the extent to which a society normalises substance use behaviour. Although smoking is sometimes considered a symbol of greater independence under the influence of feminism, contemporary China has witnessed a return to traditional gender definitions after the socialist mandate of equality was dramatically transformed in every sphere (Cao & Hu, 2007; Zheng, 2005). Unlike female drinking, smoking among women is perceived more negatively in Chinese society today. This study showed that while current smoking is associated with subsequent unemployment hazards, there is a strong gender-smoking interaction. Women are penalised particularly harshly for heavy smoking, which elevates unemployment risk for women in all populations and in the non-farming population.

We suspect that the culture which is rewarding men's substance use in China's workforce is a result of the country's rapid transition that disrupted a consistent and formal evaluation system. In this new context, informal factors have become the more reliable signal of a desirable employee; superiors end up relying on and promoting those with whom they have socialised (and with whom they have perhaps shared drinks and/or cigarettes) (Bian, 1997; Wu, 2002). As substance use prevails as an important but implicit

evaluation consideration, men and women also become differentially impacted by their substance use behaviours. We recommend that policy makers and employers interested in the three-way intersections between gender, social mobility, and health develop strategies to reduce workplace gender biases regarding substance use and methods to evaluate promotion and retention more strictly on the basis of merits and credentials.

Limitations

Despite its merits, this study has a few limitations from which studies of this nature inevitably suffer. First, missing data have limited the extent to which we can generalise this study's findings to a broader population. Although we have used multiple imputation for missing data replacement under the assumption of 'missing at random', this is still a post-hoc remedy that may leave a certain margin of error. Second, this study did not partition the sample into more occupational groups and compare the effects of substance use on unemployment between all occupations. While we have compared the non-farming population and all populations, others may be interested in comparing other groups such as white and blue-collar workers.

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