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Abstract

High quality supervisor-subordinate relationships, measured as Leader Member Exchange (LMX), can either reduce or intensify subordinates' job strain. We examined LMX effects on job demands and strain in junior and senior role nursing dyads in a sample of five UK hospitals. LMX reduced job demands and strain for junior subordinates, but for senior subordinates both low and high quality LMX lead to greater strain, indicating a curvilinear relationship between LMX and strain. We found no buffering effect of LMX between job demands and strain. The paper discusses the role of supervisors in controlling potential job stressors for employees and implications for stress management in large, complex workplaces.

Keywords: leader-member exchange, job strain, role status, nursing

This paper examines the effect of the supervisor-subordinate relationship, conceptualised as Leader-member Exchange (LMX), on employees' experiences of job strain within nursing. Drives for greater public sector efficiency and effectiveness (Burke, Allisey, & Noblet, 2013) have resulted in the need to manage increasing workload with fewer staff and often low employee morale (Callaghan, 2003). Similarly, the professionalised nursing management role (Law & Aranda, 2010) has been required to deal with conflicting demands, such as mentoring colleagues while responding to managerialist, organisational imperatives (Bolton, 2003). Nursing, therefore, manifests some of the complexities of supervisory relationships, the need to manage increasing job demands and high employee strain.

Most LMX research has focused on the positive attitudinal and performance outcomes of high-quality supervisor-subordinate relationships and their potential for minimising negative experiences; for example, reducing work demands and exhaustion (Halbesleben, 2006); easing role stressors (Nelson, Basu, & Purdie, 1998; Tordera, González-Romá, & Peiró, 2008); and reducing burnout (Thomas & Lankau, 2009). These findings are consistent with job demands-resource theory (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) where social support within a high-quality LMX relationship acts as a resource which reduces high job demands and their consequences for employees.

High LMX, however, may also be a source of additional responsibilities and accountabilities (Sherman, 2002). In line with the principles of role-making (Dansereau, Graen, & Haga, 1975), followers' roles become extended through increased trust and delegation. Some findings suggest a curvilinear relationship between LMX and stress (Harris & Kacmar, 2006; Hochwarter, 2005), and with certain role stressors, such as conflict and overload (Jian, 2012), implying negative

consequences for those in higher quality relationships. There have been few studies designed to explain this phenomenon, and Harris and Kacmar (2006), in particular, encourage further research.

The present study addresses this gap by comparing LMX relationships and the effects on job strain for two different nursing roles which represent contrasting job demands and supervisory challenges. The nursing context provides a valuable exemplar of the complexities of LMX for understanding stress. The profession's hierarchical nature comprises varied roles, from menial tasks with low levels of responsibility and control but clear role boundaries, to clinical and managerial hybrid roles at senior levels, consisting of complex role boundaries and role multiplicity (Law & Aranda, 2010; Lizarondo, et al., 2010; Bolton, 2003). It is these distinctions in seniority that we draw upon to distinguish differential effects of job demands in nursing dyads. The paper establishes and tests hypotheses that LMX's positive effects on reducing job demands and strain apply only for junior nursing roles. Those in senior roles experience different demands and draw on different resources from the supervisor.

The paper begins by elaborating on the rationale for the role distinctions in nursing. It then develops hypotheses on the effects of LMX separately for these two roles, first, proposing that LMX fulfils its resource function for junior roles by reducing job demands, and secondly, that LMX becomes a source of higher demands and strain rather than a resource for senior positions (see Figure 1). These are then tested in a study contrasting job stressors, LMX and strain for a sample of nursing dyads (employees and their supervisors) in five UK National Health Service (NHS) hospitals.

As well as contributing to the understanding of stress in nursing, the study complements the emerging perspective of LMX quality as a source of job strain. The findings suggest dyad status as an explanatory factor requiring further research and have implications for supervision and stress management within public sector organisations.

Put Figure 1 here

DEMANDS IN NURSING

Job demands are defined as work experiences which require physical or mental effort and may act as job stressors with physical or psychological costs (Demerouti, et al., 2001). In nursing, job demands are varied and complex (De Jong, Mulder & Nijhuis, 1999) but there are some recognised job-related stressors, such as the emotional content of the work (Hunter, 2005) and workload (Jenkins & Elliot, 2004).

Demands vary by rank or role status (Shirom et al, 2008; Marom & Koslowsky, 2013). A systematic review of nursing roles (Lizarondo, et al., 2010) described the duties of assistant ‘support’ workers as restricted to supporting, administrating, and maintaining the process of direct care. Less experienced nurses also tend to be assigned extra workload and more unpleasant tasks (Lambert & Lambert, 2004). More senior staff roles involve evaluating, assessing, diagnosing, planning, and implementing. The emergence of the nursing ‘professional’ (Law & Aranda, 2010) is also thought to have elevated levels of role conflict and ambiguity as a consequence of evolving role boundaries (Teo et al, 2013; Cathcart et al, 2004).

In particular, nurse empowerment and role expansion into management has increased supervision burdens for senior professional staff (Bolton, 2003; Brunetto, Farr-Wharton, Shacklock, 2011; Lizarondo et al, 2010; Apker, Propp & Ford, 2007). Other research suggests that middle managers within health services have absorbed

the workload and stress created by structural change, with greater spans of control, intensification of work and less autonomy (Conway & Monks, 2011; Hoque, Davis, & Humphreys 2004; Hutchison & Purcell, 2010).

The varied demands of nursing roles highlight the importance of status differences when examining the effects of supervisory relationships on stress. Lower status roles are more defined by the formal boundaries of the job and generally exhibit in-role behaviours; high LMX here involves a process of establishing agreement about role definition with limited threat of role expansion (Hsiung & Tsai, 2011). LMX in higher status dyads allows the role to expand and employees to develop extra-role behaviours (Liden, Wayne, & Stillwell, 1993), therefore creating further demands for subordinates. We now expand on these two conceptions of high-quality LMX as a resource and a demand.

LEADER MEMBER EXCHANGE AS A RESOURCE

Leader-member exchange (LMX) describes the relationship between supervisors and subordinates on a continuum of low- to high-quality exchanges. LMX theory proposes that relationships develop over time based on differential degrees of relational qualities (Graen & Cashman, 1975). A high-quality relationship is characterised by growing levels of respect, trust, and obligation and supervisors reward these commodities with support, clear expectations, and a relaxation of formal supervision. Low-quality relationships are characterised by a lack of briefing, poor information exchange and close supervision due to low levels of trust. Individuals in high-quality relationships have been shown to experience fewer role stressors, especially role overload and conflict (Nelson, et al., 1998; Schriesheim, et al., 1998;

Tordera, et al., 2008), and less exhaustion and burnout (Halbesleben, 2006; Thomas & Lankau, 2009).

For junior nursing roles, we have argued that role boundaries are likely to be clearer, work largely task-orientated and contained within the ward setting, and responsibilities lower than for senior counterparts. We, thus, expect this group to demonstrate the conventional negative LMX-strain relationship due to the capacity of the supervisor to reduce job demands (potential job stressors) in high-quality relationships. This leads to our first set of hypotheses on the direct and indirect effects of LMX on strain (defined as the psychological and behavioural consequences of job stressors).

Hypothesis 1 (H1): For junior roles, LMX quality is negatively related to strain.

Hypothesis 2 (H2): For junior roles, job demands mediate the relationship between LMX quality and strain through an inverse relationship between LMX and demands; that is, high LMX quality is expected to lower strain by reducing jobs demands.

The JD-R model describes a ‘health impairment process’ when the combination of exhaustive job demands and the poor provision of job resources has an energy depleting effect on the individual. However, the supervisory relationship may be utilised to buffer the impact of job demands on strain for employees.

Although the first hypothesis expects that LMX reduces the experience of strain, and the second that LMX reduces the demands placed on employees, it is likely that job demands such as high workload will still present pressures for nurses in junior roles. In this instance, we expect LMX to reduce the effects of high demands rather than reducing the demands directly. Support may be instrumental in nature therefore

alleviating how severely the strain outcomes are experienced by employees.

Therefore, we hypothesise that:

Hypothesis 3 (H3): For junior roles, LMX quality moderates the relationship between job demands and strain, such that as LMX quality increases, the strength of the relationship between job demands and strain decreases.

LMX AS A DEMAND

A more complex relationship between LMX and job strain is also possible, with negative outcomes for members of high-quality exchanges (Harris & Kacmar 2006; Hochwarter, 2005; Jian, 2012). This research suggests a U-shape association between LMX quality and strain or its antecedents (e.g. role conflict). Specifically, strain is high when LMX quality is low, decreases when LMX quality is moderate to moderately high, and increases again when LMX quality is high.

We specifically argue here that high-quality LMX and high strain may occur in senior roles where role boundaries are more ambiguous than for junior roles. In particular, senior nursing roles comprise a hybrid of management and clinical responsibilities, the former requiring detached coordination and the latter engaging the nurse in caring and nurturing activities. This role multiplicity can create emotional tensions (Bolton, 2003) as well as requiring nurses to assume responsibilities which overlap with their own managers. With respect to LMX relationships, increased responsibility and autonomy assumed by the subordinate are central features of the LMX progression to maturity according to Graen and Uhl-Bien (1995). Within a high-quality relationship, subordinates may experience increased role stressors while developing their role and LMX (Eisenberger, Fasolo, & Davis-LaMastro, 1990; Jian,

2012). This suggests that the LMX components of respect, trust and obligation could themselves be responsible for increasing job demands and hence strain.

It is possible, therefore, that a curvilinear pattern better represents the LMX-strain relationship for those in senior roles. In this case, only moderate LMX quality would succeed in limiting the effects of job demands. Poor-quality relationships imply poor access to supervisor support, while high-quality implies greater exposure to some job demands as a function of higher levels of responsibility. We explore this possibility hypothesising that:

Hypothesis 4 (H4): For senior roles, there is a non-linear relationship between LMX quality and strain.

We also consider whether the process of relationship building and reciprocal expectations from supervisors (which are features of high-quality LMX) imply higher job demands. Leaders ‘test’ the relationship through ‘repeated interaction episodes’ including the delegation of tasks. When these tasks are performed well, trust builds, role interdependency forms and this promotes obligation, based on the principles of exchange theory (Henderson, et al., 2009; Sears & Hackett, 2010). Additionally, where the dyad is more senior, role boundaries can become extended as power and accountability increases. This is consistent with principles of role making and inversion, where an increase in the quality of exchanges introduces further accountability and responsibility (Sherman, 2002). As such, the relationship itself presents a source of higher job demands, leading to the following hypothesis.

Hypothesis 5 (H5): For senior roles, job demands mediate the relationship between LMX quality and strain through a positive relationship between LMX and demands; that is, high LMX quality is expected to increase strain by increasing jobs demands.

Subordinates in more senior dyads occupy roles that are characterised and shaped by wider structural forces. Political drivers to deliver efficiency savings, standardisation and performance (Butterfield, Edwards & Woodall 2005) have placed much of the responsibility for performance targets with senior clinical staff (Bolton, 2003; Lizarondo et al., 2010) who have presence in, and appreciation of, ward conditions. Such pressures increase nurses' accountability, and supervisors who develop mutually trusting relationships with their subordinates can generally expect increased 'giving behaviours', thus maintaining high levels of effort from these subordinates.

In this context, supervisors cannot decrease job demands, as some of these are from wider organisational sources and not within their control. Further, supervisors do not necessarily decrease the experience of strain in senior dyads as they are also subject to the same pressures and expectations (Hutchinson & Purcell, 2010). Our final hypothesis, then, captures the impotence of supervisors within senior-level dyads to provide the resources for their subordinates often assumed with high-quality LMX.

Hypothesis 6 (H6): For senior roles, LMX quality has no moderating effect on the relationship between job demands and strain.

METHOD

Sample and procedure

Survey data were collected from supervisor-subordinate dyads in five UK hospitals. The target dyad sample was front-line staff in nursing, midwifery, or allied health professional (NMHAP) roles; e.g. ward managers (sisters) and senior staff nurses for senior roles and charge nurse, staff nurse, and nursing/care assistant for junior roles. Supervisors for senior roles occupied positions such as clinical service manager or senior midwife. Supervisors for junior roles included nurse sisters and occupational

health nurse managers. All employees and supervisors were responsible for making decisions about patient care and coordinating with medical and pharmacy staff.

Two versions of the questionnaire (supervisor/subordinate) were developed to enable multi-source LMX data and so reduce common-source bias (Gerstner & Day, 1997). Survey packs containing both questionnaires were distributed to 200 supervisors in four hospitals and to 12 dyads within a small mental health team in a fifth (potentially 812 dyads). Supervisors were selected by Training and Development managers from a staff database including all NMHAP staff and asked to pass the subordinate questionnaire to the first employee who arrived on the next shift (to avoid selecting their most preferred employee) and then complete their questionnaire for this subordinate. A coding system maintained anonymity and matched dyads. Return envelopes were provided for independent return within a two week deadline.

Responses were received from 121 supervisors and 126 employees (116 dyads; 70 with junior subordinates; 46 with senior subordinates). This multi-source data is rare in LMX research (Joseph, Newman, & Sin, 2011) and compensates, to some extent, for the response rate of 15 per cent. Gatekeeping/ethics restrictions prevented follow-up. Gatekeepers confirmed that the respondents were representative of NMHAP roles.

Measures

Dependent variables. Measures for job demands and strain (operationalized, respectively, as the frequency of potential job stressors and the severity with which each was experienced) were created from the subscales of the 30-item Job Stress Survey (JSS) (Table 1; Spielberger & Vagg, 1999). The JSS items represent task and organisational aspects of work which are potential job stressors and load on two dimensions: job pressure (JP) and lack of organisational support (LOS); e.g. JP items:

‘dealing with crisis situations’, ‘frequent interruptions’, ‘meeting deadlines’; LOS items: ‘lack of recognition for good work’, ‘lack of participation in policy-making decisions’. Organisational support may also be thought of as a resource; but our interest was in the effects of LMX on role stressors, either sourced from the job itself (operationalised as JP in the JSS) or the organisation (operationalised as LOS in the JSS). The JSS instrument, thus, allows us to operationalise how the nature of the job and the organisational context can be a source of demands; i.e., the JSS specifically treats lack of organisational support as a role stressor.

Respondents were asked to rate each item for: (a) frequency of reported occurrence in the last 6 months (scale from 0 to 9+ days) and (b) severity (scale of 0 to 9 with 5 representing an average amount of strain). Using frequency and severity of job stressors to represent demands and strain, respectively, we created four dependent variables based on Spielberger and Vagg’s (1999) mean composites of the JP and LOS items (Table 1): demands (JP) ($\alpha = .96$), demands (LOS) ($\alpha = .97$), strain (JP) ($\alpha = .95$), strain (LOS) ($\alpha = .96$). The hypotheses were tested separately for JP demand and strain and for LOS demand and strain.

Leader-member exchange. A seven-item scale (LMX-7; Graen & Uhl-Bien, 1995) was given to both employees and supervisors; supervisor LMX was used as the independent variable to avoid common method variance. Six items measured three dimensions (respect, trust, and obligation) and an additional global item was also included: ‘how would you characterise your working relationship with your leader/employee?’ (five-point scale of agreement; $\alpha = .86$ for supervisor ratings; $\alpha = .94$ for employee ratings). Exploratory factor analysis confirmed one component in both supervisor and employee ratings. There was no significant difference between employee and supervisor ratings ($t(116)=1.03$).

Control variables. We controlled for key correlates of supervisor-rated LMX (Gerstner & Day, 1997) and employee stress (Shirom, et al., 2008). Supervisor-rated 'liking' (friendship or enjoyment from a relationship) was measured using Wayne and Ferris' (1990) four-item scale (five-point scale, 1='strongly disagree' to 5='strongly agree'; $\alpha = .92$). Supervisor ratings minimised percept-percept bias (Crampton & Wagner, 1994). Employee job satisfaction was measured with the 20-item short-form Minnesota Satisfaction Questionnaire (MSQ; Weiss, et al., 1967) (five-point scale, 1='not satisfied' to 5='extremely satisfied'; $\alpha=.92$), representing each of the facets of the original MSQ (e.g. achievement, authority, responsibility). Relationship tenure reported by supervisor was measured in months (short relationships have had less time to develop trust, support and delegation). Gender, age, ethnicity, education, and job tenure were included as each has been found to effect supervisory relationships (Varma & Stroh, 2001; Tsui & O'Reilly, 1989) and stress (Shirom, et al., 2008). An open-ended question asked for job title. These were cross-checked against the sample qualifications. Considering a degree is now a requirement for registered nurses, this allowed us to use qualifications as a proxy for the junior/senior role distinction (i.e. school/college level only (junior) versus bachelor degree or higher (senior)).

Analysis

Multi-source data drawing from dyads allowed supervisor data to be used for LMX, liking and relationship tenure, and employee data for all other measures. H1 and H4 were examined by estimating equations separately for two dependent variables - strain (JP) and strain (LOS) - and testing for the direct effects of linear, squared and cubic LMX terms. The squared and cubic terms tested whether one or two bends in the curve better represented the data, respectively. For H2 and H5, hierarchical regressions were estimated for strain and demand (separately for JP and LOS) to test

the contribution to explained variance of demands over LMX. H3 and H6 were tested by adding the LMX-demands interaction term to the equations for strain. Variables were standardized before calculating their cross-product terms in order to avoid problems of multicollinearity.

RESULTS

Sample description

Dyads consisted of a predominantly full-time, permanent female workforce with over 70 per cent above the age of 30. Supervisors were more likely to be over 40. Twenty-two per cent of subordinates were part-time permanent and 38 per cent educated to degree level, compared to 58 per cent of supervisors. Almost all were of white ethnicity. Employee tenure (M=6.49 years, SD=7.15), supervisor tenure (M=7.24 years, SD=7.31) and length of relationship (M=8.02 years, SD=8.26) did not differ significantly across junior and senior groups and indicated long-standing relationships.

Employee ratings of demands and strain are reported for each of the 30 JSS stressors and four composites (Table 1) in descending frequency of occurrence overall. Senior roles rated many of the stressors as more frequent than junior roles but for both groups, the most frequent demands were: 'insufficient personnel to handle workload', 'excessive paperwork', 'covering for other employees', 'taking on increased responsibility', and 'fellow workers not doing their job'. These also tended to reflect the highest strain, with ratings of severity close to five or over. Events for which higher strain was reported but which occurred less frequently tended to be those which were out of the direct control of employees or reflected the nature of nursing generally e.g., 'inadequate or poor quality equipment'. The composite scores

show that JP stressors are more frequent ($M=3.66$) than LOS stressors ($M=2.95$) ($t(115)=5.65, p<.001$) for both junior ($t(69)=3.25, p<.01$) and senior ($t(45)=4.88, p<.05$) roles. With respect to strain, junior roles reported comparable severity for JP and LOS ($t(69)=1.36$) while senior roles rated JP as creating higher strain ($t(45)=2.24, p<.05$). Table 2 shows means, standard deviations and intercorrelations for each of the variables used in hypothesis tests. Multicollinearity amongst the independent variables was not an issue as correlations were below .40, other than for the two demand scales which were not used in the same analyses. Regressions estimated for strain and demands only on control variables and role (not shown) supported the separate hypothesis testing with senior roles showing significantly higher strain (JP: $\beta=.31$, LOS: $\beta=.25, p<.001$) and demands (JP: $\beta=.41$, LOS: $\beta=.33, p<.001$).

Put Tables 1 and 2 here

Hypothesis tests

Hypotheses 1 and 4 (H1, H4) relate to the direct relationship between LMX and strain. Equations for strain were estimated separately for junior (H1) and senior (H4) groups and separately for both job pressure (JP) demands and strain and lack of organisational support (LOS) demands and strain (Table 3). Control variables were entered in Step 1 followed by linear, squared and cubic LMX terms in subsequent steps with examination of the contribution to explained variance for each of the LMX terms.

H1, which proposed an inverse relationship between LMX and strain for junior roles, was supported for both JP equations ($\beta=-.49, p<.01; \Delta R^2=.12, F\Delta R^2(1,65)=11.57, p<.001$) and LOS equations ($\beta=-.44, p<.01; \Delta R^2=.20, F\Delta R^2(1,65)=9.33, p<.001$). Only the linear LMX term was significant for this group. By contrast, the squared LMX term entered in Step 3 was significant for senior roles

in the JP equations only ($\beta=2.32$, $p<.05$; $\Delta R^2=.07$, $F\Delta R^2(1,40)=3.03$, $p=<.05$). The cubed terms (not shown) were not significant. This supports H4 in the case of strain due to JP but not LOS. The positive beta for LMX^2 suggests that a U-shape best represents the LMX-strain relationship due to JP for senior roles. Strain declines up to an optimal LMX level (estimated at 3.5 on a five-point scale), after which, LMX contributes to a rise in strain. Although small, the increment in explained variance by adding the squared LMX term (7 per cent) is consistent with other findings of a quadratic relationship between LMX and stress (Harris & Kacmar, 2006). The linear and curvilinear LMX-strain relationships due to JP for junior and senior roles are shown in Figures 2 and 3, respectively.

Put Table 3 here

Put Figures 2 and 3 here

Hypotheses 2 and 5 (H2, H5) proposed demands as mediating the effect of LMX on strain. Table 4 shows the hierarchical regressions testing this for JP and LOS demands and respective measures of strain. The first condition for mediation (a relationship between LMX and the mediator) was satisfied only for junior roles, with LMX negatively related to JP demands ($\beta=-.39$, $p<.001$) and LOS demands ($\beta=-.43$, $p<.001$). Further regressions for junior roles (Table 4, Step 2) confirmed additional conditions: (a) both JP and LOS demands were positively related to strain, (b) demands made a significant contribution to explained variance over that of LMX (shown by the significant $\Delta R^2=.13$), and (c) LMX's beta coefficient at Step 2 reduced by .16 in the equation for strain(JP) and .19 in the equation for strain(LOS). These results support H2 that for junior roles job demands mediated the relationship between LMX and strain through LMX reducing demands. For senior roles, the mediation hypothesis (H5) was not supported as LMX did not increase job demands.

Table 4 (Step 3) also tests Hypotheses 3 and 6 (H3, H6) by adding the LMX-demands interaction terms. This term was not significant for any of the equations estimated. While this means that H3 was not supported, as we did not find the expected moderating effect of LMX on the demands-strain relationship for junior roles, H6 was supported, as the expectation was that there would indeed be no moderating effect for senior roles.

Put Tables 3 and 4 here

DISCUSSION

The findings suggest that in dyadic nursing relationships high-quality LMX has both beneficial and harmful effects with respect to subordinates' strain. Although not all hypotheses were supported, a critical factor appears to be the subordinate's role. The hypothesis that LMX has a negative, linear association with strain for junior roles was supported. High-quality LMX succeeded in lowering the strain experienced with respect to job pressure and lack of organisational support. Our use of the Job Stress Survey (JSS), which measured each item as a potential job stressor along with its associated strain, allowed us to test whether this effect resulted from LMX reducing demands. Our hypothesis that this would be the case for junior roles was confirmed. However, we found no evidence to support our expectation that LMX provided a resource for these employees by moderating the effects of high demands on strain.

For higher status staff, the relationship between LMX and strain was non-linear, as hypothesised, but only for strain related to job pressure (not lack of organisational support). This confirms other studies using various employee samples (Harris & Kacmar, 2006; Hochwarter, 2005) although none of these has proposed that role status may explain linear versus non-linear findings. For senior roles, contrary to

expectation LMX did not create higher demands leading to strain; but as expected it did not moderate the effects of high demands on strain.

The study moves beyond the more usual consideration of linear relationships between LMX, role stressors and strain. Drawing on the health-impairment pathway of the job demands-resource model, high-quality LMX may be both a resource (e.g. by decreasing job demands) and a demand itself (e.g. by increasing expectations). We conceptualised contrasting processes for LMX in two different dyadic environments to show the possibilities and limitations of the supervisory relationship for reducing demands and strain.

First, we proposed that junior roles were more likely to represent the ideal conditions for high-quality LMX relationships given the task-focused, and relatively stable nature of the role. For these employees, the premise was that high-quality LMX leads to tangible resources. High LMX both alleviates demands (e.g. work overload) and provides support which enables subordinates to cope with these demands. Our findings for junior roles are consistent with LMX as a resource (Erdogan & Enders, 2007; Erdogan, Kraimer, & Liden, 2002) which brings a direct and indirect (through reduced demands) reduction in strain. The lack of expected LMX moderation could be due to the complexity of demand and resource factors interacting in this work situation, which influences whether job resources act as buffers (Bakker & Demerouti, 2007). For example, some of the frequent stressors (Table 1) may not be predictable (e.g. covering work for an employee) or within the power of the direct supervisor (e.g. excessive paperwork).

Our second set of hypotheses builds on evidence that high-quality relationships increase stress (Harris & Kacmar, 2006) and that this may be due to inherent features of the relationship-making process which heighten demands (e.g.

higher leader expectations). For senior roles, we found support for higher JP strain in high-quality relationships, but no evidence that it affected LOS strain or demands. While the frequency of interactions between supervisors and employees has been found to relate positively to LMX (Cogliser & Schriesheim, 2000), we speculate about the type of interactions between supervisors and more autonomous senior employees. For example, communication research applied to LMX (Fairhurst, 1993) highlights a ‘linear bias’ which assumes that contractual interactions decrease and informal interactions increase as LMX quality increases, but this may apply more for senior roles where extra-role behaviours are inherent features of multiple, ambiguous roles. Conversely, the contractual restrictions of junior (and in our sample sometimes unregistered) staff may limit the degree of distance a supervisor can achieve from an employee, even though personally familiar and unceremonious styles of communication may feature (in high LMX relationships).

Our evidence of contrasting dyadic contexts within which LMX varies as a demand and resource highlights subordinate role status as an important variable in the LMX-strain relationship. We have suggested that employees in senior dyads, although more autonomous, are less able to control job demands and hence the resulting strain. This is consistent with suggestions that empowerment provides resources, such as flexibility, but also increases ambiguity about role expectations (Humborstad, & Kuva, 2013). Moreover, higher status LMX dyads may experience unpredictable or uncontrollable sources of demands, perhaps from higher in the managerial structure. These types of demands may contribute to role ambiguity and result in the different job demands-strain relationships we describe.

Thus, our findings add further intricacy to the understanding of the relationship between role stressors, such as overload, and stress outcomes (O’Driscoll

& Beehr, 1994). By focusing on the perceived job-related physical and emotional strain created by specific job stressors (defined as demands), we were able to focus directly on LMX's demand and resource properties. The JSS instrument allowed for the delineation of task and organisational demands associated with strain using matched items rated for frequency and strain severity. It is an appropriate instrument for the measurement of job demands and strain in healthcare and possibly other public-facing contexts, capturing well the demands of contemporary work.

Managerial implications

The study highlights the role of supervisors in managing workplace strain in a challenging job. Previous research in healthcare confirms the need to tailor management to role and level, particularly for lower-level, front-line managers (Hutchinson & Purcell, 2010). The importance of junior management is confirmed by our finding that LMX can influence job demands due to job pressure (e.g., by coordinating workflows and delegating tasks across the team) and perceived lack of organisational support, an issue identified for nurses (Burke, 2003). However, our findings suggest that supervisors are not able to buffer the negative effects of some high demands, qualifying the view of LMX as a resource.

Public sector healthcare organisations generally are disempowering not only for low-grade staff, but also for nurse managers/executives (Cameron & Masterson, 2000; Hoque, et al., 2004; Patrick & Laschinger, 2006). In the NHS, resources such as time, money, and staffing are managed at Trust level (or higher) with bureaucratic processes including arduous paperwork protocols and some mistrust of management (Cooke, 2006). Thus, supervisors are unlikely to be able to protect employees when they themselves are unsupported. Understanding the LMX relationships of

supervisors as subordinates, and hence their access to resources, is acknowledged as essential to nurses' structural empowerment and mental health (Davis, Wong & Laschinger, 2011; Laschinger, et al., 2001). Similarly, ensuring supervisors report high perceived organizational support could contribute to improved benefits for subordinates (Erdogan & Enders, 2007). For NHS employers, it may be possible to enhance line managers' ability to buffer the effects of high demands caused by the stressors found in this study (Table 1) by providing support when considering staffing levels, recording protocols, staff skill mix, and training.

A further management concern is the role expansion of senior staff in healthcare. We propose that the high strain experienced by senior roles with high-quality LMX is a function of job enlargement. The disaggregation of stressors possible with the JSS showed that increased responsibility was the fourth most frequent stressor for more highly qualified nurses. Moreover, some of these additional expectations may exceed senior employees' skillset, especially where nurses have evolved into management from clinical backgrounds (Wise, 2007). For example, Townsend, et al. (2012) highlight that ward managers are expected to filter signals from HR, an additional burden for which they have little training. Future role creation within the NHS, in new assistantship or middle management roles for instance, would also benefit from an understanding of the nature and potential effects of job demands and role boundaries, and ensure effective team design through clear division of labour (Delarue, Van Hootegem, Proctor & Burrige, 2008).

Finally, it is important to acknowledge the complexity of stress management in the public sector given particular contextual factors and role responsibilities. Collins (2006) highlights that organisations such as the NHS should become more aware of the influence of rank and status on stress outcomes. Proactive organisational

level management strategies may be more effective than individual stress management strategies. Our research also suggests that managing strain at the dyadic level is not effective in all instances.

Study limitations

The low response rate and sample size was a limitation, but we ensured that respondents reflected a representative variation in NMHAP roles. In addition, although generalisation is restricted, greater power is offered by the rare multi-source, dyadic design which utilised matched subordinate-supervisor data (Joseph, et al., 2011). A further limitation was the inability to verify the proposition that supervisor support is lacking even in high LMX relationships, as the LMX-7 measure did not directly measure support experienced or offered. It is unclear, for example, what type of supervisory support will prevent demands resulting in high strain. We speculate that for junior roles the explanation for our findings rests on a less complex supportive function. It has been acknowledged that there is little empirical evidence that LMX has balanced reciprocity (Gerstner & Day, 1997), therefore we feel confident in concluding that for these roles it is support from supervisor that reduces strain, not high trust, obligation, and respect. Similarly, the cross-sectional design limited more detailed assessment of the changing nature of exchanges over time (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012).

The study focused on only one social exchange construct (LMX) within what is well known to be a multi-layered organisational structure. As our findings can be explained to a large extent by the sometimes conflicting roles of employees as supervisors and subordinates, and the degree to which some job stressors are within supervisors' control, a study combining social exchange at co-worker, supervisory

and organisational levels is desirable. These are conceptually distinct constructs which contribute to employee outcomes (Tekleab & Chiaburu, 2011). We suggest that supervisors in high LMXs may be required to shield their employees from the negative effects of upper management policy, but often are not empowered to do so. Role empowerment for middle-level managers may be an important area for further consideration to enable better management of high job demands and strain. As we did not measure empowerment or perceptions of organisational support for either employees or supervisors, these points remain speculative and further research should investigate the implications for LMX and the strain outcomes of both dyadic members.

CONCLUSIONS

Even though high-quality LMX has been found to enhance positive employee experiences, the implications for job strain remain uncertain. Using the complexities of the nursing role as the research setting, we confirmed the existence of both linear and curvilinear effects of LMX on perceived job strain in two different types of roles and supervisory relationships. The study confirms the important influence of immediate supervisors for lower level staff, but provides evidence that high-quality LMX increases strain for more senior staff. Our findings accentuate previously understated effects of role status and increases in responsibility for some subordinates.

With respect to research on LMX, the findings support Rosen et al.'s (2011) call for attention to the contextual conditions for examining the effects of LMX on job strain and stress. Under ideal conditions, high LMX should reduce job strain by the provision of support, information, encouragement, role clarity, and less structured supervision. It is possible that conditions in the NHS and other large organisations

present such a broad range of demands for senior staff with large and expanding roles that direct supervisors may be powerless to protect their staff, and indeed be exposed to these demands personally. This adds to the complexity of the relationship between LMX, job demands, and strain.

The paper has interrogated the importance of leadership for stress more generally within organisational hierarchies and contributed to the emerging literature on the negative outcomes of high-quality LMX relationships for some staff. Rank and status dynamics are identified as potentially significant factors in understanding the effects of LMX on stress.

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TABLE 1

Demands and strain (mean employee ratings)

Job-related stressor	Demands						Strain					
	(days experienced in last 6 months)						(severity with which stressors experienced)					
	Total		Junior role ^a		Senior role ^b		Total		Junior role ^a		Senior role ^b	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Insufficient personnel to handle workload (JP)	5.07	3.36	4.24 _a	3.36	6.34 _b	2.97	5.55	2.61	5.39 _a	2.78	5.77 _a	2.34
Excessive paperwork (JP)	4.88	3.59	4.03 _a	3.65	6.17 _b	3.13	5.09	2.49	4.61 _a	2.56	5.81 _b	2.22
Covering work for an employee (JP)	4.65	3.57	3.92 _a	3.51	5.73 _b	3.42	4.63	2.65	4.40 _a	2.74	4.98 _a	2.49
Taking on increased responsibility (JP)	4.58	3.46	3.69 _a	3.43	5.90 _b	3.10	4.66	2.32	4.25 _a	2.29	5.27 _b	2.26
Fellow workers not doing their job (LOS)	4.51	3.41	4.14 _a	3.46	5.04 _a	3.29	5.68	2.23	5.65 _a	2.38	5.73 _a	2.01
Poorly motivated workers (LOS)	4.38	3.42	3.96 _a	3.40	5.00 _a	3.38	5.11	2.48	4.97 _a	2.53	5.31 _a	2.41
Making critical on-the-spot decisions (JP)	4.29	3.42	3.17 _a	3.09	5.98 _b	3.22	4.43	2.24	3.99 _a	2.30	5.08 _b	2.00
Insufficient personal time (eg breaks) (JP)	4.16	3.67	3.10 _a	3.65	5.75 _b	3.10	4.14	2.52	3.54 _a	2.55	5.04 _b	2.22

Job-related stressor	Demands						Strain					
	(days experienced in last 6 months)						(severity with which stressors experienced)					
	Total		Junior role ^a		Senior role ^b		Total		Junior role ^a		Senior role ^b	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Dealing with crisis situations (JP)	3.95	3.33	3.51 _a	3.23	4.58 _a	3.39	5.28	2.01	5.06 _a	2.26	5.63 _a	1.54
Taking on new or unfamiliar duties (JP)	3.66	2.26	2.98 _a	2.12	4.68 _b	2.10	4.43	2.01	4.05 _a	1.74	4.99 _b	1.50
Performing tasks not in job description (JP)	3.63	2.21	2.77 _a	1.42	4.54 _b	2.31	4.31	2.71	4.01 _a	1.04	5.01 _b	1.52
Periods of inactivity (JP)	3.63	2.79	2.08 _a	2.55	4.41 _b	2.77	4.23	2.04	3.98 _a	2.11	4.96 _b	1.32
Frequent interruptions (JP)	3.62	2.12	2.56 _a	2.32	4.13 _b	2.32	4.03	2.74	3.65 _a	1.78	4.88 _b	1.75
Meeting deadlines (JP)	3.61	2.56	2.57 _a	2.11	4.02 _b	2.01	4.11	1.44	3.76 _a	1.73	4.49 _b	1.04
Working extra hours (JP)	3.61	2.22	2.95 _a	2.09	4.61 _b	2.06	4.43	1.71	4.05 _a	1.74	4.99 _b	1.50
Experiencing negative attitudes toward org (LOS)	3.54	3.20	3.45 _a	3.43	3.68 _a	2.85	3.83	2.31	3.57 _a	2.36	4.21 _a	2.20
Freq. changes/boring to demanding activities (JP)	3.53	3.49	2.82 _a	3.24	4.58 _b	3.61	3.71	2.17	3.40 _a	2.20	4.17 _a	2.06
Noisy work area (JP)	3.39	3.50	2.79 _a	3.35	4.30 _b	3.56	3.70	2.31	3.53 _a	2.31	3.96 _a	2.30

Job-related stressor	Demands						Strain					
	(days experienced in last 6 months)						(severity with which stressors experienced)					
	Total		Junior role ^a		Senior role ^b		Total		Junior role ^a		Senior role ^b	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Inadequate or poor quality equipment (LOS)	3.29	3.24	2.65 _a	2.90	4.26 _b	3.50	4.54	2.45	4.08 _a	2.49	5.23 _b	2.25
Having to perform disagreeable duties (JP)	2.96	3.02	2.53 _a	2.88	3.60 _a	3.15	4.68	2.06	4.28 _a	1.97	5.29 _b	2.06
Conflicts with other departments (LOS)	2.95	1.99	2.51 _a	1.87	3.60 _b	2.01	4.10	1.80	3.84 _a	1.77	4.48 _a	1.79
Lack of recognition for good work (LOS)	2.74	3.13	2.03 _a	2.71	3.79 _b	3.44	3.93	2.48	3.61 _a	2.56	4.40 _a	2.29
Personal insult from customer/colleagues (LOS)	2.65	2.99	2.42 _a	2.61	3.00 _a	3.48	4.58	2.60	4.35 _a	2.62	4.92 _a	2.56
Lack of participation in policy/decisions (LOS)	2.37	3.14	1.86 _a	2.84	3.13 _b	3.43	3.83	2.30	3.50 _a	2.30	4.31 _a	2.22
Lack of opportunity for advancement (LOS)	1.97	2.95	1.73 _a	2.72	2.31 _a	3.25	4.24	2.39	3.99 _a	2.38	4.60 _a	2.37
Inadequate support by supervisor (LOS)	1.92	2.74	1.48 _a	2.45	2.56 _b	3.02	3.68	2.68	3.42 _a	2.81	4.08 _a	2.45
Inadequate compensation (LOS)	1.72	2.93	1.39 _a	2.51	2.21 _a	3.44	3.52	2.27	3.38 _a	2.17	3.74 _a	2.41
Poor or inadequate supervision (LOS)	1.38	2.41	1.15 _a	2.31	1.73 _a	2.55	3.23	2.72	2.94 _a	2.74	3.67 _a	2.67

Job-related stressor	Demands						Strain					
	(days experienced in last 6 months)						(severity with which stressors experienced)					
	Total		Junior role ^a		Senior role ^b		Total		Junior role ^a		Senior role ^b	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Competition for advancement (JP)	1.23	2.19	1.16 _a	2.02	1.33 _a	2.43	3.43	2.05	3.28 _a	1.98	3.67 _a	2.15
Difficulty getting along with supervisor (LOS)	1.09	2.17	.71 _a	1.75	1.67 _b	2.59	2.63	2.54	2.31 _a	2.40	3.13 _a	2.69
<i>Composites</i>												
JP demands / strain index	3.66	2.26	2.98	2.12	4.68	2.10	4.93	1.47	4.38	1.67	4.02	1.70
LOS demands / strain index	2.95	1.97	2.51	1.83	3.60	2.00	4.54	1.74	4.14	1.75	3.87	1.72

Note. ^aN=70 ^bN=46

JP=Job Pressure; LOS=Lack of support

Scale range: 0-9+, where 9+ represents either '9 or more days' or the highest level of intensity. Items are rank ordered in descending order of stressor frequency for the total sample. t-tests of group mean differences for demands and strain are indicated by the subscripts in the same row.

Those not sharing the same subscript are significantly different at $p < .05$

TABLE 2

Means, standard deviations and intercorrelations

	Junior		Senior		1	2	3	4	5	6	7	8
	roles		roles									
	M	SD	M	SD								
1 Demands (JP)	2.75	1.90	4.14	1.89	.96	.83	.37	.36	-.17	-.18	-.03	.02
2 Demands (LOS)	2.51	1.83	3.60	2.00	.79	.97	.37	.40	-.17	-.18	-.03	-.03
3 Strain (JP)	4.02	1.70	4.93	1.47	.23	.21	.95	.62	-.09	-.22	.12	.07
4 Strain (LOS)	3.87	1.72	4.54	1.74	.20	.27	.53	.96	-.05	-.20	.17	.04
5 LMX (supervisor)	3.79	.72	3.89	.51	-.19	-.15	.10	.04	.86	.07	.52	.03
6 Job satisfaction	3.52	.57	3.69	.64	-.38	-.34	-.23	-.16	.17	.92	.02	.02
7 Liking	4.07	.88	4.16	.85	-.14	-.19	.06	-.10	.51	.09	.92	.12
8 Relationship tenure	41.34	46.44	59.59	61.43	.11	.11	.07	.02	.00	.09	.03	--

Note. JP=job pressure, LOS=lack of organisational support. Kendall-tau correlation coefficients.

Correlations for junior roles (N=70) are above the diagonal (.16 or above significant at $p < .05$). Correlations for senior roles (N=46) are below the diagonal (.21 or above significant at $p < .05$). Cronbach alpha reliability coefficients in diagonal. All data except for LMX (supervisor), liking and relationship tenure was drawn from the employee survey. Scale ranges: demands and strain 0-9; LMX, job satisfaction and liking 1-5.

TABLE 3

Hierarchical regression analyses for linear and curvilinear effects of Leader-Member Exchange on strain

	Junior roles ^a			Senior roles ^b		
	b	AdjR ²	ΔR ²	b	AdjR ²	ΔR ²
Dependent variable: Strain (JP)						
Step 1: controls						
Rel tenure	-.06			.13		
Liking	.15			.05		
Job satisfaction	-.35**	.10	.14*	-.29*	.03	.09
	<i>F(3,66)=3.62*</i>			<i>F(3,42)=1.41</i>		
Step 2: main effect						
LMX	-.49**	.22	.12***	.31	.06	.05
	<i>F(4,65)=5.81***</i>			<i>F(4,41)=1.68</i>		
Step 3: quadratic effect						
LMX ²	.73	.21	.01	2.32*	.11	.07*
	<i>F(5,64)=4.64**</i>			<i>F(5,40)=2.06*</i>		
Dependent variable: Strain (LOS)						
Step 1: controls						
Rel tenure	-.10			.02		
Liking	-.24*			-.19		
Job satisfaction	-.28*	.10	.14*	-.24	.04	.11
	<i>F(3,66)=3.55*</i>			<i>F(3,42)=1.67</i>		
Step 2: main effect						
LMX	-.44**	.20	.11**	..30	.07	.04
	<i>F(4,65)=5.33**</i>			<i>F(4,41)=1.88</i>		
Step 3: quadratic effect						
LMX ²	-.14	.19	.00	1.25	.07	.00
	<i>F(5,64)=4.20**</i>			<i>F(5,40)=1.68</i>		

Notes. LMX=Leader-member Exchange; JP=job pressure; LOS=lack of organizational support. Beta coefficients are standardized and reported only for the variable added at each step with respect to the relevant model. F statistics are for the overall model at each step. ^aN=70 ^bN=46 *p<.05 **p<.01 ***p<.001

TABLE 4

Hierarchical regression analyses for mediation and moderation effects

	Junior roles ^b			Senior roles ^c			Junior roles ^b			Senior roles ^c		
	b	AdjR ²	ΔR ²	b	AdjR ²	ΔR ²	b	AdjR ²	ΔR ²	b	AdjR ²	ΔR ²
	DV: Strain(JP)						DV: Demands(JP)					
Step 1: controls+LMX												
LMX	-.49**	.22	.12***	.31	.06	.05	-.39 ***	.09	.09 *	-.17	.24	.01
	<i>F(4,65)=5.81***</i>			<i>F(4,41)=1.68</i>			<i>F(4,65)=2.68*</i>			<i>F(4,41)=4.58**</i>		
Step 2: main effects												
LMX	-.33*			.32								
Demands(JP)	.39**	.39	.13**	.02	.04	.00						
	<i>F(5,64)=8.06***</i>			<i>F(5,40)=1.39</i>								
Step 3: 2-way interaction												
LMXxDemands(JP)	.11	.34	.01	-.13	.03	.01	-.13					
	<i>F(6,63)=6.91***</i>			<i>F(6,39)=1.22</i>								
	DV: Strain(LOS)						DV: Demands(LOS)					
Step 1: controls+LMX												
LMX	-.44**	.20	.11**	.31	.07	.05	-.43**	.12	.11**	.21	.32	.03
	<i>F(4,65)=5.33**</i>			<i>F(4,41)=1.88</i>			<i>F(4,65)=3.43*</i>			<i>F(4,41)=6.16**</i>		
Step 2: main effects												
LMX	-.25*			.23								
Demands(LOS)	.45***	.37	.17 ***	.33	.13	.07						
	<i>F(5,64)=9.09***</i>			<i>F(5,40)=2.31</i>								
Step 3: 2-way interaction												
LMXxDemands(LOS)	.03	.37	.09	.14	.12	.02						
	<i>F(6,63)=7.60***</i>			<i>F(6,39)=1.21</i>								

Notes. LMX=Leader-member Exchange; JP=job pressure; LOS=lack of organizational support. ^aN=70 ^bN=46 *p<.05 **p<.01 ***p<.001

Figure 1 Research hypotheses

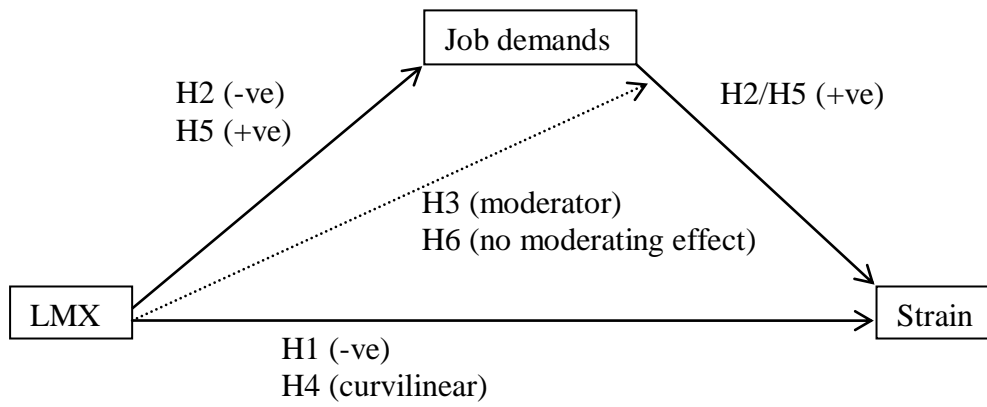


Figure 2 Linear relationship between Leader Member Exchange and strain from job pressure (junior roles)

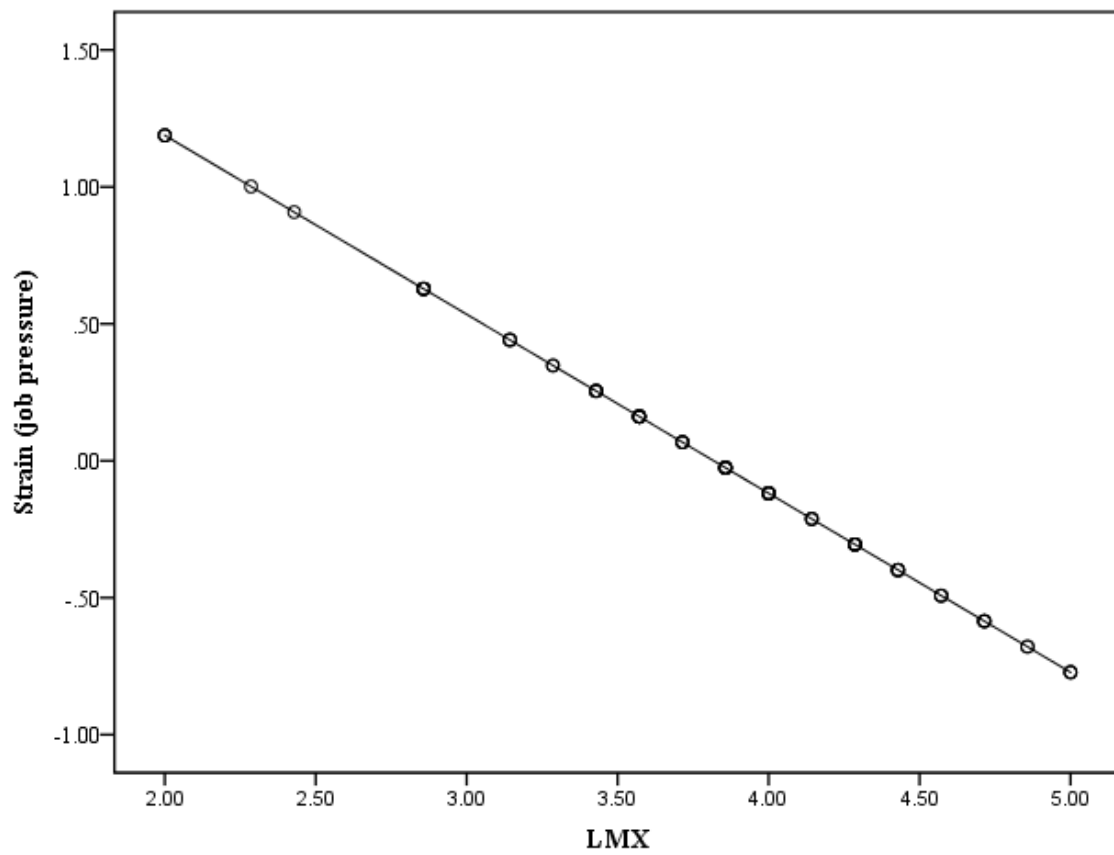


Figure 3 Relationship between LMX quality and strain from job pressure (senior roles)

