Health and work locus of control during women managers’ careers

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Citation:

Abstract
Purpose – The purpose of this paper is to examine subjective health among women managers and professionals during their careers. Further, the role of work locus of control for women managers’ health is analyzed in a longitudinal perspective.
Design/methodology/approach – This is a follow-up study among 38 women managers and professionals who participated in an earlier investigation in 1996. Data were collected by means of interviews and two short questionnaires.
Findings – The results of the analysis showed that nine women had maintained their health during their career, whereas others had various health problems and some women had also suffered from burnout syndrome. There was no significant change in work locus of control between the two investigations. The healthy women were characterized by stability in their work locus of control beliefs, rather than externality or internality.
Research limitations/implications – Even though the results are based on a limited number of participants, the study points out factors that can be crucial for women managers’ and professionals’ health. Further research is needed to corroborate the findings in the current study.
Originality/value – The paper contributes further understanding of factors that are important for professional women’s health. It also suggests that the role of work locus of control beliefs for health might be more complex than the internal-external dimension.
Keywords Gender, Work locus of control, Health, Women, Managers, Professionals
Paper type Research paper

1. Introduction
The increase in the number of women managers is still negligible, contrary to the expectations nourished during the 1990s (Burke and Vinnicombe, 2005; Fielden and Cooper, 2001, Statistics Sweden, 2010). Even though the number of women and men in the Swedish labor market is approximately equivalent (88 per cent of men and 81 per cent of women are in the labor force), few women reach managerial levels, especially the senior levels. Only 33 per cent of all managers and three percent of managing directors (CEOs) are women (Statistics Sweden, 2010). The situation seems to be approximately the same in other western countries (Barreto et al., 2009; Vinnicombe, 2000).

Earlier research has mainly revolved around two approaches providing different explanations for the paucity of women managers (cf. Tharenou et al., 1994). One approach has concentrated more on the individual and focused on factors such as gender identity, personality
The other approach, which can be labeled as structural or situation-centered, has focused on the structure of organizations and society, power and lack of opportunity (Kanter, 1977; Wahl, 2003). Even though many researchers hold to either the person-centered or the situation-centered approach Fagenson (1990; 1993) has tried to move beyond this dichotomy by putting forward the gender-organization-system (GOS) approach. Instead of explaining women’s limited career development either with individual or structural factors Fagenson maintains that it is a matter of interaction between individual, organizational and societal factors (e.g. affirmative laws and maternity laws).

A metaphor often used to describe the structural difficulties women face when trying to advance in organizations is the glass ceiling. This suggests that there is an almost invisible but impenetrable structural barrier that prevents women, and other marginalized groups, from advancement to higher managerial positions (Barreto et al., 2009). Some studies have also shown that women who succeed in penetrating the glass ceiling can end up at a glass cliff, i.e. in precarious managerial positions with a high risk of failure (Ryan and Haslam, 2005).

Further, there are signs that many women choose to leave their managerial positions (Hewlett and Luce, 2005). What factors can lie behind the fact that women are opting out of the organizations? Even though both women and men in managerial positions experience a high workload (Torkelson and Muhonen, 2003), several studies point out that female managers experience more stress at work than their male colleagues (Davidson and Cooper, 1987; Nelson and Burke, 2002). Women managers have additional stress factors that can contribute to an adverse working environment health-wise. Among these stressors are low salary, difficulties in getting promotion, their “token” position, sexual harassment and work-family conflict (Burke and Richardsen, 2009; Fielden and Cooper, 2001; Kanter, 1977). To avoid work-family conflict or to achieve work life balance (cf. Doherty, 2004) can be regarded as example of an area where individual, situational and societal factors interact (Fagenson, 1990:1993) resulting in higher demands for women. This is in line with Offerman and Armitage (1993) who have postulated that the same stress factors may have different meaning and consequences for women than for men. There is also evidence that women have to work more and better in order to get similar positions as men (Lyness and Heilman, 2006). In addition, women managers have to overperform in a manner that makes men feel comfortable about working with them (Nelson and Burke, 2000). These results taken together indicate that women managers encounter various kinds of demands that can make them more vulnerable to health problems, but also more inclined to leave managerial careers.

Women generally report more psychological and physical symptoms than men (Fielden and Cooper, 2002), but there are some indications that managerial women in higher positions have better health than women working in lower-status jobs (Nelson and Burke, 2000). It is important to notice that there is so far a very limited amount of research concerning the health effects of stress among managerial women (Nelson and Burke, 2000).

Earlier studies have pointed out the importance of locus of control concerning the occupational stress process (Daniels and Guppy, 1994, Spector et al., 2002). Individuals who believe that they can control the reinforcements through their behavior are considered to have internal locus of control, while individuals who believe that external forces such as fate or luck control the reinforcements of their behavior are thought to have external locus of control (Rotter, 1966).
Spector (1988) developed the Work Locus of Control Scale (WLCS), a domain-specific locus of control measure for organizational settings. Domain-specific measures are generally regarded as better predictors than the global measure of locus of control (Lefcourt, 1992). Several studies have also shown that WLCS is a better predictor of work behavior than the generalized measure of locus of control (Blau, 1993; Orpen, 1992). According to earlier studies among managers internal work locus of control (WLC) is associated with higher well-being (Spector et al., 2002), and less perceived stress at work (Lu et al., 2000). Furthermore, there are indications that higher levels of stress in interaction with external locus of control can be detrimental especially for women’s health (Muhonen and Torkelson, 2004).

The locus of control construct originates theoretically from social learning theory (Rotter, 1966), which denotes that a reinforcement strengthens an expectancy that a particular behavior or event will be associated with the specific reinforcement. Expectancies or beliefs can be generalized to different situations and thus affect the behavioral choices an individual makes (Rotter, 1966). It could therefore be argued that WLC can also change as a result of new learning experiences, but no studies have measured WLC over time in a longitudinal perspective.

The purpose of this follow-up study was to investigate the subjective health of women managers during their careers in order to find out what characterized the women who had remained healthy over the years compared with those who had health problems. Further, the role of locus of control for women managers’ health was analyzed in a longitudinal perspective.

2. Method
2.1. The original study
The current research is based on a follow-up study among 38 women managers and professionals who participated in an earlier investigation in 1996 (Muhonen, 1999). The following definition of manager was used in the study: a person with responsibility for staff and administrative work in a larger division or a person with specialist assignment employed in either the private or public sector (Statistics Sweden, 1992). The group of participants therefore consisted of women managers both with and without staff and women professionals who worked as specialists (Muhonen, 1999). The women rated their managerial level as belonging to either higher or lower managerial level and they represented four different lines of work: banking, engineering, social welfare work and urban planning. The first two lines of work represented the private sector and the two other the public sector. There was a wide geographical distribution among the participants, who lived in 31 different places all round Sweden.

The results of the original study (Muhonen, 1999) showed that the women found their work highly stimulating, worked long hours and had difficulties in drawing a line between work and private life. Several women also spontaneously reported stress-related symptoms such as eczema, ulcers and exhaustion/fatigue. When it comes to career development the results pointed out the importance of both structural factors, such as discrimination concerning promotion, and personal factors such as self-confidence. Further, work locus of control (WLC) measured by the Work Locus of Control Scale (WLCS, Spector, 1988) was related to career development. Female managers at the higher organizational level appeared to have more internal locus of control than managers at the lower level.

2.2. Participants in the current study
Altogether 38 of the originally 45 participants were interviewed during autumn 2007. The drop-out consisted of seven women; five of them could not be located at their former addresses and
two women did not want to take part in the study. The participants were on average 58 years old (SD=7.07), the youngest being 43 and the oldest 71. When it comes to family situation, 32 women were married or cohabiting and six were single. Nearly all of the participants were of Swedish origin, except one participant who was of Zech origin. The majority (29) had grown-up children that no longer lived at home, seven women had children living at home and two women had no children. The majority (61 percent) had a university education with the exception of the bank manager group where nobody had a university diploma. As can be seen in Table I, only eight participants had a managerial position by the time of the follow-up interview, eleven worked as different kinds of specialists, five had started their own businesses, and three participants were employed as administrator or salesperson and two women were unemployed. Ten participants had retired, although two of them had their own business where they worked part-time.

2.3. Procedure and measures
The interviews were conducted between September and December 2007. They were semi-structured and lasted approximately one hour. In most cases (20) the participants were interviewed at their workplace, seven persons were interviewed in their home, six persons were interviewed in a nearby hotel, two interviews took place in a café and three participants were interviewed by phone. An interview guide was used and the questions focused upon the women’s career development (Muhonen, 2010) and their health during their careers. After the interviews the participants filled in two questionnaires measuring health and work locus of control.

Table I about here

Current health was assessed by the Hopkins Symptom Checklist-25 (HSCL-25) (Derogatis et al., 1974). HSCL-25 consists of 25 items measuring symptoms such as headache, insomnia and anxiety ($\alpha = .84$). Respondents rated the intensity of different symptoms on a scale ranging from 1 (= not bothered) to 4 (= extremely bothered).

Work locus of control was measured by a Swedish version (Muhonen, 1999) of Spector’s (1988) WLCS. The scale contains 16 work-related items (e.g. getting a job, promotions) to which participants respond on a six-point scale from 1 (disagree very much) to 6 (agree very much). Example items are “Getting the job you want is mostly a matter of luck” and “People who perform their jobs well generally get rewarded for it”. Higher scores on WLCS indicate externality. The participants also responded to WLCS in the first interview study. The reliability of the scale then (1996) was $\alpha = .78$ and in the present study $\alpha = .85$ (2007). These coefficients are in line with earlier studies (Lu et al., 2000; Muhonen and Torkelson, 2004). The scores were skewed toward internality on both occasions (1995: $M = 38.86$; 2007: $M = 39.49$), which is also consistent with previous studies e.g. Spector (1988). Some researchers divide participants into either internals or externals, whereas others view the concept as a continuum ranging from high internal locus of control to high external locus of control (Cvetanovski and Jex, 1994; Renn and Vandenberg, 1991).

2.4. Data analysis
All the interviews were recorded and transcribed verbatim. The transcribed interviews were read through carefully a number of times in order to gain an overall view of the entire material and to be able to identify central themes. Thereafter, the material was coded in different categories with
the aid of QSR NVivo 7, a computer program for qualitative analyses. The aim of the qualitative content analysis is to organize and to simplify the complexity of the interview material and to accomplish meaningful and manageable themes or categories (Patton, 1987). For the purpose of the analysis presented in this paper, particular emphasis was given to examining expressions concerning women’s health during their career. The expressions were coded into two categories either as no health problems (0) or health problems (1) as can be seen in Table I. Thereafter the different health problems were analysed further in order to find out if there was a recurrent pattern concerning the different symptoms. This resulted in two categories, a variation of different symptoms and burnout syndrome.

The questionnaire data were analyzed statistically (PASW/SPSS 18). The participants’ work locus of control values between the two studies were analyzed by means of paired $t$-test. In order to investigate potential differences related to current health and locus of control by means of $Chi^2$ analyses the scores on HSCL-25 and WLCS were dichotomized using median values. WLCS scores were first coded as I=internal WLC and E=external WLC for 1996 and 2007 and thereafter as 1=the same WLC in 1996 and in 2007, 0=different WLC in 1996 and in 2007. HSCL-25 scores were coded as 0=no problems, 1=health problems.

2.5. Ethical considerations
This study was approved by the Regional Ethical Review Board, Lund, Southern Sweden. The participants received both oral and written information about the project before they gave informed consent. The participants were guaranteed confidentiality throughout the study and all the research material was anonymized by coding.

3. Results
3.1. The participants’ health during their career
Altogether nine of the participants reported having no health problems during their career, whereas the rest of the participants had experienced different kinds of health problems and six of them had suffered from burnout syndrome or exhaustion.

Among the most frequent health problems mentioned were pain in the shoulders, neck and lower back, supposedly related muscular tension when the participants had been exposed to stressful situations. Further, quite a few of the participants stated that they had reacted to stress with their stomach by developing symptoms such as heartburn, gastritis or ulcer. This they thought was due to the fact that when they had a high work overload they skipped meals in order to save time and drank too much coffee. A few of the interviewees had problem with high blood pressure and severe dizzy spells when their work situation was stressful.

Stress had also triggered migraine attacks among some of the participants. At times the combination of high demands from both work and private life had evoked the attacks. One of the women had been secretive about her having migraine since she thought that it might be a disadvantage for her career.

“I had severe migraine regularly and […] yet I never told anybody that during the 20 years I worked in that bank. I just went out to the ladies when I was being sick and then went back to work again. I felt that if I as a woman said that I had migraine it would be impossible for me to make a career. […] I thought it was a great disadvantage, I imagined that one had to be perfect in order to make career.” (No. 5.)
A couple of the women believed that stress could lead to overweight, since they thought that the metabolism might be affected in a negative way when the body was exposed to constant strain. Further health problems that the interviewees brought up, but which they considered as not work-related, were diabetes, different kinds of allergies, arthritis, cancer and depression.

Health is at least partly a subjective perception, and some of the interviewees said that they felt healthy even though they could have several health issues. Many of the interviewed women had not paid attention to the physical warning signals and carried on working until they had more or less collapsed. Even those who had problems with their back or arms tended to minimize their symptoms and did not want to regard them as health problems. To be affected by stress was regarded as more or less inevitable in today’s working life.

“Well, I don’t know if I have any health problems, but of course one is affected by stress. It is impossible to work without being stressed; I don’t think anybody can do that.” (No. 6)

A prolonged stressful situation at work could lead to problems with sleep, because it was difficult to relax and not to think of the work situation when it was time to go to sleep. Problems with insomnia in the long run were related to burnout syndrome. Four women had been diagnosed as having burnout syndrome, whereas two others had suffered from exhaustion, and all of these six women had been on sick-leave because of that. The women diagnosed with burnout felt that the only way out of the situation had been to quit their jobs and either look for another job or retire earlier.

“I decided to quit since I ended up in a situation where I couldn’t sleep and I was feeling really bad. I was thinking a lot about what really was happening during this period, before I realized that I belonged to the relatively large group of burnout women […] I was diagnosed as having burnout syndrome and I have not come through that syndrome yet.” (No. 33)

All of the women who had been stricken with burnout syndrome had been working as managers in the public sector. A common factor for them was that they had continued to work hard despite various warning symptoms such as insomnia, headaches and problems with memory. The women testified that the recovery process after burnout had moved very slowly. Nearly all of them also reported having health problems currently (2007), as can be seen in Table I. These women maintained that they were more sensitive and reacted more strongly than before in stressful situations, and it also took a longer time for them to settle down after experiencing stress.

### 3.2. Characteristics of the women who have remained healthy throughout their career

Current health as measured by HSCL-25 showed that majority of the women (61%) were not at all bothered or only slightly bothered by the different health problems ($M=1.30, SD=0.24$). Two participants scored 1.72 and two persons scored higher than 1.75, i.e. on the level that is regarded as a cut-off point for psychiatric treatment (Sandanger et al., 1998).

When both the current and earlier health was taken into consideration, nine of the interviewees said that they had not had any health problems during their career and did not report any symptoms currently either. These nine participants were therefore classified as healthy.
“I am a thoroughly healthy person.” (No. 12)

As can be seen in Table I, most of the women who have been healthy (labeled as no health problems) throughout their career represented different lines of work, but nearly all of them were or had been at the higher managerial level. The relationship between being healthy and higher managerial level was also confirmed by the chi² analysis ($\chi^2=4.65$, $df=1$, $p=0.031$). Even the one who was originally on the lower managerial level had advanced to a higher level. When it comes to different sectors, approximately half of the healthy women were working in the private sector while the other half of the group was working in the public sector. Four women had retired and another two were in the process of doing so in the near future. The retired women led an active life and were e.g. engaged in voluntary work in different associations. The healthy women maintained that their health had not declined with age.

The WLC values were slightly higher at the time of the follow-up study ($M=39.49$, $SD=9.80$) compared with the original study ($M=38.86$, $SD=8.76$). However, the results of the paired t-test showed that there was no significant change in work locus of control among the participants ($t=-58$, $df=37$, $p=0.57$). Further, no significant correlations were found between work locus of control and current health (HSCL-25) or age.

Three of the healthy women were classified as having internal locus of control and five women as having external locus of control in both investigations, whereas only one person differed in her locus of control beliefs on the two occasions. Consequently there was no clear pattern concerning internal or external work locus of control, but it appeared that the group of healthy women were constant in their work locus of control beliefs. The chi² analyses confirmed that there was a relationship ($\chi^2=7.32$, $df=1$, $p=0.007$) between stable work locus of control beliefs and current health. This indicates that internality or externality per se might not be crucial when it comes to health, but rather that the stability of the control beliefs could be important.

The healthy women reported taking care of themselves, trying to maintain regularity concerning both their eating and exercising habits. Further, they attempted to draw a line between work and leisure activities. It seemed that even though work had been an important part of their lives, they had not lived only for their jobs, but had other meaningful activities besides work.

“I have friends who live for their work, but I have not done that. […] I am engaged in many activities, work has not been my main interest in life.” (No. 19)

4. Discussion

The number of women in managerial positions has only increased at a very moderate pace (Burke and Vinnicombe 2005; Fielden and Cooper, 2001, Statistics Sweden, 2010), and there are also indications that many women leave their managerial positions (Hewlett and Luce, 2005). Earlier research has pointed out that women managers encounter a number of demands and difficulties (Burke and Richardsen, 2009; Fielden and Cooper, 2001; Kanter, 1977) that can make them more vulnerable to health problems, but also more inclined to leave managerial careers. Considering the limited amount of research concerning health among managerial women (Nelson and Burke, 2000), the purpose of this follow-up study was to investigate the subjective health of women managers and professionals during their careers and the role of locus of control for their health in a longitudinal perspective.

Although the majority of the participants did not report having health problems currently,
most of them (76%) had experienced different kinds of health problems during their careers. It was common that the participants had developed symptoms such as heartburn, gastritis or ulcer as a reaction to stressful situations. Other health problems that were frequently mentioned were tensions in the body associated with stress, such as pain in the shoulders, neck and lower back. Some of the interviewees had also suffered from migraine, overweight, diabetes, different kinds of allergies, arthritis, cancer and depression. The interviews indicated that many of the women who had experienced different kinds of health problems did not initially pay attention to the physical warning signals but carried on working until the symptoms were so severe that they could not work anymore. One of the women had been secretive about her having migraine since she thought that it might be a disadvantage for her career. It was also evident that health is a subjective perception as some of the interviewees said that they felt healthy even though they could have several health issues, such as problems with their back or arms. That everybody was affected by stress in today’s working life was regarded as more or less inevitable and something that you have to learn to deal with, as for instance visiting a physiotherapist regularly in order to keep the symptoms under control.

Four women had been diagnosed as having burnout syndrome and two others had suffered from exhaustion, which had initially forced them to be on sick-leave for a longer period. However, most of the burnout women had quit their jobs and looked for another job or retired earlier, since they felt that there would be no change otherwise in their work situation. These women had been working as managers in the public sector and they considered that their increasing work load that had led to burnout was related to the downsizing and organizational changes. The female dominated public sector has generally encountered extensive changes in recent years (Härenstam et al., 2000), which has affected women, both at the managerial and non-managerial level. This illustrates how the individual, organizational and societal factors interact (Fagenson, 1990;1993) resulting in higher demands for women. Even though the stressful work situation was caused by organizational and societal factors beyond the female managers’ control, the women affected by burnout had tried to work harder and harder despite various warning symptoms such as insomnia and headaches. According to these women it took a long time to recover after burnout; several of them had different symptoms even a couple of years afterward. They also complained being more sensitive and less resistant to stressful situations.

When it comes to current health, the results showed that most of the women (61%) had no or only few health problems as measured by HSCL-25. Two persons scored higher than 1.75, which is the level that is regarded as a cut-off point for psychiatric treatment (Sandanger et al., 1998) and another two scored 1.72. Three of those with high scores had previously suffered from burnout syndrome and were still having some symptoms after that.

Nine of the participants were classified as healthy since they reported that they did not have any health problems either currently or earlier during their career. These women represented different lines of work, but most of them were or had been working at the higher managerial level. Considering that individuals who have higher positions can be regarded as having more power and control over their work situation, the results are in line with earlier research that has pointed out the importance of control at work for occupational health and well-being (cf. Karasek and Theorell, 1990).

There was no clear pattern concerning which sectors the healthy women had been employed in; about half of them had been working in the private sector while the other half of the group was working in the public sector. It also appeared that age had not affected these
women’s health negatively. Four women had retired and two more were in the process of doing so in the near future. The retired women led an active life and were engaged e.g. in voluntary work in different associations.

The participants had slightly more external WLC in the follow-up study than in the original study, but no significant change in work locus of control beliefs among the participants could be found. In contrast to earlier studies (Spector et al., 2001; Spector et al., 2002), WLC was not related to current health (HSCL-25).

The results showed that three of the healthy women were classified as having internal locus of control and five women as having external locus of control in both investigations. Only one person differed in her locus of control beliefs on the two occasions. Consequently there was no clear pattern concerning internal or external work locus of control, but it appears that the group of healthy women were stable in their work locus of control beliefs. This indicates that internality or externality per se might not be crucial when it comes to health, but rather the stability of the control beliefs. Although the internal locus of control is generally associated with better health and well-being than external locus of control (Spector et al., 2001), there are situations when being internal might not be propitious. This is the case e.g. when the situation offers little objective control (Hahn, 2000), and it could therefore be postulated that the external beliefs might be beneficial for health in these kinds of stressful situations.

The healthy women were taking care of themselves, tried to maintain regularity concerning both their eating and exercising habits. Further, they tried to draw a line between work and leisure. It seemed that even though work had been an important part of their lives, they had not lived only for their jobs, but had meaningful activities outside work.

Even though this study has certain strengths such as its being a follow-up study using both quantitative and qualitative data, it also has some limitations that need to be addressed. Health was not measured systematically in the first investigation; instead the participants expressed their potential symptoms spontaneously. Another shortcoming of the study is that health was measured only by means of subjective ratings and expressions. The result would have been more reliable if some physical assessment had been available. Further, the study was based on a small sample and it is therefore important that the findings are further investigated in future research.

In sum, the results of the study showed that nine out of 38 women managers and professionals had maintained their health during their career, whereas others reported different health problems and a few had also suffered from burnout syndrome. The healthy women maintained regular eating and exercising habits and drew a line between work and leisure. Further, the healthy women were characterized by stability in their work locus of control beliefs, rather than externality or internality.

Acknowledgments
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Table I.

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<td>Specialist in a bank (H)</td>
<td>Specialist in a bank</td>
<td>1</td>
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</tr>
<tr>
<td>16</td>
<td>Bank manager (H)</td>
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<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>20</td>
<td>Bank manager (H)</td>
<td>Specialist in a bank</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>31</td>
<td>Bank manager (H)</td>
<td>Specialist in a bank</td>
<td>1</td>
<td>0</td>
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<td>I</td>
</tr>
<tr>
<td>3</td>
<td>Bank manager (L)</td>
<td>Specialist in a bank</td>
<td>1</td>
<td>1</td>
<td>I</td>
<td>E</td>
</tr>
<tr>
<td>14</td>
<td>Bank manager (L)</td>
<td>Administrator</td>
<td>1</td>
<td>0</td>
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(continued)
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<tbody>
<tr>
<td>17</td>
<td>Bank manager (L)</td>
<td>Bank manager</td>
<td>1</td>
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<tr>
<td>30</td>
<td>Bank manager (L)</td>
<td>Specialist in a bank</td>
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<td>0</td>
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<tr>
<td>32</td>
<td>Specialist in a bank (L)</td>
<td>Salesperson</td>
<td>1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Head of urban planning (H)</td>
<td>Own business</td>
<td>1</td>
<td>1</td>
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<tr>
<td>13</td>
<td>Head of urban planning (H)</td>
<td>Specialist</td>
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<td>E</td>
</tr>
<tr>
<td>18</td>
<td>Construction inspector (L)</td>
<td>Pensioner</td>
<td>1</td>
<td>1</td>
<td>E</td>
<td>E</td>
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<tr>
<td>11</td>
<td>Director of social welfare office (H)</td>
<td>HR director</td>
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<td>I</td>
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<tr>
<td>22</td>
<td>Head of division (L)</td>
<td>Own business</td>
<td>1</td>
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</tr>
<tr>
<td>25</td>
<td>Director of a city district (L)</td>
<td>Head of division</td>
<td>1</td>
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</tr>
<tr>
<td>6</td>
<td>Engineering manager (H)</td>
<td>Unemployed</td>
<td>1</td>
<td>1</td>
<td>I</td>
<td>E</td>
</tr>
<tr>
<td>7</td>
<td>Engineering manager (H)</td>
<td>Unemployed</td>
<td>1</td>
<td>1</td>
<td>I</td>
<td>E</td>
</tr>
<tr>
<td>37</td>
<td>Engineering director (H)</td>
<td>Research program director</td>
<td>1</td>
<td>1</td>
<td>I</td>
<td>E</td>
</tr>
<tr>
<td>15</td>
<td>Head of division, construction co. (L)</td>
<td>Pensioner</td>
<td>1</td>
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<td>E</td>
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<tr>
<td>21</td>
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<td>E</td>
</tr>
<tr>
<td>29</td>
<td>Head of research division (L)</td>
<td>Head of research division</td>
<td>1</td>
<td>1</td>
<td>I</td>
<td>I</td>
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<tr>
<td>8</td>
<td>Head of housing division (L)</td>
<td>Head of housing division</td>
<td>1</td>
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<td>I</td>
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</tbody>
</table>

Note. H=higher managerial level, L=lower managerial level; 0=no health problems, 1=health problems; I=internal locus of control, E=external locus of control