Working Conditions, Lifestyles and Health

Elena Cottini Paolo Ghinetti

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Abstract

The aim of this paper is to investigate whether employee health is affected by the environment in which the individual works - in terms of both physical and psychosocial working conditions - and by his or her lifestyle. Health measures are computed from Danish data, and refer to both self assessed general health and two more objective health measures: mental health specific to work-related problems, and physical health. Preliminary results show that both bad working conditions and bad lifestyles reduce health, especially in its self-assessed component. About mental and physical health, once we account for their (positive) correlation we find heavy drinking has a positive impact on health at work.

Keywords: working conditions, lifestyle, health
JEL Classification:I1 C0

1 Introduction

In the last years, workers' health has become a priority in the policy agenda both at the EU and at the national levels. Improving health status is recognised as a major concern not only for individuals, but also for the development of the economic system. Healthy individuals live better, are more employable and, to the extent to which health is considered a human capital input, they produce positive externalities for the society as a whole. Overall, health's levels are characterised by a lot of heterogeneity, both across individuals, firms and within individuals over time.

Among the determinants of the health status, a growing attention is addressed to the role played by specific behaviours, such as 'good' lifestyle practices, and the characteristics of work-related health. About the latter, the period of rapid transformation and changes in the organisation of the production system has modified the work environment, with an increase in the share of atypical jobs and a reduction of hierarchical levels, as well as a growth of service oriented work. In many cases, the content of jobs has modified, with a shift from occupations with manual and 'hard' contents to others with a prevalence of soft and intellectual tasks. As a result, the traditional sources of adverse physical working conditions are declining, whereas the share of workers subject to psychological job stressors is increasing (Cappelli et al., 1997). A greater importance of "immaterial" job attributes such as stress and work overload relative to strenuous physical working conditions may have non neutral effects on health at work, with a worsening in its mental versus its physical component. Indeed, there is evidence that mental health has worsened especially among the low-skilled and those subject to stressful working conditions (OECD, 2008; Cottini and Lucifora, 2010; Cottini 2011). From a poilicy perspective, the EU commission has recognised the importance of several job quality dimensions and decent working conditions for the implementation of the European Employment Strategy (EU 2001).

In particular, through the Framework Directive 89/391/EEC and its individual directives, the European Union legislation provides the framework for workers in Europe to enjoy high levels of health and safety. Within this framework, the Community Strategy clearly identify that one of the main challenges facing employers today is the increasing importance of 'emerging' risks, such as stressful working conditions, and much of the effort of the Europen Agency for Safety and Health at Work is recently addressed to a better understanding of how health and safety risks are actually managed at the workplace level. For example, this has been done with the European Survey of Enterprises on New and Emerging Risks (ESENER), where the European Community has explicitly recognided the importance of the growing – and relatively new – area of psychosocial risks. These risks, which are linked to the way work is designed, organised and managed, as well as to the economic and social context of work, result in an increased level of stress and can lead to serious deterioration of mental and physical health.

The aim of this paper is to use individual and workplace data for Denmark to study whether employee health is affected by the environment in which the individual works and by his or her lifestyle. Whilst the relationship between lifestyle indicators and self-assessed general health - where the former plays an input role in the production of the latter - has been recently investigated (e.g. Contoyannis and Jones, 2004), the role that working conditions could play in the same context has not received the same attention yet. However, adverse environmental job aspects and, more in general, organisational factors are important determinants of perceived health. And it is of course especially important when either physical and mental work-related health are considered.

From a policy perspective Denmark is a very interesting country: On the one hand, in recent years it has introduced and implemented many wokplace policies targeted to improve health and safety - especially in its mental component (see Section 4). This is reflected, for example, in the high and above-the-EU-average percentage of establisments surveyed by the ESENER that declared the existence of procedures to combat work related stress and, more in general, psycosocial factors (see the REPORT, ???). On the other hand, in Denmark the percentage of establishments' managers and employees representatives saying that psychosocial risks and work-related stress are of major concern for health and safety at work is below the EU average. In general, the Survey indicates that at the cross country level there is a negative correlation between the percentage of establishments covered by procedures that deal with work-related stress factors and concerns for the same factors among establishments. Of course, this negative correlation may be spurious and affected by reverse causaltity and simultaneity biases. In this context, it is then important to shed more light on the extent to which work-related factors and individual behaviours can affect psysical and mental health. In turn, this would allow a more accurate analysis of the impact of policy interventions on the well-being of individuals.

The data derive from two different sources that are matched through individual identifiers. First is the "Danish Work Environment Cohort Study (DWECS)" which consists in the 2005 and 2000 waves of a panel data collected every 5 years by the Institute for Occupational Health (AMI). Second is Statistics Denmark Integrated Labour Market Database (IDA), which comprises the Danish population of individual and establishment administrative records together with background characteristics, such as annual earnings and demographics.

Borg and Kristensen (2000) use the same Survey, but we differentiate from them by estimating more rich and flexible empirical specifications, which use an economic framework and take advantage of the data and the richness of the information available at the individual level to model the potential endogeneity of lifestyle and working conditions in health equations, and to control for the simultaneous correlation existing between the unobservable determinants of mental and physical health. Preliminary results show that both bad working conditions and bad lifestyles reduce health, especially in its mental components, and that the unobservable determinants of the two health spheres are positively correlated.

The remainder of the paper is organised as follows. In Section 2 we review the relevant literature. Section 3 describes the economic framework, while the data and the Danish institutional context are overviewed in Section 3. In Section 4 we put forward the empirical specification and estimation results for the effect of work environment and lifestyles on one individual's health. Section 5 briefly summarizes and presents some concluding remarks.

2 Related literature

Contoyannis and Jones (2004) estimate the structural parameters of a health production function, together with the reduced form parameters for the lifestyle equations using panel data from the Health and Lifestyle Survey (HALS) conducted in the United Kingdom in 1984 and 1991. In particular they use Maximum Simulated Likelihood (MSL) for a multivariate probit (MVP) model with discrete indicators of lifestyle choices and self-assessed health (SAH). They find evidence of a reduction of the influence of socioeconomic characteristics on health once lifestyle are included in the model. In particular they find that sleeping well, exercising, and not smoking in 1984 have dramatic positive effects on the probability of reporting excellent or good SAH in 1991, and that these effects are much larger having accounted for endogeneity of lifestyles.

Kenkel (1995) estimates health production functions using several output measures, in order to assess the impact of lifestyles on adult health. He models current health as depending on previous health and on the depreciation rate, as well as on lifestyle and schooling. However, the empirical specifications were not derived from an explicit structural model. Other have focused on how single behaviours such as smoking are determined with health (see, e.g., Blaylock and Blisard, 1992 and Mully and Portney, 1990) or have examined interactions between lifestyle choices without the basis of a structural model (see, e.g., Hu et al., 1995).

On the work-related variables side, Robone et al. (2008) use the BHPS panel to analyse whether health is hampered by adverse working and contractual conditions. They distinguish between self-assessed health and psychological well-being. The working conditions variables are standard controls such as shift work, overtime, unions, supervision, job satisfaction, which are only proxies of the more accurate conceptual categories developed by the literature. They find that being unsatisfied with working hours is negatively related with health, especially in the case of part-time jobs. Having low expectations about future career advancements reduces the health of temporary workers.

Datta Gupta and Kristensen (2008), use ECHP panel data for Denmark, France and Spain to detect a causal relationship between work environment indicators and general health and work related health. However, their proxy for working aspects is a single variable for individual satisfaction with the work environment. Moreover, the authors are not able to distinguish between mental and physical health. In this context, a separate analysis of the determinants of physical and mental health seems particularly relevant, especially for policy purposes. Using the 1990 and 1995 waves from the DWECS data on Denmark Borg and Kristensen (2000) analyse the health effects of both lifestyle and work environment. Their focus is on self-assessed general health only, and their analysis is rather descriptive and limited in scope.

In light of the existing literature and the highlighted issues, our analysis of the relationship between lifestyle, working conditions and health is based on a more integrated approach. First, we acknowledge the multi-dimensional nature of working conditions by including a rich set of work characteristics in estimated health equations. Second, we run separate analysis for physical and mental health. Third, we take into account that the two health spheres may not be independent, such that there might be (unobserved) factors driving simultaneously the two processes. In the next section we will our reference theory, based on the model developed by Contoyannis and Jones (2004), in which health is considered a consumption good produced in our case using, among others, lifestyle and working conditions as inputs. This will allow us to derive a set of theoretical predictions to be tested with the data.

3 Economic framework

In economic terms, individual's health is typically considered as a multifacets good having both consumption and capital components, which can be partially produced over time by means of individual choices and environmental determinants. In particular health is affected by both work-related and non-work related activities. Among the former, an important role is played by job characteristics and the environment in which the work is performed (riskiness, exposure to adverse working conditions). For the latter, the bundle of all family and leisure activities is cospicuous, with an obvious focus on lifestyle practices and risky behaviours (such as smoking, for example). Moreover, health is a multifacet good in the sense that it can be ideally analysed over several dimensions: not overall health and, for example, health at work only: but also distinguishing between its mental and physical components.

Based on these assumptions, a simple economic model may be useful to summarise the main implications for the empirical analysis. Our strategy closely follows Contoyannis and Jones (2004), whose model for lifestyle and health choices can be easily extended to our case, where health is also a function of working conditions. For simplicity, we consider health as a consumption good which directly affects current utility. The set up can be easily extended to the infinite horizon case, where health is also an investment good as in Grossman (1972), see Balia and Jones (2008) The implications for the empirical analysis are similar.

The individual's problem may be sketched as follows:

$$\max_{LS,WC,H} U(LS, WC, H; X_U, \varepsilon_u)$$

U is overall utility or satisfaction, and depends on non-work utility (leisure, family time) and on work-related utility. The latter depends on job attributes like working conditions WC, which may enter directly the utility function as they are typically not adequately compensated (e.g.: bad working conditions are not fully compensated by higher wages as in Rosen, 1974). At least to some extent, jobs are choosen by individuals, and, therefore, also their bundle of characteristics (including working characteristics). Utility is also function of a bundle of costly activities under the label "lifestyle" LS. X_U and ε_u are a vector of individual observable and unobservable (respectively) characteristics affecting preferences.

We also assume that health (H) is produced with the following technology:

$$H = H(LS, WC, X_H, \varepsilon_H) \tag{1}$$

where X_U and ε_u are observable and unobservable factors affecting health. H can be thought either as a scalar (such as the overall general health of the individual), or as a vector of different and interconnected health components: physical and mental health; health at work and health at home and so on.

Combining the above equations with standard money budget constraint, the solution of the model is rather straightforward and allows to define a set of demand functions for optimal levels of LS, WC and H [1]:

$$\begin{aligned} LS^* &= LS(X, \varepsilon) && (2) \\ WC^* &= WC(X, \varepsilon) && (3) \\ H^* &= H(X, \varepsilon) && (4) \end{aligned}$$

where X combines all the exogenous variables of the model (X_U, X_H, and all the parameters in the budget constraint) and ε is the union of the - partly overlapping - determinants of $\varepsilon_u$and ε_H. These demand functions are reduced forms and do not allow to evaluate the impact of lifestyles and working conditions on health indicators, which is the core of our analysis.

The empirical models then combines (1), (2) and (3), where the former is the structural equation for health and the other two are reduced forms for lifestyle and

[1] See Contoyannis and Jones (2004) for details about the formal derivation.

health. The estimation is of course complicated by the fact that the unoservables ε driving the set of lifestyle and working conditions choices is common and that ε is correlated with ε_h.

Theoretically, a long standing psychological and epidemiological literature has advanced several explanations for why we expect working conditions and behavioral risk factors to be empirically correlated. In general, the idea is that individuals may respond to environmental challenges such as strenuous working conditions by modifying their behaviour (Bhui 2002). Accordingly, employees might show a tendency to compensate strenuous work such as either heavy physical or psychosocial demands with unhealthy behaviors (Prättälä, 1998). For example, these studies suggest that physically and psychosocially strenuous working conditions and other work-related factors extend their effects outside the workplace and influence the behaviors potentially via coping strategies related to drinking or smoking (Greenberg and Grunberg 1995). As smoking is assumed to ease stress, smokers may smoke most when exposed to strenuous work in order to calm themselves down or to alleviate the perceived stress (Perkins & Grobe 1992, Parrott 1999). Similar considerations apply to other lifestyles such as physical activity, eating behaviours and obesity. In other words, both physical and psychosocial working conditions as well as other work-related factors may correlate with behaviors occurring at work and home subject to the nature of work-related exposure in question.

The main goal of the empirical strategy in Section 4 is to shed more lights over these issues by, first, estimating the errors' conditional correlations matrix; and, second, accounting for this correlation to recover the causal effect of lifestyle and working conditions on various indicators of individual's health.

Before moving to the data section, a couple of considerations. First, in the above discussion we do not consider the effect of the time dimension on actual choices. This is because the model is kept as simple as possible to focus on main issues. However, for example in the production of health, the time dimension is indeed important but can be easily accommodated in a simple way by interpreting H as an indicator of current and future health. In this way, we can think at health as dependent also on past lifestyle decisions and working conditions (compare with Balia and Jones, 2008, who specify a dynamic model for the evolution of health). In principle, this may affect the specification of the empirical model (contemporaneous versus lagged effects). We will discuss more on that when describing our estimation methodology. Second, the mapping between the theoretical and the empirical model is of course not perfect. On the one hand, while we have focused on interior solutions the data reveals the prevalence of corner solutions for lifestyles and working conditions. On the other hand, while we have assumed continuous variables for H, LS and WC, the data often provide instead binary or discrete indicators, such as ordered measures of self-assessed health or dummies for the presence/absence of a given characteristics (e.g. drinking or not).

4 Data and variables

From a policy perspective, Denmark is an interesting country. On the one hand, the European recommendations has been implemented by creating a Working Environment Authority which provides guidelines to improve working conditions, screens enterprises and uses a system of 'smiles' to evaluate and certificate health and safety at the workplace level[2] . On the other hand, from 2005 the requirements for recognition of an occupational disease also became less strict, in terms of medical evidence of a correlation between an exposure in the workplace and a disease. As a result, Denmark became one of the few countries in the world to include a mental disorders on the list of occupational diseases, by adding post traumatic stress to the list. As a result, both hazardous physical conditions and stress and mental problems can affect worker's compensation.

The data we use derive from two different sources that are matched through individual identifiers. First, a panel data collected every 5 years from 1990 to 2005 by the Institute for Occupational Health (AMI),"The Danish Work Environment Cohort Study (DWECS)". The 1990 panel consists of a random sample of people aged 18-59 years on 1st October 1990 drawn from the central population register that were interviewed again in 1995, 2000 and 2005 irrespective of participation in previous rounds. The questionnaire contains very detailed work environment information, such as exposure to physical agents (noise, radiation, vibration, etc.), chemical agents, biological agents, safety at the workplace, physical workload, mental strain, work organisation issues, social environment (participation and consultation, equal opportunities, violence at work, etc.), together with occupational, health outcomes (both health diagnosed by a doctor and self-rated health) and lifestyle information. For the purpose of the paper we focus only on 2000 and 2005 since the full set of lifestyle information is available only in these two waves.

[2] Improving the working environment is of high priority in Denmark and in december 2004 a smiley system was introduced. It aims to further improve conditions for workers at the workplace. Under the Danish system, facilities are awarded a smiley (coloured either green, yellow or red) that reflects the quality of the working conditions at the firm. A facility obtains a green smiley if it has an acknowledged Working Environment Certificate, and it automatically gets exempted from some of the control measure of the Danish Workin Environment Authority. More informations here: http://www.enhesa.com/en/service/docs/Flash_Aug05_en.pdf

Second we use Statistics Denmark Integrated Labour Market Database (IDA), which comprises the Danish population of individual and establishment administrative records together with background characteristics. Danish administrative registers record individual annual earnings as well as demographic and firm characteristics. As to individual characteristics, we control for gender (*female*), age dummies (*age24, age25_34, age35_44, age45_54,age55+*), married (*married*), if any child is present in the household (*child*) educational codes (*educ1-educ10*). The set of workplace attributes included in the estimations are dummies for firm's size (*fsize1-fsize4*), sectoral dummies (*sect1-sect9*) and occupational dummies (*blue-collar; white-collar; manager*). We further control for natural logarithm of individual income (*logwage*). Finally we also control for time dummies. This dataset has been widely used elsewhere including Mortensen (2003), Bingley and Westergård-Nielsen (2003) or Buhai et al. (2008). It should be noted that, even though IDA comprises the whole population of Danish firms and workers, when Matched to the representative survey DWECS that collects information on working conditions and lifestyle we end up with 3,000 observations.

Health is measured in three different ways. The first is an indicator of self-assessed health (SAH). Respondents were asked to rank they health status with respect to people of their own age. We have transformed the categorical indicator of SAH into a binary variable that takes value 1 if individual perceived health is excellent or good, and 0 if it is fair or poor. This is of course a rather rough measure of individuals' health and subject to many well-known conceptual problems. However, it represents the only available information in many data set and it is also the mostly used indicator in the literature (see Datta Gupta and Kristensen (2007) for a discussion about the limitations in the use of SAH).

Fortunately, the information contained in the data enables us to go beyond SAH and to analyse additional and more disaggregated health dimensions. The second indicator measures physical health (PH). This is constructed starting from questions on specific objective symptoms related to physical problems. Specifically the questions asks: "Have you felt pain in the last twelve months (for more than 30 days) in...? (i) the neck; (ii) the knees; (iii) the shoulder; (iv) the hand; (v) the low back?". For each of these symphtoms a dummy variable was created and the PH dummy indicates whether the individual experienced at least one of these symptoms or not. While the PH measure is based on the incidence of specific health limitations which individuals are more likely to recall and report truthfully, it is nonetheless also self-reported and a recent study shows, for example, that such self-reported "objective" measures can also contain response error; see, for example, Baker et al. (2001). Moreover, an objective health measure may only be weakly correlated with actual physical incapacity. A pragmatic approach is to assume that true health levels are spanned by our subjective and objective indicators, which are both important as they capture different dimensions of health.

Third, the definition of mental health problems focuses on four types of indicators which capture a series of emotional and mood-related problems. Unlike PH, these indicators are reported by the worker as being work-related. Accordingly, the information on mental health refers to what happens at work only, and we label this variable MH. In particular, we measure morbidity using a set of self-assessed responses to the following questions present in each wave of DWECS. "Does much of your working hours during the last month you felt..? (i) nervous, (ii) down and nothing could cheer you up, (iii) blue. Out of the above responses we specified a set of dummies that take value 1 if the worker answers affirmatively to at least one of the above questions and 0 if not. The MH variable is a dummy for at least one of the morbidity variables taking value 1.

We also notice that, while SAH is an encompassing measure of health, PH and MH- the latter specifically referred to the subfield of work-related activities - are the two main components of the former. This suggest that PH and MH should be modelled jointly in the empirical analysis.

For what concerns the working condition variables (WC), to facilitate comparison with other studies, we follow the literature and specify them as measures of several aspects of work environment that has been shown to be significant in describing working conditions at the firm[3]. Thus working conditions are characterized as physical and psychosocial conditions relating to the work environment (Cox, Griffiths and Rial-González 2000). About the latter, key items comprehend psychosocial strain, work arrangements, and work organizational factors, whereas physical work conditions refer to traditional physical work demands, i.e. worker expositions to harmful physical factors or agents hazard exposition such as noise and workload which, nevertheless, may be also linked with stress, or potentially cause stress (Cox, Griffiths and Rial-González 2000, Stock et al. 2005).

Psychosocial working conditions comprise job demands and job control, which reflects employees' opportunities to participate in decision making and develop skills the job requires (Muntaner et al. 2006a). The job demand-control model mostly used to study the effects of work stress on health outcomes has been developed by Karasek (1979). The model has its origins in the field of occupational health, although the concepts have been applied in other fields with different approaches to the associations between social context and behaviors (Muntaner and O'Campo

[3]See for example Borg and Kristensen (2000); Datta Gupta and Kristensen (2008); Bockermann and Illmakunnas (2008).

1993). Another more contemporary model , called the effort-reward imbalance model examines the effects of psychosocial working conditions on health outcomes and has been developed by Siegrist (1996).

With reference to psychosocial work conditions we construct four indicators that refer to employee roles, role conflicts in organization, and job insecurity. Particularly we define *plan* that takes value 1 if the worker always, often or sometimes has much influence on decisions concerning his/her work, zero otherwise; *repetitive* that takes value 1 if the worker responds that his/her work requires that he/she repeats the same task many times in an hour, zero otherwise; *nosupcoll* takes value 1 if the worker never or rarely receives help from his/her colleagues, zero otherwise. Finally, we construct the variable *Jobsec*, that accounts for the worker's perception about her job (in)security. This takes value 1 if the worker mentions to worry about at least one of the following situations: (i) Losing job?; (ii) Transferred against will?; (iii) Made redundant because of new technology?, (iv) Difficult to find a new job?[4]. Moreover, we define a set of three binary variables that provide a subjective evaluation of harms related to hazardous physical working conditions experienced at the workplace. Each of these variables is constructed from a six-point scale, in which the lowest category corresponds to the perception by a worker that a feature of working conditions is 'very much an adverse factor at the workplace: we recode them as 1 when the worker is 'ever exposed'(scale 1-5) to this particular harm during her working time, and 0 if he/she is never exposed. Namely: *Phyharm* takes value 1 if the worker was exposed to: (i) noise so loud that he/she has to raise his/her voice to talk with other people; or (ii) vibrations from hand tools; or (iii) vibrations from strike his/her whole body; or (iv) bad lighting; 0 otherwise; *Termharm* takes value 1 if at the time of the interview the worker was exposed to: (i) temperature fluctuations; or (ii) coldness (work outdoor or in cold rooms); (iii)or draft, 0 otherwise; *Chemharm* takes value 1, if at the time of the interview the worker was exposed to: (i) skin contact with

[4]In the occupational health literature two theoretical models predict elevated health risks in workers exposed to adverse working conditions: the demand-control model (Karasek et al.1988 and Karasek and Theorell 1990) and the effort–reward imbalance model (Siegrist et al.1990 and Siegrist 1996). The first model predicts as the worst combination for one individual's health and well being the joint interaction of high job demand and low job control. Psychological demands create stress, if the worker cannot control this stress because of a low level of control, the accumulation of this unreleased stress has a negative impact on the workers' health. Instead, the second model emphasizes the non reciprocity of social exchange at the firm. The effort–reward imbalance model considers the categories of effort, such as the demands of the job and the motivation of workers in challenging situations, and reward at work in terms of salary, esteem, job stability and available career opportunities. It

predicts that a negative impact on health occurs when there is an imbalance between these two dimensions.

refrigerants or lubricants; or (ii) solvent vapor; (iii) or passive smoke; 0 otherwise.

Also for the definition of lifestyle variables we use an approach that is standard in the literature (as in Borg and Kristensen, 2000; Contoyannis and Jones, 2004; Balia and Jones, 2008). Thus, we specify variables that indicate whether the individual is a non-smoker, a heavy consumer of alcohol, eats fruit and vegetable, is obese, and did any physical activity in the last week. Smoking is defined in terms of whether the individual is a current smokers or not (*smoke*). Drinking is measured by a binary variable (*drink*) which indicates heavy alcohol consumption in the week before the interview The indicator for obesity (*obesity*) is calculated using the body mass index (BMI)[5].Since sporting activities are known to be healthy and to help people suffering stress or depression, we also use an indicator of physical activity undertaken in the last week (*physac)*. Finally, the variable related to the consumption of fruit and vegetables (*fruveg*) takes value 1 if the individual eats them at least twice a day.

The selection of exogenous characteristics is based on existing studies in the field and data availability. A description of the sample is presented in Table 1. We observe that the self assessed level of health is good for almost 80% of the sample. About physical health, we observe that 64% of the sample report physical health problems while 43 % mental distress. With respect to lifestyle, only 15% of the sample is obese, 18% heavy drinker, 31% currently smoking, 40% is engaged in physical activity at least once a week and 61% consumes fruit and vegetable at least twice a day. Finally adverse working conditions are experienced by one third of the sample (on average).

5 Empirical strategy

In the spirit of the theoretical considerations outlined in Section 3, we specify a recursive model for lifestyles, working conditions and health, with structural equations for health indicators and reduced forms for lifestyles and working conditions. For simplicity we consider a linear specification for these processes. The potential endogeneity of LS and WC in health equations is introduced allowing for arbitrary correlation between the errors of the equations in the model. The main complication is that we do not observe true health levels but, instead, binary indicators based on them.

The empirical model is specified as follows:

[5]The definition of the drinking and obesity variables is different across gender. Drink takes value 1 with more than 2 drinks a day for men, and with more than 1 drink in the case of women.

About obesity we follow Contoyannis et al (2004) and construct and indicator that takes value 1 if the BMI is greater than 30 for men and greater than 28.6 for women.

$$
\begin{aligned}
H_i &= I(\alpha WC_i + \delta LS_i + \beta X_{Hi} + \varepsilon_{Hi} > 0) \\
LS_i &= I(\gamma X_i + \varepsilon_{L\mathrm{Si}} > 0) \\
WC_i &= I(\theta X_i + \varepsilon_{W\mathrm{Ci}} > 0)
\end{aligned}
$$

where $I(\#)$ is an indicator function for the argument being true, H is alternatively a scalar dummy for SAH or a vector for PH and MH. For LS we have five equations for obesity, physical activity, eating fruit and vegetables, drinking and smoking. WC includes three equations for chemical, thermical and chemical harm, as well as four additional equations for planning activities, repetitive work, no support from collegues and job insecurity. The system for SAH has than thirteen simultaneous equations freely correlated through unobservables; The system for work-related mental and physical health has fourteen equations. If endogeneity issues were not considered, the model for self-assessed health could be estimated with a simple univariate probability model like probit, while that of mental and physical health with a bivariate probit with correlated errors. They are provided and used as a benchmark to be compared with the full models. Few remarks are in order before moving to the main results.

About the model's specification, we could take the advantage of the longitudinal nature of our data to add a dynamic dimension to the model: for example including lagged values of lifestyles and working conditions in the health equations (Contoyannis and Jones, 2004) or adding lagged health as a predictor of current health to capture its persistence (see Datta Gupta and Kristensen, 2008). But in this case we would loose one of the two waves, which is particularly problematic given that our full sample only counts about 2,000 observations and that the estimation of our structural model is quite demanding in terms of data requirements. For this reason, we do not include lags. However, the recursive nature of the model is consistent with the logic of the theory, where LS and WC may precede H.

To solve for the endogeneity of lifestyles and working conditions, fixed effects estimators for panel data may be used. However, in the case of binary dependent variables and binary endogenous regressors, this class of models suffers for severe limitations: in the probit case this estimator is in general not consistent; in the logit case, the information used to estimate the parameters comes from those individual who change health status across periods. But since in general the persistence in health status is high - and our sample makes no exception - the estimates would be rather imprecise. Accordingly, for the estimates we do not take the advantage of the longitudinal dimension of the data and consider our sample as a pooled cross section.

The complication that our model is non linear and with binary dependent variables prevents the use of simple 2SLS methods to solve for endogeneity. We then assume normality of the error terms in the health, lifestyle and working conditions equations and specify the model as a multivariate probit. Estimates are obtained with simulated maximum likelihood using the GHK alghoritm (Cappellari and Jenkins, 2003). More precisely, the model for SAH has one structural equation for health and eight reduced forms for LS and WC, jointly distributed as a nineth-variate normal distribution. The correlated errors have a covariance matrix with thirthysix elements, that are estimated together with the coefficients. The joint modelling of PH and MH has one equation more, so it is a tenth-variate normal distribution with correlated errors. Significance of the correlation coefficients between errors in the LS or WC and H equations indicates a joint determination of the corresponding variables and also account for endogeneity problems. If the errors are not correlated, the estimation of the multivariate probit is equivalent to running separate univarite probits.

In general, the identification of models with endogenous regressors is based on exclusion restrictions. However, in the case of a recursive multivariate probit, given the high non linearity of the model, the functional form is sufficient for identification (see Wilde, 2000). As usual, the main problem using observational data is to figure out what variables can be excluded from X_H and included in X[6]. In a preliminary stage, we experimented with the approach followed by Contoyannis and Jones (2004), who use one period lags of the exogenous variables X_H as exclusion restrictions for lifestyle indicators. However, using this strategy a single cross section can be used for the estimates. Maybe because the sample is small as compared to the number of parameters, we encountered several problems to achieve convergence to a global maximum in the likelihood maximisation. For this reason, at this stage we follow the Wilde's (2000) approach and estimate a multivariate probit model where each equation has the same set of regressors. In general, we notice that here identification issues may not play a crucial role: in other papers where health and lifestyle equations are estimated using a similar approach, results are not very sensitive to changes in exclusion restrictions (Balia and Jones, 2008).

[6]In particular, we have no access to the family background variables used, for example, by Balia and Jones (2008) to identify lifestyle indicators.

6 Results

6.1 Self-Assessed Health (SAH)

As discussed above, we comment on two set of estimates: one for a simple probit for SAH where lifestyles and working conditions are considered exogenous, and another one for the full recursive system estimated by multivariate probit. We start by presenting in Table 2 the matrix of correlation coefficients of the full recursive model, which is useful to evaluate the extent to which structural health equations as well as reduced forms for lifestyle and working conditions are jointly determined.

The results indicate some clear conditional correlation patterns across equations. First, unobservable determinants of SAH are negativly correlated especially with drinking and smoking, among lifestyles; and with the exposure to chemical and thermical agents among working conditions. According to our estimation strategy, these variables are therefore endogenous in the health equation. By converse, the statistical association between error terms of SAH other working conditions and lifestyle equations is rather weak.

Second, there is also substantial correlation between the errors of the reduced forms: in particular, and unsurprisingly, this is true especially within the groups of both physical and psychosocial working condition variables. We also find that the two working conditions spheres - physical and psychosocial - are correlated each other, with the partial and reasonable exception of not having support from the colleagues (*nosupcol*). Among the lifestyles, there is correlation especially between drinking, smoking and the other lifestyle practices. On the contrary, physical activity is statistically associated only with obesity. Across groups, there are some interesting differences between physical and psychosocial working conditions: for example the former are correlated with obesity and drinking, the latter with smoking. Both have a positive statistical association with eating fruit and vegetables. Overall, these results suggest that, in general, both lifestyles and working conditions should be included both in the analysis of health determinants.

This rich structure of correlation patterns suggest that a simple probit is not fully adequate to analyse the causal links between health, lifestyle and working conditions. For comparative purposes, results from a univariate probit for SAH are presented in column 1 of Table 3. Column 2 displays the estimates of SAH obtained from the multivariate model (full results including coefficients for the reduced forms are in the appendix). The comparison of the two columns offer interesting insights. First, bad lifestyles and adverse working conditions have in general a negative association with self assessed health levels. Second, many of the significant effects obtained with the simple probit are not causal, as they disappear when unobservble heterogeneity is accounted for: this happens especially to the coefficients for lifestyles and, in particular, to smoking, eating fruit and vegetables, and physical activity. The negative effect of obesity remains positive but to a smaller extent. About working conditions, only the variable capturing no support from the colleagues become insignificant, and all the other coefficients increases in absolute value. Our results are qualitatively similar to those by Contoyannis and Jones (2004). They have a slightly different set of lifestyles, but still find a complex correlation structure between errors of SAH and LS equations and that obesity and physical activity are the only variables who are significant when endogeneity is accounted for. Using the 1990 and 1995 waves of Danish data also used by us, Borg and Kristiensen (2000) estimate a logit model and detect a positive statistical association between a worsening in SAH between 1990 and 1995, and factors like smoking and obesity. Also adverse working conditions of the kind we consider appeared positively correlated with a decrease in perceived health. Using a random effect ordered probit, Datta Gupta and Kristensen (2008) similarly find a positive effect of satisfaction for the work environment on SAH. Our results suggest that these effects may be partly driven by unobservable heterogeity.

6.2 Physical and Work-Related Mental Health

The SAH variable has the disadvantage that, on the one hand, it is a subjective measure which may be a poor proxy for true health; on the other hand, that it refers to the overall health of the individual. It may be argued that the effect that lifestyles and working conditions differ across different components of health. For this reason, a separate treatment of physical and mental health, the latter limited to work-related issues, appears particularly important. Table 4 is the analogue of Table 2 but for a model where PH and MH are jointly determined together with reduced forms for LS and WC.

As expected, the error terms of the two health components display a substantial positive correlation, while the correlation patterns between lifestyles, working conditions and the two health spheres are rather different: for example drinking is positively correlated with mental health at work, while it is negatively related with physical health. In general, our measures of lifestyles and working conditions are negatively correlated with our two health measures, but only in few cases this correlation is significant. Table 5 reports the main findings from a simple bivariate probit model for MH and PH (thus treating all the regressors as exogenous) in column 1; and coefficients' estimates of the multivariate probit in column 2.

We first comment on results from the bivariate probit. We notice that the effect of bad lifestyles (especially obesity and drinking) is concentrated on the mental component of health, with the exception of smoking, which negatively affect especially physical health. About adverse physical working conditions, they are negatively related with both work-related mental and, especially, physical health, with the exception of chemical harm, which is insignificant. Among the proxies for psychosocial working conditions, being insecure about the job has an effect on both mental and physical health, while receiving few support from the colleagues has a negative impact especially on the mental well-being. By converse, the repetitive nature of the work is associated with lower physical health.

However, when we control for endogeneity and simultaneity issues by estimating the multivariate probit model, many of these effects disappear, suggesting again that they are not genuine but due to unobservable systematic preferences or characteristics. This is the case, for example, of smoking and both adverse thermical and chemical conditions at work. By contrary, the negative effect of bad lifestyles such as drinking survive in the equation for work-related mental health, which is also negatively affected by the perception of job insecurity. About physical health, only psychosocial working conditions seem to play some role, while no causal effects of lifestyles are detectable.

7 Summary and Conclusion

The aim of this paper was to investigate whether employees' health is affected by the work environment and by her lifestyle. Whilst the relationship between lifestyle indicators and self-assessed general health - where the former plays an input role in the production of the latter - has been recently investigated (e.g. Contoyannis and Jones, 2004), the role that working conditions could play in this context has not received the same attention yet. However, adverse environmental job aspects and, more in general, organisational factors are important determinants of perceived health. In particular we believe that it is important to distinguish between physical and mental health dimensions.

The data we use refer to 2000 and 2005 and are derived from two different sources matched through individual identifiers. First is the DWECS, a panel of Danish employees that provides very detailed information on lifestyles, working conditions and different measures of health statuses; second are administrative data (IDA) which comprehend the Danish population of individual and establishments administrative records together with demographic characteristics and annual earnings.

The main econometric issue that emerges in our analysis is the endogeneity of the lifestyle and working conditions measures in the health equation. To this purpose we use a multivariate probit that uses the GHK algorithm to estimate a recursive system of equations for health, lifestyle and working conditions. Preliminary results show that both bad working conditions and bad lifestyles reduce health, especially in its mental components, and that the unobservable determinants of the two health spheres are positively correlated.

Summing up, once we consider mental and physical health separately, we observe substantially different gradient relative to variables capturing differences in lifestyles and working conditions. Overall, the causal effect of lifestyles and working conditions it is in general negative, but not as strong as one may expect, and it is concentrated on the subjective evaluation of health (Self-assessed health). When we consider the more objective measures of mental work-related and physical health many effects vanishes (with the exception of drinking and job insecurity) and, if any, they are concentrated on mental health. From a policy perspective, the result that drinking has a negative impact on mental health is a novel and interesting result, especially for Denmark. Indeed, a report commissioned by the European Union concludes that: 'however much the continent associates alcohol with Ireland, much of the EU has a serious drinking problem – with DENMARK being something of a standout', while, for example, there is now less concern for the consequences of smoking, which is decreasing [7].

This suggest that the interventions aimed at promoting good lifestyle practices and better working conditions should be particularly targeted to specific behaviours (drinking) or conditions (job security), and that they may be particularly effective on those health component (the mental ones) that are increasing in their importance in modern societies and workplaces.

[7] For alchool, see: http://www.boston.com/news/world/europe/articles/2006/07/06/report_offers_sobering_view_o
For smoking, visit: http://www.ncbi.nlm.nih.gov/pubmed/7792970

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Table 1: Summary statistics

	description	mean	sd
SAH	self assesed health	0.78	0.41
MH	mental health if	0.43	0.50
PH	physical health	0.64	0.48
female	1 if female	0.36	0.48
ageless25	1 if worker is less than 24 years of age	0.125	0.331
age2534	1 if worker is between 25 and 34 years of age	0.233	0.423
age3544	1 if worker is between 35 and 44 years of ag	0.287	0.42
age4554	1 if worker is between 45 and 54 years of age	0.223	0.41
age54plus	1 if worker is more than 54	0.129	0.33
educ1	1 if 7-klasse	0.05	0.219
educ2	1 if 8-klasse	.016	.219
educ3	1 if 9-klasse	0.058	0.127
educ4	1 if 10 klasse	0.113	0.317
educ5	1 if gymnasium	0.101	0.302
educ6	1 if higher commercial exam.	0.441	0.496
educ7	1 if higher technical exam.	0.032	0.176
educ8	1 if vocational education	0.046	0.218
educ9	1 if boarding school	0.073	0.261
educ10	1 if BA or more	0.067	0.246
married	1 if married	0.61	0.49
child	1 if has children	0.56	0.50
sect1	1 for manufactoring	0.28	0.45
sect2	1 for construction and electricity	0.05	0.069
sect3	1 for wholesale	0.22	0.42
sect4	1 for Hotels and Restaurant	0.034	0.18
sect5	1 for Transport	9	0.29
sect6	1 for Financial	0.088	0.28
sect7	1 for PA	0.056	0.23
sect8	1 for Education	0.11	0.32
dsize1	1 if firm size 1-5	0.197	0.39
dsize2	1 if firmsize 6-50	0.314	0.46
dsize3	1 if firmsize 50-200	0.129	0.33
dsize4	1 if firmsize 200+	0.234	0.42
logwage	natural logarithm of real monthly wages	5.21	0.34
manager	1 if manager	0.03	0.18
white	1 if white collar	0.28	0.45
blue	1 if blue collar	0.69	0.37
obesity	1 if obese	0.15	0.36
physac	1 if did physical exercise in the last week	0.40	0.49
fruveg	1 if consumes fruit and vegetables twice a day	0.61	0.49
drink	1 if heavy drinker	0.18	0.39
smoke	1 if currently smokes	0.31	0.46
phy-harm	1 if harmful physical conditions at work	0.39	0.49
therm-harm	1 if harmful thermical conditions at work	0.35	0.48
chem-harm	1 if harmful chemical conditions at work	0.23	0.42
plan	1 if can plan his/her work	0.223	0.416
nosupcoll	1 if no cupport from colleagues	0.43	0.49
repwo	1 if work is repetitive	0.57	0.49
nojobsec	1 if no job security	0.35	0.47

Table 2- Correlation coefficients for the multivariate probit – SAH model

corr obesity-SAH	-0.0794	-0.82
corr physact-SAH	0.0811	1.13
corr fruveg-SAH	-0.0038	-0.05
corr drink-SAH	-0.0224	-0.25
corr smoke-SAH	-0.0719	-0.84
corr phy_harm-SAH	0.0196	0.28
corr therm_harm-SAH	0.1563	2.02
corr chem_harm-SAH	-0.1815	-2.36
corr repwo-SAH	0.0658	0.99
corr plan_SAH	0.0673	0.78
corr nosupcoll-SAH	-0.0289	-0.4
corr nojobsec-SAH	0.0798	1.16
corr physact-obesity	-0.0912	-2.48
corr fruveg-obesity	-0.0015	-0.04
corr drink-obesity	-0.0370	-0.81
corr smoke-obesity	-0.0580	-1.55
corr phy_harm-obesity	0.0920	2.61
corr therm_harm-obesity	0.0496	1.38
corr chem_harm-obesity	0.1860	5.01
corr repwo-obesity	-0.0414	-1.13
corr plan-obesity	0.0286	0.63
corr nosupcoll-obesity	-0.0001	0.00
corr nojobsec-obesity	-0.0393	-1.1
corr fruveg-physact	-0.0399	-1.24
corr drink-physact	-0.0097	-0.24
corr smoke-physact	-0.0146	-0.44
corr phy_harm-physact	-0.0092	-0.29
corr therm_harm-physact	-0.0297	-0.91
corr chem_harm-physact	-0.0359	-1.03
corr repwo-physac	-0.0359	-1.11
corr plan-physac	0.0406	0.97
corr nosupcoll-physac	-0.0407	-1.28
corr nojobsec-physac	-0.0376	-1.17
corr drink-fruveg	0.0120	0.31
corr smoke-fruveg	0.1672	5.21
corr phy_harm-fruveg	0.0621	1.98
corr therm_harm-fruveg	0.0603	1.88
corr chem_harm-fruveg	0.0240	0.69
corr repwo-fruveg	0.0766	2.42
corr plan-fruveg	0.0196	0.48
corr nosupcoll-fruveg	0.0590	1.89
corr nojobsup-fruveg	0.0473	1.49
corr smoke-drink	0.2452	6.87
corr phy_harm-drink	0.0410	1.14
corr therm_harm-drink	0.1173	3.2
corr chem_harm-drink	0.1343	3.45
corr repwo-drink	0.0422	1.13
corr plan-drink	-0.0187	-0.41
corr nosupcol-drink	0.0203	0.56
corr nojobsec-drink	0.0626	1.75
corr phy_harm-smoke	-0.0325	-1.01
corr therm_harm-smoke	-0.0094	-0.29
corr chem_harm-smoke	0.0384	1.09

corr repwo-smoke	0.0673	2.06
corr plan-smoke	0.0604	1.47
corr nosupcol-smoke	-0.0923	-2.88
corr nojobsec-smoke	0.0499	1.54
corr therm_harm-phy_arm	0.4885	18.63
corr chem_harm-phy_arm	0.3218	10.08
corr chem_harm-term_arm	0.1885	6.15
corr plan-phyharm	0.1596	4.07
corr nosupcol-phyharm	0.0752	2.42
corr nojobsec-phyharm	0.0831	2.68
corr chemharm-termharm	0.3065	9.71
corr repwo-termharm	0.2199	7.21
corr plan-termharm	0.0985	2.51
corr nosupcol-termharm	0.0305	0.99
corr nojobsec-termharm	0.0738	2.37
corr repwo-chemharm	0.0966	2.88
corr plan-chemharm	0.0474	1.14
corr nosupcol-chemharm	0.0067	0.2
corr nojobsec-chemharm	0.0836	2.53
corr plan-repwo	0.1397	3.51
corr nosupcol-repwo	0.0414	1.33
corr nojobsec-repwo	0.0638	2.03
corr nosupcolplan	0.0793	2.18
corr nojobsecplan	0.0791	2.18
corr nojobsec-nosupcol	0.0671	2.18

Table 3:_ SAH estimates (univariate and multivariate probit)

	Univariate Probit		Multivariate Probit	
	Coeff	Z	Coeff	Z
obesity	-0.535	-6.16	-0.409	-2.09
physac	0.153	2.07	0.015	0.11
fruveg	-0.127	-1.79	-0.122	-0.9
ddrink	-0.019	-0.2	0.005	0.03
smoke	-0.159	-2.22	-0.031	-0.21
phy_harm	-0.085	-1.15	-0.064	-0.5
term_harm	-0.130	-1.75	-0.437	-3
chem_harm	-0.065	-0.83	0.292	2.05
repwo	-0.138	-1.93	-0.225	-1.75
plan	-0.074	-0.81	-0.180	-1.03
nosupcoll	-0.155	-2.32	-0.091	-0.7
nojobsec	-0.298	-4.43	-0.427	-3.31
y05	-0.347	-4.45	-0.423	-4.66
constant	2.000	2.47	2.239	2.57

Note: each regression includes a constant; dummies for education levels, occupations, sectors, size; a control for log wage; a quadratic in age; dummies for year 05 gender, marital status, having children

Table 4- Correlation coefficients from the multivariate probit – MH and PH

	Coeff	t-stat
corr PH MH	0.1772	4.72
corr obesity MH	-0.2374	-2.52
corr physact MH	-0.0327	-0.39
corr fruveg MH	-0.1101	-1.29
corr drink MH	0.0420	0.42
corr smoke MH	-0.0149	-0.17
corr phy_harm MH	-0.2382	-2.97
corr therm_harm MH	-0.1096	-1.10
corr chem_harm MH	-0.1090	-1.30
corr repwo-MH	0.0123	0.12
corr plan-MH	-0.1164	-1.17
corr nosuocol_MH	-0.0081	-0.10
corr nojobse_MH	0.0774	0.99
corr obesity PH	-0.0294	-0.30
corr physact PH	0.1385	1.60
corr fruveg PH	-0.0215	-0.29
corr drink-PH	-0.0851	-0.70
corr smoke-PH	-0.0916	-1.04
corr phy_harm-PH	-0.0801	-1.05
corr therm_harm-PH	-0.1033	-1.11
corr chem_harm-PH	-0.2410	-2.84
corr repwo-PH	-0.0596	-0.67
corr plan-PH	0.0885	0.93
corr nosuocol_PH	0.0127	0.16
corr nojobse_PH	0.0380	0.49
corr physact-obesity	-0.0972	-2.55
corr fruveg-obesity	-0.0275	-0.74
corr drink-obesity	-0.0037	-0.08
corr smoke-obesity	-0.0710	-1.89
corr phy_harm-obesity	0.0507	1.37
corr therm_harm-obesity	0.0760	2.03
corr chem_harm-obesity	0.1932	4.95
corr repwo-obesity	-0.0433	-1.14
corr plan-obesity	0.0210	0.45
corr nosupcol-obesity	0.0365	1.00
corr nojobsec-obesity	-0.0785	-2.16
corr fruveg-physact	-0.0313	-0.98
corr drink-physact	-0.0273	-0.67
corr smoke-physact	-0.0405	-1.24
corr phy_harm-physact	-0.0179	-0.57
corr therm_harm-physact	-0.0043	-0.13
corr chem_harm-physact	-0.0469	-1.35
corr repwo-physac	-0.0324	-1.01
corr plan-physac	0.0262	0.64
corr nosupcol-physac	-0.0313	-0.99
corr npjobsec-physac	-0.0004	-0.01
corr drink-fruveg	0.0603	1.51
corr smoke-fruveg	0.2125	6.71
corr phy_harm-fruveg	0.0647	2.05
corr therm_harm-fruveg	0.0461	1.43
corr chem_harm-fruveg	0.0128	0.37
corr repwo-fruveg	0.0654	2.05
corr plan-fruveg	0.0264	0.64

corr nosupcol-fruveg	0.0507	1.62
corr nojobsec-fruveg	0.0497	1.58
corr smoke-drink	0.2858	7.98
corr phy_harm-drink	0.0690	1.86
corr therm_harm-drink	0.0932	2.55
corr chem_harm-drink	0.1241	3.15
corr repwo-drink	0.0455	1.20
corr plan-drink	0.0383	0.83
corr nosupcol-drink	0.0353	0.97
corr nojobsec-drink	0.0550	1.53
corr phy_harm-smoke	-0.0363	-1.13
corr therm_harm-smoke	-0.0240	-0.74
corr chem_harm-smoke	0.0320	0.93
corr repwo-smoke	0.0267	0.83
corr plan-smoke	0.0735	1.83
corr nosupcol-smoke	-0.0985	-3.11
corr nojobsec-smoke	0.0614	1.93
corr therm_harm-phy_harm	0.4922	19.12
corr chem_harm-phy_harm	0.3460	11.18
corr chem_harm-therm_harm	0.2064	6.80
corr plan-phyharm	0.1658	4.32
corr nosupcol-phyharm	0.0887	2.90
corr nojobsec-phyharm	0.0932	3.04
corr chemharm-termharm	0.3248	10.37
corr repwo-termharm	0.1974	6.33
corr plan-termharm	0.0860	2.21
corr nosupcol-termharm	0.0476	1.53
corr nojobsup-termharm	0.0803	2.57
corr repwo-chemharm	0.1154	3.46
corr plan-chemharm	0.0098	0.24
corr nosupcol-chemharm	0.0155	0.47
corr nojobse-chemharm	0.0741	2.26
corr plan-repwo	0.1340	3.28
corr nosupcol-repwo	0.0442	1.40
corr nojobsec-repwo	0.0622	1.95
corr nosupcol-plan	0.1031	2.80
corr nojobsec-plan	0.0904	2.48
corr nojobsec-nosupcol	0.0902	2.86

Table 5:_ MH and PH estimates (bivariate and multivariate probits)

	Bivariate Probit				Multivariate Probit			
	MH		PH		MH		PH	
	Coef	Z	Coef	z	Coef	Z	Coef	z
obesity	-0.159	-1.96	-0.130	-1.61	0.265	1.36	-0.129	-0.65
physac	0.012	0.22	-0.021	-0.36	0.082	0.56	-0.235	-1.52
fruveg	-0.046	-0.82	-0.044	-0.78	0.127	0.86	-0.036	-0.27
ddrink	-0.217	-2.70	-0.008	-0.09	-0.319	-1.71	0.089	0.39
smoke	-0.043	-0.73	-0.146	-2.47	-0.011	-0.07	-0.006	-0.04
phy_harm	-0.131	-2.22	-0.179	-3.03	0.225	1.70	-0.134	-1.02
term_harm	-0.125	-2.09	-0.310	-5.19	-0.065	-0.40	-0.204	-1.26
chem_harm	0.053	0.82	-0.100	-1.53	0.129	0.83	0.269	1.71
repwo	-0.038	-0.68	-0.103	-1.80	-0.111	-0.69	-0.036	-0.23
plan	-0.022	-0.28	-0.101	-1.28	0.148	0.78	-0.274	-1.49
nosupcoll	-0.202	-3.70	0.063	1.13	-0.204	-1.49	0.045	0.33
nojobsec	-0.341	-6.17	-0.137	-2.48	-0.472	-3.47	-0.221	-1.60
y05	-0.439	-7.31	-0.017	-0.28	-0.418	-5.18	-0.071	-0.82
constant	0.642	1.01	0.466897	0.72	-0.106	-0.13	0.195	0.25

Note: each regression includes a constant; dummies for education levels, occupations, sectors, size; a control for log wage; a quadratic in age; dummies for year 05 gender, marital status, having children