Workplace social capital and absenteeism in the public sector
(work in progress)

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Introduction
Public management traditionally is concerned with a rather high level of absenteeism in public sector organizations (Wright and Pandey 2011) and public management research has identified absenteeism as a challenge to organizational health in local governments (Hugh 2001). Hassan and colleagues (2014) point out that despite the importance of the phenomenon of absenteeism in public sector organizations, research on how to reduce absenteeism is scarce.

Existing HRM approaches to public management often focus on the individuals’ competences and resources when dealing with issues such as absenteeism. A new perspective on public management which emphasizes collective resources in an organization is workplace social capital (WSC). WSC is a management perspective which focuses, not on the individual employee, but on the collective relationships in an organization. If the relationships are characterized by trust, reciprocity and a high degree of collaboration it might create synergy effects (Putnam 1996) in the organization, which is actually more effective than the traditional HRM approach. Research has shown that WSC is an important buffer against absenteeism (De Clercq et al., 2015; Kiss et al., 2014; Rugulies et al., 2014). Furthermore, contrary to individual antecedents to absenteeism, public managers can influence WSC, hence making it a potential lever to directly affect employees’ absenteeism. However, many studies in the field suffer from limitations, for example simplistic conceptualizations and measurements of WSC and persistent lack of evidence on causal mechanisms over time. Furthermore, with only few exceptions (Rugulies et al. 2016; Hansen et al. 2017) the research on WSC has mainly been conducted in the Finnish public sector (e.g. Oksanen et al., 2008; Oksanen et al. 2010; Kouvonen et al., 2006; Kouvonen et al., 2008; Liukkonen et al., 2004, Väänänen et al., 2009) These limitations might bias the results and thereby weaken our current knowledge in this area (De Clercq et al., 2015; Hansen et al., 2017).

This paper will examine the relationship between workplace social capital (WSC) and absenteeism in the public sector. We will address several of the existing gaps in the literature and examine WSC and absenteeism in a large Danish municipality. To avoid common source bias, we integrate survey data from all employees on WSC (N = 7848 from 2014) with registered sickness absences of all employees from 2014-2015. For WSC, we use a well validated measure which systematically measures the different relationships in the organization (bonding, bridging, linking and organizational relations) (Borg et al., 2014). We control for relevant factors such as prevalent health
problems, organizational position, gender, etc. (Kiss et al., 2014; Väänänen et al., 2008). The research design presents a unique opportunity to examine how WSC impact on sickness absenteeism over time.

In the next section we will briefly give an overview of the existing research in the field. We will define WSC, discuss its relationship with sickness absence and propose hypotheses. Hereafter, we will present the data and methods used in the paper. Our findings will be reported in the fourth section. Our results show that WSC reduces absenteeism and that the effect is consistent over time. However, the impact of WSC differs depending on which relation (bonding, bridging, linking and organizational) is considered. We will discuss these results further and provide suggestions on how managers may use WSC to reduce absenteeism in the public sector in the future in the last section. Thereby, the paper will contribute with new and highly needed knowledge to enable public managers to reduce absenteeism.

**Theoretical framework**

Traditionally, social capital has been used to describe social cohesion in the society with Bourdieu (1986), Coleman (1988), and Putnam (1993, 2000, 2016) as primary exponents of the theory. Social capital is most often viewed as a resource characterizing the societal networks. Social capital has been described as a resource that may benefit the individual in relation to his or her position in society (Bourdieu 1986), or as a broader resource, which expands the individual interests and provide collective goods in society (Putnam 1993, Putnam and Cohen, 2004). According to Putnam, even though social capital may benefit the individual, it is not an individual resource, but refers to the “features of social organization, such as trust, norms and networks that can improve the efficacy of society by facilitating coordinated actions” (Putnam, 1993: 167). Thus, social capital is hypothesized to be a societal resource, because it is strengthening the expectation of reciprocity in a relationship and thereby minimize the transactions costs present in all human interactions (Putnam 1993). In this paper we depart from Putnam’s understanding of social capital as a collective resource.

Within the last two decades the concept of social capital has entered related debates about public and occupational health (Kawachi et al 2000, Rugulies et al 2016). In this paper we introduce the
concept to the public HRM literature to discuss how public managers may reduce absenteeism in their organizations by using social capital as a collective resource instead of focusing on individual antecedents and solutions. We thereby limit our focus to the organizational relationships and specifically examine Workplace Social Capital (WSC) (Oksanen et al. 2013).

Previous research has examined WSC in different ways (see for example Elovanio et al 2005; Ybema & van den Bos 2010). Even though the field has yet to reach consensus about a common definition (Borg & Andersen, 2017), there is a tendency to follow the broader social cohesion theory (Muaryama et al., 2012), and understand WSC as a resource generated through interactions in the different interpersonal relationships in the organization. Parallel to Putnam’s definition most studies focus on employees’ perceptions of reciprocity, justice, trust and collaboration when they characterize the organizational relationships (see for example Szreter & Woolock. 2004; Elovanio et al 2005; Ybema & van den Bos 2010). In congruence with the newest research in the field (Borg & Andersen 2017; Rugulies et al., 2016, Borg, 2014) we therefore define WSC as: A resource inherent in the social relationships at the workplace, where the interpersonal interactions are characterized by trust, justice and collaboration.

Research has pointed out, that it is important to distinguish between ‘horizontal’ and ‘vertical’ components of WSC (De Clercq et al. 2015:2; Choi et al. 2007). The distinction between ‘horizontal’ and ‘vertical’ components of WSC is a way to differentiate between the different types of relationships in an organization. This distinction is well-known within the discussion of trust in organizations, where horizontal trust describes the degree of trust between individuals at the same organizational levels and vertical trust describes the degree of trust across organizational levels for example between employees and managers (ref). Transferred to WSC horizontal social capital is a matter of relationships between individuals and/or groups at the same organizational level. Following Putnam’s (1993) discussion of how different relations within a society contribute to solidarity and strong networks horizontal social capital is conceptualized in two forms as bonding and bridging social capital (Putnam, 2000: 22). Bonding social capital defines relationships within a group at a specific organizational level. Bonding social capital thus refers to the relationships that tie actors within a work unit or a team (consisting of two or more members) together. Bridging social capital defines the relationships between groups at the same organizational level. Thus, bridging
social capital describes relationships between work units or teams that enables collective action and collaboration across different units at the workplace.

Woolcock has addressed the vertical relationships with the concept linking social capital, which focuses on interactions across formal and institutionalized power and authorities in society (Woolcoock, 1998; Szreter & Woolcock, 2004; De Clercq et al., 2015). In WSC the vertical relationships are also conceptualized in two forms as the hierarchical relationship to the immediate manager, linking social capital, and the relationship to the top-level management denoted organizational social capital (Borg, 2014). Thus, bonding, bridging, linking and organizational social capital are used to describe the various relationships within the workplace. These relationships represent different dynamics in an organization and must therefore be expected to impact on absenteeism in different ways. However, even though most researcher agree upon this nuanced understanding of WSC (Olesen 2008, De Clercq et al., 2015; Rugulies et al. 2016, Borg and Andersen, 2017) empirical studies that distinguish between these dynamics within WSC are very scarce mainly due to problems with data accessibility (De Clercq et al. 2015, Borg & Andersen. 2017).

The existing studies only examine a few features of WSC (for example Eloainio et al., 2005 ; de Boer et al., 2012; Ybema & van den Bos, 2013, De Clercq et al., 2015; Kiss et al., 2014) or treat WSC as an global concept without considering the importance of the different dynamics within WSC (for example Kouvonen et al. 2006; Driller et al. 2010; Kiss et al., 2014; Rugulies et al., 2016; Hansen et al 2017). No studies have so far distinguished between bonding, bridging, linking and organizational social capital when examining the association with absenteeism. Consequently, knowledge about the interplay between the different social relationships at the workplace and whether the four different dynamics within WSC affect outcomes such as sickness absences differently, has yet to be discovered. Furthermore, new research points out that it is important to analyze workplace social capital at both an individual- and a workplace-level (De Clercq et al. 2015:2). Still most prospective studies have only examined WSC as a resource on the individual level (Hansen et al., 2017).

This paper contributes with the first (to our knowledge) prospective study of how bonding, bridging, linking and organizational social capital affect employees’ absenteeism over time. Below we will propose hypotheses on how the four types of relationships within WSC may affect employees’ absenteeism.
Workplace social capital and sickness absence

It is a widespread proposition within the research that high levels of social capital are desirable and causes positive outcomes across a variety of different contexts. Several studies have shown that different features of WSC (for example interpersonal or procedural justice) impact on employees physical and mental health (Liukkonen et al., 2004; Elovainio et al., 2005: 2505-6; Laaksonen et al., 2006: 208; Kouvonen et al. 2006; Spell & Arnold, 2007 Kouvenon et al. 2008; Driller et al. 2010; Løkke 2016; Jay & Andersen 2018). Cross-sectional studies from different workplace contexts indicates that employees’ perception of stress, burnout and emotional exhaustion decline with higher levels of WSC (Boyas & Wind, 2010, Gächter et al., 2011, Driller et al., 2010, Kowalski et al. 2010). Research has also shown that WSC is an important buffer against absenteeism (De Clercq et al., 2015; Kiss et al., 2014; Nielsen et al., 2006, Elovainio et al., 2005). However other studies find no impact of WSC (de Boer et al., 2012; Hansen et al., 2017), or only a limited impact on absenteeism (De Clercq et al., 2015; Rugulies et al., 2016) and more research on how WSC affects absenteeism is clearly needed.

Absenteeism is a complex phenomenon, which can be related to several factors of the employees’ personal and work life (Lund et al., 2009). By absenteeism we mean sickness absence due to normal health problems and work-related injuries (we do not include absence related to maternity leave, pregnancy, kids living at home or other types of leaves of absence).

Horizontal WSC

The horizontal relationships in an organization are described by two different types of WSC, namely bonding and bridging social capital.

Bonding social capital refers to close relationships within a work group or a unit. These relations are characterized by strong ties that connect family members, close friends or colleagues which are homogeneous (Putnam 2000). The relationships are characterized by interpersonal interactions taking place on a day-to-day basis and they therefore are often perceived as trusting, cooperative and with a high degree of reciprocity (Muaryama et al 2013:180). Such strong ties are more likely to support psychological processes that provide employees with affective support and mutual respect,
and previous research has shown that such dimensions are related to health (Kawachi & Berkman 2000). Overall research suggest that bonding social capital provide individuals in a group with emotional and material supports (Zhang et al 2011:121; Muaryama et al., 2013:180) which help people getting by in their daily lives and preserve good health. Bonding social capital must therefore be expected to be of highly importance for the employees’ absenteeism and we propose that:

**H1: High levels of bonding WSC will reduce employees’ absenteeism**

_Bridging social capital_ refers to relationships between different groups at the workplace. The density of these relations is less than for bonding social capital and the links are weaker (Borg et al. 2017: 23; Muaryama et al 2012:180; Zhang et al 2011:122, Putnam, 2000). Bridging social capital is often denoted structural social capital because it represents relationships between individuals who are often dissimilar with respect to occupational status and/or professional backgrounds (Muaryama et al 2012:180) and therefore also differs with regard to social identity in an organization. Bridging social capital is expected to have other beneficial effects for the individuals than bonding capital. For example bridging social capital is suggested to improve the individuals’ economic development and well-being to a higher degree than bonding social capital, because it is important for economic well-being to know people who are not similar to one-self and have other kind of networks (Zhang, 2011). However, studies most often do not differ between bonding and bridging relationships. An exception is Iwase et al., who in a cross-sectional study from 2010 showed that bridging social capital was strongly associated with higher self-rated health. Contrary to this Wen et al. (2005) showed that community network density had no effect on mortality. Even though Muaryama et al (2012:184) conclude in their meta-review of the field that both forms of capital appear to have positive effects on health outcomes, there is no empirical evidence in the WSC research that correlate health and absenteeism with bridging social capital. Furthermore since employees in bridging networks have more indirect and less frequently contact we hypothesize that:

**H2: There is no correlation between bridging WSC and employees’ absenteeism**
Vertical WSC
Vertical WSC also consists of two different forms of relationships, namely linking and organizational social capital. They are both representing hierarchical relationships in an organization and are asymmetric with regard to power and authority.

*Linking social capital* characterizes the relation between the employee and his or her immediate manager. A lot of research has documented the importance of the immediate manager to the employees’ physical and mental well-being at work (refs). Studies within WSC have also pointed out that the linking social capital impact on employees’ well-being and absenteeism (Väänänen et al 200X, Nyberg et al. 2008; Read & Laschinger 2015). For example do de Clercq et al. show in a study from 2015 that higher levels of supervisor reciprocity are related to lower future sickness absence (de Clercq et al. 2015:9). Other studies indicate that help received from the supervisor is more important than help received from colleagues for employees’ level of sickness absence (Nielsen et al., 2006). We therefore propose that:

*H3: High levels of linking WSC will reduce employees’ absenteeism*

*Organizational social capital* characterizes the relationship between the employee and the top-level management and/or the organization per se. In public hierarchically structured organizations like a municipality, it becomes important to distinguish between the top-level management and the immediate managers’ relationship with the employees. The top-level management operate on different interaction terms than the immediate managers do and have often no or very little direct contact with the individual employees in the organization (ref). The top-level management direct the visions of the organization and define organizational policies and practices which is of importance to the efficiency and avoidance of conflict at the workplace (Andersen, Borg and Pallesen 2018). However, it is the immediate manager who most often act as an interpreter of the visions and policies formulated by the upper level managers, and actively engage the implementation of these strategies among the employees (ref). In a meta-analysis of employee trust towards management effect on various outcomes, Birk and Ferrins (2002) show that trust towards the immediate leader is more strongly associated with job satisfaction and job performance as well as altruism than trust to the top-level management. Trust in top-level management only
came to be more important for employees’ organizational commitment (Birk & Ferrins, 2002). Thus, top-level managers limited latitude of daily interaction and lower levels of reciprocity in the relation to the employees, lead us to prose that:

**H4: Organizational WSC will not correlate with employees’ absenteeism**

**Methods**

**Sample and Data**

This study examines public sector employees working in a large Danish municipality through survey- and register based data. The Danish municipalities functions according to the principle of subsidiarity and are multipurpose organizations delivering a variety of different public services. Research has shown, that employees in the Danish municipal sector have higher risks of long-term sickness absence than other Danish employees (Lund, Labriola and Villadsen 2007). To meet this challenge WSC as a potential resource for workers’ health is increasingly discussed (Rugulies et al. 2016) and many local authorities in Denmark have increased their focus on social capital and hereof implementation of social capital practices in their daily operations (ref). The municipality embedded in this study has strategically worked with social capital and sickness absence since 2014, and were in 2017 ranked as one of the municipalities with the lowest number of days of absence per employee in Denmark.

The survey data used in this study stems from a questionnaire sent to all employees and managers in the municipality in 2014 (from September to November). The purpose of the questionnaires was to map the overall working environment in the municipality. The data gathering was administrated by The HR department in the municipality and all respondents were anonymized. The survey was distributed to a total of 9046 individuals of which 7848 responded, rendering to respective response rates of 87 %. In this paper we exclude respondents from the analysis with missing survey items, and furthermore respondents not being employed during the whole period of the study. The sizeable majority of workers in the Danish public sector are women (ref), which reflects the distribution of the study-population with 80 % being female.
The obstacle of common source bias, which is a limitation within several of the studies in the field, is managed by using a register based measure of absenteeism. Occurrence of sickness absence within the labor force of the municipality was obtained through a database managed by Silkeborg Data, who provide services and systems of remuneration to 28 of the 98 Danish municipalities. Sickness absence from work is registered from the first day of absence till the employee return to work. We investigate the prospective relation between WSC (2014) and sickness absence (in 2014 and at follow up + one year in 2015).

**Measures**

*Workplace social capital* was measured by fifteen survey items that cover bonding, bridging, linking and organizational social capital. The items were taken from the Social Capital Questionnaire developed by the Danish National Research Centre for the Working Environment (Borg, Matu & Clausen, 2014). All items and scales are analyzed and validated (Borg, Mateu & Clausen, 2014).

Unlike in previous studies, the questionnaire allows for a more nuanced measure of social capital in respect to the various relationships and dynamic within the workplace. For each of the four subdimensions of social capital, an additive index ranging from 1 to 5 was created. Additional validation of the indexes in this dataset are presented in appendix XX. Corresponding to previous research we also include a one-dimensional measure of WSC which is reflected in an global index containing all of the 15 survey items.

*Bonding social capital* consist of four survey items measuring the employees' perception of trust, justice and cooperation between colleagues within the unit. “*In our group, we help colleagues who have too much to do*,” “*In our group, we agree on what is most important in our work tasks*”, “*I trust the group's ability to do the work well*”, “*There is a sense of cohesion and cohesion in my group*” (alpha=0,83).

*Bridging social capital* contains the following four items: “*Our group and other groups / departments recognize each other's contribution to solving the tasks at work*”, “*We agree on the main goals of our work across the departments of the organization*”, “*Other groups provide us with the information we need for our work to be done well*”, “*Other groups have a great understanding of the work we do in our group*” (alpha=0,84).
Linking social capital contains the following four items: “Our immediate manager considers our needs and point of view when making decisions”, “The immediate manager helps solve specific problems we face during the workday”, “Our immediate manager has great understanding of the work we are doing”, “The relationship between our group and our immediate manager is characterized by mutual respect and recognition” (alpha=0,93).

Organizational social capital differs from the other social capital measures by consisting of only three items: “Employees are involved in decisions about changes of the workplace”, “There is a common understanding between management and employees about how to perform the work tasks”, “In our group we feel a strong connection to our workplace” (alpha=0,81)

All survey questions were answered using a five-point Likert scale ranging from 1 “to a great extent” to 5 “to a small extent” (reversed coding).

Sickness absence is traditionally measured as either the frequency of absence spells or the duration of sickness absence. Both types of measures have been shown to relate to motivation, but the duration of sickness absence has been found to be more strongly connected to factors concerning the seriousness of the illness (Beemsteboer et al., 2009). A literature review on sick leave determinants found an overall similar influence of workplace related determinants such as relations to supervisor and colleagues on both frequency and duration of absenteeism (ibid.). We measure sickness absence as a continuous variable reflecting the number of days’ sick per year (in 2014 and 2015). Parental leave, pregnancy-related nuisance and other types of leaves are not included in the measure.

Co-variates. Well stablished antecedents when studying sickness absence are self-reported health, prevalent health problems or sickness absence at baseline (See for example Lund, Labriola and Villadsen 2007; De Clercq et al 2015; Rugulies et al 2016, Hansen et al 2017; ). In this study we use objective baseline sickness absence information from 2013 as control, which is one year prior to the measure of workplace social capital. The baseline measure of absenteeism is categorical. Further, several studies have shown that gender and age are of importance (Lund, Labriola and Villadsen 2007; Oksanen et al 2008: Oksanen et al. 2013; Rugulies et al 2016, Hansen et al 2017). Oksanen et al. (2013) for example argue that gender congruency within work units can lead to more frequent
interaction, which in turn will form closer interpersonal relations within networks and generate higher levels of social capital. We therefore control for gender (0=female, 1=male), age (in years from 18-73). Finally we also control for whether the employee is assigned staff responsibility (0= no staff responsibility, 1= staff responsibility) and for which section they work in.

Data analysis
Some descriptive statistic on sickness absences are displayed in Table 1. For analyzing the data, we compared the fit of four models for count data: the simple Poisson regression model, the zero-inflated Poisson model, the simple negative binomial model, and the zero-inflated negative binomial model. It turned out that (i) there was great overdispersion in relation to the Poisson model (i.e., the variance was substantially larger than the mean), and (ii) there was no essential excess of zero absences compared with what could be reasonably expected in the simple non-inflated model. Hence, we chose negative binomial regressions for the data analysis.

Table 1 Summary measures of absenteeism, 2013-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Obs.</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Share of individuals with 0 days absent</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>6,236</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>36%</td>
<td>7.9</td>
<td>18.4</td>
</tr>
<tr>
<td>2014</td>
<td>6,608</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>39%</td>
<td>8.4</td>
<td>21.3</td>
</tr>
<tr>
<td>2015</td>
<td>6,590</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>39%</td>
<td>9.6</td>
<td>27.3</td>
</tr>
</tbody>
</table>

We estimated eight regression models for the main analysis, using two different dependent variables (absenteeism 2014 and 2015), two sets of main independent variables – a joint social capital index and the four social capital dimensions separately – and two sets of control variables (a) a baseline model without controls, b) controlling for gender, age, whether an employee has staff responsibility, absenteeism in 2013 (as categorical variable with 6 categories), and including section dummies (descriptive statistics on all but section dummies is provided in the Appendix). Coefficients were transformed into incidence rate ratios (IRR) to ease interpretation.

As sensitivity analyses, we a) repeated the estimations excluding outliers, defined as individuals with more than 120 days of absence, and b) performed logit regressions on a binary measure of
long-term absenteeism (defined as more than 30 days of absence). All analyses were performed in Stata 15.1.

Results
Results are displayed in Table 2. The first four columns report the results for the joint social capital index. After adjustment for covariates, a one-unit increase in social capital yields a 21% decrease in the number of days absent in 2014 (IRR = 0.79, 95% CI: 0.73, 0.87) and a 10% decrease in the number of days absent in 2015 (IRR = 0.90, 95% CI: 0.81, 0.99). Regarding the control variables, all our control variables significantly relate to sickness absence, except for age on absenteeism 2015.

The second four columns report the results for the single social capital dimensions. It becomes obvious that it is mainly two dimensions which drive the effect of social capital on absenteeism; in the simple model, bonding and linking to the immediate manager each yield a 13% decrease in the number of days absent in 2014, respectively (IRR = 0.87, CI: 0.78, 0.97 for bonding, and CI: 0.79, 0.95 for linking). When adding the control variables, the effect remains negative, but becomes insignificant for linking. For the days absent in 2015, the effect diminishes further, but remains negative for both dimensions and significant for bonding.

The sensitivity analyses confirm the robustness of our results: the direction of coefficients remains stable across all models, with only slight changes in the significance.
### Table 2 Results of negative binomial regressions

<table>
<thead>
<tr>
<th>Model no.</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absenteeism (Y):</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint or separate indexes</td>
<td>Joint</td>
<td>Joint</td>
<td>Joint</td>
<td>Joint</td>
<td>Separate</td>
<td>Separate</td>
<td>Separate</td>
<td>Separate</td>
</tr>
<tr>
<td>Controls included?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Social capital (joint index)</td>
<td>0.75*** (0.04)</td>
<td>0.79*** (0.04)</td>
<td>0.87** (0.05)</td>
<td>0.90** (0.05)</td>
<td>0.87** (0.05)</td>
<td>0.89** (0.04)</td>
<td>0.91 (0.06)</td>
<td>0.89** (0.04)</td>
</tr>
<tr>
<td>Social capital (index 1)</td>
<td>1.00</td>
<td>0.96</td>
<td>1.02</td>
<td>1.03</td>
<td>0.95</td>
<td>0.94</td>
<td>0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>Social capital (index 2)</td>
<td>0.87*** (0.05)</td>
<td>0.89** (0.04)</td>
<td>0.94 (0.05)</td>
<td>0.95 (0.04)</td>
<td>0.95 (0.05)</td>
<td>0.94 (0.05)</td>
<td>0.95 (0.04)</td>
<td>0.95 (0.05)</td>
</tr>
<tr>
<td>Social capital (index 3)</td>
<td>0.87*** (0.04)</td>
<td>0.89** (0.04)</td>
<td>0.91 (0.05)</td>
<td>0.92 (0.04)</td>
<td>0.95 (0.05)</td>
<td>0.94 (0.05)</td>
<td>0.95 (0.04)</td>
<td>0.95 (0.05)</td>
</tr>
<tr>
<td>Female</td>
<td>1.23*** (0.10)</td>
<td>1.52*** (0.12)</td>
<td>1.22*** (0.10)</td>
<td>1.55*** (0.12)</td>
<td>1.22*** (0.10)</td>
<td>1.55*** (0.12)</td>
<td>1.22*** (0.10)</td>
<td>1.55*** (0.12)</td>
</tr>
<tr>
<td>Age</td>
<td>0.45*** (0.00)</td>
<td>0.57*** (0.00)</td>
<td>0.44*** (0.00)</td>
<td>0.56*** (0.00)</td>
<td>0.44*** (0.00)</td>
<td>0.56*** (0.00)</td>
<td>0.44*** (0.00)</td>
<td>0.56*** (0.00)</td>
</tr>
<tr>
<td>Has staff responsibility</td>
<td>1.63*** (0.14)</td>
<td>1.67*** (0.16)</td>
<td>1.67*** (0.17)</td>
<td>1.65*** (0.19)</td>
<td>1.67*** (0.17)</td>
<td>1.65*** (0.19)</td>
<td>1.67*** (0.17)</td>
<td>1.65*** (0.19)</td>
</tr>
<tr>
<td>Absenteeism in 2013:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 days</td>
<td>Ref.</td>
<td>Ref.</td>
<td>Ref.</td>
<td>Ref.</td>
<td>1.21** (0.11)</td>
<td>0.88 (0.09)</td>
<td>1.20** (0.11)</td>
<td>0.86 (0.08)</td>
</tr>
<tr>
<td>1-2 days</td>
<td>1.12</td>
<td>0.88</td>
<td>1.20**</td>
<td>0.86</td>
<td>0.93</td>
<td>0.73</td>
<td>1.20**</td>
<td>0.86</td>
</tr>
<tr>
<td>3-4 days</td>
<td>1.36*** (0.11)</td>
<td>1.25** (0.11)</td>
<td>1.36*** (0.11)</td>
<td>1.24** (0.11)</td>
<td>1.36*** (0.11)</td>
<td>1.24** (0.11)</td>
<td>1.36*** (0.11)</td>
<td>1.24** (0.11)</td>
</tr>
<tr>
<td>5-6 days</td>
<td>0.63*** (0.15)</td>
<td>1.67*** (0.19)</td>
<td>0.63*** (0.16)</td>
<td>1.67*** (0.19)</td>
<td>0.63*** (0.16)</td>
<td>1.67*** (0.19)</td>
<td>0.63*** (0.16)</td>
<td>1.67*** (0.19)</td>
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<tr>
<td>7-8 days</td>
<td>2.17*** (0.22)</td>
<td>1.87*** (0.19)</td>
<td>2.17*** (0.22)</td>
<td>1.77*** (0.18)</td>
<td>2.17*** (0.22)</td>
<td>1.77*** (0.18)</td>
<td>2.17*** (0.22)</td>
<td>1.77*** (0.18)</td>
</tr>
<tr>
<td>9+ days</td>
<td>3.26*** (0.22)</td>
<td>2.53*** (0.19)</td>
<td>3.28*** (0.22)</td>
<td>2.52*** (0.19)</td>
<td>3.28*** (0.22)</td>
<td>2.52*** (0.19)</td>
<td>3.28*** (0.22)</td>
<td>2.52*** (0.19)</td>
</tr>
<tr>
<td>Section dummies</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Intercept</td>
<td>23.58*** (4.71)</td>
<td>2.34*** (3.38)</td>
<td>16.25*** (11.84)</td>
<td>3.09*** (11.84)</td>
<td>3.60*** (0.08)</td>
<td>0.00 (0.06)</td>
<td>3.96*** (0.08)</td>
<td>3.05*** (0.07)</td>
</tr>
<tr>
<td>Alpha</td>
<td>3.63*** (0.08)</td>
<td>n/a</td>
<td>3.99*** (3.38)</td>
<td>14.33*** (0.07)</td>
<td>24.26*** (5.01)</td>
<td>n/a</td>
<td>17.52*** (5.01)</td>
<td>15.97*** (5.01)</td>
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<tr>
<td>Observations</td>
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<td>6,219</td>
<td>6,579</td>
<td>6,200</td>
<td>6,467</td>
<td>6,112</td>
<td>6,450</td>
<td>6,093</td>
</tr>
</tbody>
</table>

Note: reported are coefficients (expressed as incidence rate ratios) and standard errors (in parentheses) from negative binomial regressions, with Huber-White heteroscedasticity consistent standard errors.

*** p<0.01; ** p<0.05; * p<0.1
Discussion and conclusion
We will discuss the theoretical and practical implications of our results and conclude in our further development of the paper.
### Appendix

**Table 3 Variable definitions and descriptive statistics**

<table>
<thead>
<tr>
<th>Variable definition</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td><strong>Absenteeism</strong>: Continuous (untransformed, log transformed) and binary: Continuous (untransformed): Days of absence in a given year</td>
<td></td>
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<tr>
<td>2013</td>
<td>6,236</td>
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<td>27.3</td>
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<td>2013, categorical:</td>
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<td>0 days</td>
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<tr>
<td>1-2 days</td>
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<td>3-4 days</td>
<td>737</td>
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<td>5-6 days</td>
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<td>7-8 days</td>
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<td>9+ days</td>
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<td><strong>Social capital</strong></td>
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<td>5</td>
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<tr>
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<td>5</td>
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<tr>
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<td>10.7</td>
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<td>73</td>
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<td><strong>Organisational unit: Section in which the individual is employed</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note a: Register data.
Note b: From 2014 survey.
Note c: Proportion for absenteeism 2013, categorical.
References:


