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Original Article

Workplace Bullying, Working Environment and Health

Gabriel OXENSTIERNA[1], Stig ELOFSSON[2], Maria GJERDE[1], Linda MAGNUSSON HANSON[1] and Töres THEORELL[1, 3]*

[1] Institute for Stress Research, University of Stockholm, Sweden
[2] Department of Social Work Research, University of Stockholm, Sweden
[3] Department of Public Health Sciences, Karolinska Institute, Sweden

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Abstract: Improved work organisation could be of importance for decreased bullying in workplaces. Participants in the Swedish Longitudinal Occupational Survey of Health (SLOSH) responded to questions about work and workplace and whether they had been bullied during the past year in 2006. Those in worksites with at least five employees who did not report that they had been bullied in 2006 and without workplace change between 2006 and 2008 constituted the final sample (n=1,021 men and 1,182 women). Work characteristics and workplace factors in 2006 were used in multiple logistic regression as predictors of bullying in 2008. Separate analyses were performed for work characteristics and workplace factors respectively. Adjustments for demographic factors were made in all analyses. The question used for bullying was: "Are you exposed to personal persecution by means of vicious words or actions from your superiors or your workmates?" Such persecution any time during the past year was defined as bullying. For both genders organisational change and conflicting demands were identified as risk factors, and good decision authority as a protective factor. Dictatorial leadership, lack of procedural justice and attitude of expendability were male and lack of humanity a female risk factor for bullying.

Key words: Bullying, Work organisation, Gender, Psychological stress

Introduction

There is now general agreement that bullying is about negative, consistently aggressive behaviour that is extremely detrimental to the victim taking place during an extended period of time (as distinguished from random bullying or 'picking on' a person) and where there is a clear imbalance in power resources between the victim and the persecutor (s) – with the victim clearly at the disadvantage. There need be no formal power involved, however; it is enough for the victim to *feel* inferior to another or to several others. Whether there must be a conscious intention to hurt the victim or whether it is enough that the aggressive behaviour does in fact cause harm, regardless of intent, has long been discussed and still is under debate[1, 2].

Bullying is seen as one variation of aggressive or violent behaviour. Expressions of negative aggression have many variations. These may be physical, verbal, relational/social or electronic/digital and be more or less direct or indirect. Examples of physical aggression are punching, kicking, pinching, locking in, etc.; examples of verbal aggression are taunting, screaming at, swearing at, etc., while relational and social aggression may be about exchanging

*To whom correspondence should be addressed.
E-mail: Tores.Theorell@stressforskning.su.se

meaningful glances, pointedly not choosing the victim in different contexts or entirely excluding the victim from the group – all with the intention of affecting that person's status in the group or within the context. Electronic and digital expressions of aggression are receiving growing attention with the expansion of innovation and services and quite simply denote the violence taking place within the social media, via sms, e-mail and the like. Since there is no total unity of opinion about the exact definition of the concept nor how it can be measured, the possibilities are small of comparing how common different types of bullying are in different countries. There is also the risk that the number of unrecorded cases is great.

The connection between workplace bullying and deterioration in mental health, increased levels of self-reported stress, various psychosomatic conditions, lessened self-confidence and increased sick-leave has been investigated in a range of studies[3–8]. During a Swedish follow-up period of two years in the 1990s, persons who were the victims of bullying showed an increased risk of long-term sick-leave (i.e. at least 60 d of sick-leave during the two-year period) of around 70 per cent[9]. No change in the prevalence of bullying has been observed in recent years (SCB's AMU surveys 2003–2007 and SLOSH 2006–2008). Bullying entails costs for the society. This underlines the importance of working to forestall workplace bullying.

Much bullying research has focused on the personality traits and characteristics of the persecutor and the victim[10]. This individualist perspective has dominated the field for many years and a specific bullying-victim profile still remains to be formulated[11]. Bullying research has also attempted to map risk factors in the environment and in the situations that arise. In a wider perspective, explanatory factors for bullying are found at individual, group and organisational level. In more recent research, bullying is explained as the result of a complex interaction between environmental factors and the personal characteristics of the actors, i.e., the victim, the persecutor (s) and the witnesses[9, 12–14].

Leadership, control, social climate and role conflict were all identified as important factors by Einarsen and his research group[15]. Similar results have thereafter been shown in cross-sectional analyses of more or less selected groups[14, 16]. In some organisations, bullying is an unusual occurrence. In other organisations, bullying behaviour is inherent in the organisational culture. In some cases sustained, consistent bullying may result from a conflict that has escalated out of hand[12].

Surprisingly few studies have explored more than a couple of predictors of bullying and very few studies have been based on samples that represent the general working population. Few studies have examined several factors together in multivariate regression analyses[15, 17, 18].

As far as we know, no representative prospective multivariate study using current work environment theory and with adjustment for confounders has yet been published although there are studies using current theory[7]. Our investigation aims to fill some of the gap. It rests mainly on the demand-control-support theory and its extensions[19, 20].

Subjects and Methods

The study population was derived from the Swedish Longitudinal Occupational Survey of Health (SLOSH)[21] [ER1] based on the respondents from the 2003 Swedish Work Environment Survey (SWES). SWES is conducted biennially by Statistics Sweden on a sample drawn from the Labour Force Survey (LFS). The SWES sample is a nationally representative one covering all occupational groups of people aged 16–64 in the active labour force. In connection with the LFS telephone interviews, respondents were asked to fill out a supplementary self-completion questionnaire about their physical and psychosocial work environment, work-related morbidity, education and training, and attitudes to work. In March 2006, 9,154 of the SWES respondents were followed up by means of two extended self-completion questionnaires, one addressed to those in gainful employment at least 30% of full time and one to those out of the labour force. A total of 5,985 individuals (65% of the eligible SWES participants) responded to the follow up, of which 5,141 used the questionnaire for persons in employment and 844 for people out of the labour force. In the spring and fall of 2008 the same population was subsequently asked to fill out a new SLOSH questionnaire. This time the participation was 60%.

In the present study only those who answered the questionnaire for persons in employment were used. Characteristics of the working population have been presented previously[21]. The SLOSH questionnaire contains information about the number of persons employed at the respondent's workplace. Many companies are family-owned or small businesses with limited organisational structure. For the present study we have therefore chosen only to include respondents in workplaces with 5 employees or more. In addition, only those who reported that they worked in the same workplace in 2008 as in 2006 were included. This was necessary to be sure that we captured relevant data on

workplace and work characteristics. The data for persons who changed their workplace between 2006 and 2008 could not be included as bullying may have started after they changed workplaces. Also those who reported having been bullied in the 2006 study (being a special group staying at the same workplace) have been deleted to refine the picture of which factors are predictors for being bullied. For persons reporting being bullied in 2006 we do not know whether there have been changes in their experience of workplace and work characteristics as a consequence of being bullied. The total number of subjects in the study then filling our inclusion criteria was 2,203 (1,021 men and 1,182 women). The study was approved by the Regional Research Ethics Board in Stockholm.

The dependent variable "being bullied" was determined by means of the following question: "Are you exposed to personal persecution by means of vicious words or actions from your superiors or your workmates?" with the response alternatives: "every day/a couple of days a week/one day a week/a couple of days a month/a couple of days in the past three months/once or twice during the past 12 months/not at all during the past 12 months".

The responses were then dichotomised – those who reported having been exposed during the past 12 months were defined as being victims of persistent bullying.

Exposure variables were selected according to Oxenstierna *et al*[20]. In this exploratory work, several established work environment models had been supplemented with questions that mirror the modern work environment. After preparatory focus interviews resulting in a final set of questions, a study with a random sample of 252 Swedish employees ("pilot sample") was performed. For strategic reasons (future work redesign has to be performed on different organisational levels) a distinction was made between "work" (which have to do with the employee's individual work situation) and "workplace" (which have to do with work organisation and social climate at the workplace level) factors. This means that for some kinds of variables similar questions were made about "work" and "workplace" although the framework around these groups of questions was formulated differently. An exploratory factor analysis based upon the "pilot" sample resulted in the "work" dimensions Demands, Decision authority, Resources, and Security of employment. Demands were divided into quantitative, conflicting, emotional, social, intellectual, and physical. The dimensions on the "workplace" level included: Goals, Structure, Management, Freedom, Democracy, Humanity and Social support. Most of these dimensions, variables and variable groups were incorporated in SLOSH. Details about questions can be found in Table 1.

Organisational justice – seven items – was measured according to Elovainio[23] and decision authority – two items – and social support at work – six items – according to Theorell[24].

All analyses were performed separately for men and for women to check for differences in prediction patterns. Men and women differ in a number of aspects, e.g. around two-thirds of the women were employed in the public sector, while two-thirds of the men worked in the private sector. As seen later in the results, there are also clear gender differences in workplace and work characteristics. It therefore seems quite reasonable to assume that different factors predict bullying among men and women.

Two separate pairs of multiple logistic equations were calculated; one with workplace characteristics and the other with work characteristics as explanatory variables. Since the explanatory variables had different scores and characteristics, all variables were standardized before the odds ratios were calculated. The standardized odds ratio corresponds to the relative change in risk of being bullied with the increase of one standard deviation in the explanatory variable after adjustment for all other workplace and work characteristics. Adjustment for socio-demographic variables was made in both these analyses. *p*-values at or below 0.05 were regarded as significant.

The study was approved by the Regional Research Ethics Board in Stockholm.

Results

In the group studied, 7.5% (6.6% among men and 8.5% among women) reported in 2008 that they had been bullied at work once or several times in the last two years. The same proportion (7.5%) of those not being bullied in the 2006 survey and who had changed their workplace in the interim also reported in the 2008 survey that they had been bullied. Among those reporting that they had been bullied in 2006, a much larger proportion (40%, 32% among those who had changed workplace, 42% among the others) reported in the 2008 survey that they had been bullied during the last two years.

Table 1 shows that there are a number of differences between men and women with regard to work environment description. Men report higher demands and more lack of humanity but at the same time higher possibilities of exerting control. In contrast, women report greater freedom to take time off and high workplace democracy

Table 1. Characteristics of the study group. Only subjects who did not report being bullied in 2006, who worked in workplaces with at least five employees and who had not changed workplace from 2006 to 2008. Proportion (%) or mean (m) with standard deviation (s)

n=	Men 1,021		Women 1,182		Difference M-W Sign level
	m	s	m	s	
Proportion (%) who reported that they felt bullied in 2008	6.6		8.5		
Age (m, s)	48.2	10.2	48.7	9.7	
Education (%)					***
Mandatory only	19		17		
High school or comparable	47		37		
University or comparable	35		46		
Sector (%)					***
Private	66		29		
Public	29		65		
Not guided by organisational goals (1–5)	2.06	0.85	1.90	0.83	***
Not matching basic values (1–5)	2.15	0.71	2.02	0.71	***
Lack of belongingness (1–5)	1.90	0.72	1.82	0.69	**
Lack of organisational structure (1–4)	2.28	0.33	2.29	0.33	
Organisational change (mean of two items) [A] (1–4)	2.04	0.71	2.02	0.69	
Demotion (%)	4		3		*
Promotion (%)	13		11		
Lack of trust in leadership (1–4)	2.27	0.84	2.34	0.80	*
Dictatorial leadership (mean of five items) [B] (1–5)	2.05	0.82	1.96	0.80	*
Bad relationship to closest superior (at least one of four items "to a small or very small extent") [C] (yes=1, no=0)	18		17		
Lack of freedom in decision making (mean of two items) [D] (1–4)	1.55	0.63	1.57	0.64	
Lack of influence (mean of two items) [E] (1–4)	2.45	0.84	2.26	0.74	***
Freedom in working hours (%)					
1 flexible working hours (yes=1, no=0)	39		38		
2 relatively free hours (yes=1, no=0)	25		23		
3 no, in general not (yes=1, no=0)	35		38		
Lack of freedom to take time off (1–5)	2.14	0.83	2.30	0.86	***
Lack of freedom of expression (1–4)	1.93	0.81	1.89	0.72	
Lack of workplace democracy (mean of five items) [F] (1–3)	1.90	0.52	1.96	0.44	*
Lack of procedural justice (mean of seven items), ref [23] (1–5)	3.54	0.86	3.48	0.86	
Lack of social support (mean of four items), ref [24] (1–4)	3.26	0.47	3.32	0.50	**
Lack of humanity (1–4)	1.87	0.62	1.69	0.81	***
Attitude of expendability (1–4)	2.61	0.86	2.72	0.89	**
Lack of recognition (1–5)	1.93	1.08	1.94	1.18	
Threats (%)	10		21		***
Conflicts with customers (%)	22		22		
Unemployment threat (%)	26		22		
Quantitative demands (mean of three items; work fast, work hard, too high demands, 1–4)	2.13	0.60	2.06	0.61	*
Conflicting demands (1–4)	2.55	0.76	2.48	0.76	*
Emotional demands (mean of two items) [G]	2.42	0.84	2.94	0.87	***
Social demands (1–4)	3.21	0.84	3.64	0.68	***
Intellectual demands (%) (yes=1, no=0)	18		13		**
Physical demands (mean of two items) [H] (1–6)	2.78	1.54	2.98	1.36	**
Demands to create own tasks (1–4)	2.42	0.96	2.45	0.94	
Information technology demands (mean of five items) [I]	1.84	0.88	1.93	0.83	
Lack of concentration (1–6)	2.18	1.22	1.93	1.18	
Decision authority (1–4) (mean of two items), ref. [24]	3.89	0.31	3.88	0.33	
Lack of resources (yes=1, no=0)	1.12	0.32	1.15	0.36	
Lack of time resources (yes=1, no=0)	1.99	0.63	2.07	0.65	**
Lack of demands to create own tasks (1–4)	2.48	0.96	2.55	0.94	
Lack of information technology demands (1–5)	3.16	0.88	3.07	0.83	*
Lack of skill discretion (1–4)	1.42	0.57	1.40	0.58	
Lack of concentration (1–6)	2.18	1.22	1.93	1.18	***
Shortage of knowledge (%) (either some or extensive need for more knowledge, yes=1, no=0)	15		17		

*p<0.05; **p<0.01; **p< 0.001.

[A] change of a) group and b) superior. [B] superior is a) bossy, b) egoistic, c) elitistic, d) dictatorial e) autocratic. [C] a) lacking confirmation from boss b) boss does not know me, c) boss does not show care, d) boss does not listen to me. [D] a) management does not allow my own decisions b) I am not accountable for my own decisions. [E] a) I am not involved in decision making in my organisation b) I am not involved in decision making in my workplace. [F] a) I do not get information b) do not take part in discussions about future c) do not participate in discussions about future d) no employee participation in planned changes. [G] a) showing empathy b) emotionally taxing situations. [H] a) physical effort b) lifting > 15 kg. [I] a) many telephone calls/e-mails b) always available c) demanding prompt replies d) interrupted by telephone and e-mail e) technical hardware problems.

Table 2. Subjects who did not report being bullied in 2006, who worked in workplaces with at least five employees and who had not changed workplace from 2006 to 2008. Associations between age, education and sector and being bullied in 2008. Results from multiple logistic regressions (Odds ratios with 95%CI)

		Bivariate after control for age, education, sector			
		Men		Women	
		OR[1]	95%CI[1]	OR[1]	95%CI[1]
Age		0.74*	0.55−0.99	0.99	0.76−1.28
Education	Mandatory only	1.00		1.00	
	High school or comparable	0.58	0.29−1.17	1.24	0.61−2.53
	University or comparable	0.61	0.29−1.27	1.60	0.82−3.13
Sector	Private	1.00		1.00	
	Public	1.31	0.74−2.34	1.49	0.90−2.49
	Other	0.99	0.29−3.35	0.87	0.29−2.61

*p<0.05; **p<0.01; ***p< 0.001. [1]The "standardised" odds ratios indicate the relative change in risk of bullying with the increase of one standard deviation of the factor (in this case after adjustment for all other factors in the Table).

but to a higher extent threat and lack of support and lack of resources. They also had higher values on attitude of expendability.

Table 2 shows that the demographic variables education and branch have little influence on the risk of being bullied. Age, however, is important for men; older men reported being bullied to a lesser extent than younger ones.

Table 3 shows the relationships between workplace factors and bullying. For men the independently significant predictors were "dictatorial leadership" (1.79, 1.29–2.49), "lack of procedural justice" (1.54, 1.00–2.38) and "attitude of expendability" (1.59, 1.13–2.23). For women the only independent significant predictor was "lack of humanity" (1.61, 1.10–2.35). One factor, organisational change, was significantly predictive for women (1.28, 1.00–1.63) and close to significantly predictive for men (1.29, 0.95–1.74). Since the odds ratios are almost identical for women and men (and a joint analysis of men and women showed a clearly significant odds ratio) this factor is regarded as a significant and independent predictor in the following presentation.

Table 4 shows the corresponding data for work characteristics. Conflicting demands was an independent statistically significant predictor of bullying in men (1.52, 1.14–2.04) and almost significant in women (1.30, 0.99–1.69). A high level of decision authority was significantly protective for women (0.77, 0.61–0.97) and close to significantly protective for men (0.78, 0.56–1.08). Both these factors will be regarded as predictive for both men and women in the following presentation.

Discussion

In the present study the aim was to identify work and workplace conditions that are predictive of increased (two-year) risk of being bullied among subjects who are not bullied at start. It could be argued, since many factors were concomitantly analysed, that variable competition may have inaccurately_kicked out the influence of important predictors. In order to examine this possibility we also analysed the influence of each work characteristic and workplace factor separately, after adjusting for age, education and sector. This analysis resulted in similar findings, but as expected, a few variables that were significant predictors at this stage lost importance in the final step. Our conclusion, however, is that the multivariate analysis that we have presented provides a better picture of the risk factor pattern since the influences of the different factors in the alternative analysis overlap and it is important to minimise the number as far as possible. In addition, the risk of multicollinearity was analysed and no pairs of variables were accepted in the multivariate analysis that had a common variance exceeding 40%. However, a more limited multiple logistic model was also tested for work and workplace factors respectively. These alternative limited models only included variables which had a significant explanatory value in univariate analyses including demographic adjustments only. The results were almost identical to the ones presented in Tables 3 and 4. No significance limits were changed and the odds ratios were very similar. Accordingly we chose to present the full model.

Table 3. Subjects who did not report being bullied 2006, who worked in workplaces with at least five employees and who had not changed workplace from 2006 to 2008. Associations between workplace characteristics in 2006 and bullying in 2008 (from no bullying in 2006). Multiple logistic regressions (Standardised odds ratios with CI) with adjustments for age, education, sector and supervisory duties. Mutual adjustments for all workplace characteristics

Dimensions		Multiple			
		Men		Women	
		OR[1]	95% CI[1]	OR[1]	95% CI[1]
Company	Not guided by organisational goals	1.15	0.86–1.55	1.00	0.74–1.36
	Not matching basic values	1.25	0.86–1.83	0.87	0.61–1.26
	Lack of belongingness	0.89	0.59–1.33	0.87	0.60–1.25
Organisation	Lack of organisational structure	1.11	0.78–1.59	0.97	0.70–1.34
	Organisational change	1.29	0.95–1.74	1.28*	1.00–1.63
	Demotion	0.45	0.10–2.16	2.08	0.63–6.88
	Promotion	0.57	0.22–1.52	1.13	0.57–2.27
Leadership	Lack of trust in leadership	0.93	0.68–1.28	1.10	0.81–1.51
	Dictatorial leadership	1.79**	1.29–2.49	1.04	0.77–1.41
	Bad relationship to closest superior	2.19	0.85–5.66	1.38	0.68–2.81
	Lack of freedom of decision making	0.62	0.36–1.05	0.70	0.45–1.10
Influence	Lack of influence	1.19	0.77–1.82	1.14	0.82–1.60
Freedom	Lack of freedom in working hours	0.75	0.39–1.44	1.08	0.63–1.85
	Lack of freedom to take time off	0.94	0.68–1.32	1.03	0.80–1.32
Democracy	Lack of freedom of expression	0.96	0.71–1.30	0.85	0.63–1.16
	Lack of workplace democracy	0.70	0.45–1.08	0.76	0.52–1.12
	Lack of procedural justice	1.54*	1.00–2.38	0.85	0.62–1.18
Social support	Lack of social support	0.93	0.59–1.48	0.92	0.63–1.35
	Lack of humanity	1.13	0.75–1.70	1.61*	1.10–2.35
	Attitude of expendability	1.59**	1.13–2.23	0.92	0.69–1.21
	Lack of recognition	1.12	0.79–1.58	1.19	0.91–1.56
Conflicts	Threats	1.81	0.78–4.18	1.65+	0.96–2.83
	Conflicts with customers	1.48	0.81–2.70	1.28	0.77–2.11
	Unemployment threat	1.86	0.97–3.56	1.07	0.60–1.92

*p<0.05; **p<0.01; ***p< 0.001. [1]The "standardised" odds ratios indicate the relative change in risk of bullying with the increase of one standard deviation of the factor (in this case after adjustment for all other factors in the table).

Theoretically the two groups of explanatory factors, work characteristics and workplace factors, are on two levels and we therefore consider it necessary to analyse them separately.

The main finding is that both risk factors and protective conditions can be identified. For both men and women organisational change and conflicting demands seem to be risk factors, while "good decision authority" is protective which is an expected finding in view of the importance of psychological demands and decision authority[19]. These results are also consistent with previous findings in the bullying literature[15]. It is to be expected that an organisation going through major changes will stimulate bullying processes, particularly for employees who lack decision authority and who experience conflicting demands.

Interestingly, the pattern of risk factors and protective conditions among the workplace factors differs between men and women. While for men "dictatorial leadership", "lack of procedural justice" and "attitude of expendability" are risk factors, "lack of humanity" is a risk factor for women. In some cases the gender differences in significance – despite very similar odds ratios – can be explained on the basis of the slightly lower number of men (organisational change and decision authority) and in joint analysis of men and women together they are significant predictors. For several other factors, however, the gender difference seems to mirror a true difference in risk factor pattern. Men seem to emphasise formal factors more than women, whereas the risk factor pattern for women seems to be more relation oriented (lack of humanity) than it is

Table 4. Subjects who did not report being bullied 2006, who worked in workplaces with at least five employees and who had not changed workplace from 2006 to 2008. Associations between work characteristics on one hand and bullying on the other hand from no bullying in 2006 to bullying in 2008. Multiple logistic regressions (Standardised odds ratios with 95% CI) with adjustments for age, education, sector and supervisory duties. Mutual adjustments for all work characteristics

Dimensions		Multiple			
		Men		Women	
WORK		OR[1]	95% CI[1]	OR[1]	95% CI[1]
Demands	Quantitative demands	0.97	0.69–1.37	0.84	0.62–1.13
	Conflicting demands	1.52**	1.14–2.04	1.30	0.99–1.69
	Emotional demands	0.67	0.47–1.01	1.28	0.89–1.85
	Social demands	1.19	0.87–1.64	0.97	0.67–1.43
	Intellectual demands	0.96	0.46–2.03	0.89	0.38–2.10
	Physical demands	0.86	0.65–1.15	0.90	0.70–1.16
	Demands to create own tasks	1.08	0.76–1.49	1.04	0.80–1.35
	Information technology demands	1.00	0.67–1.35	1.08	0.83–1.41
	Lack of skill discretion	1.13	0.86–1.50	1.09	0.83–1.42
	Concentration	1.01	0.76–1.35	0.99	0.76–1.31
Latitude	Decision authority	0.78	0.56–1.08	0.77*	0.61–0.97
	Possibility to exert control	1.12	0.84–1.51	1.07	0.85–1.36
Resources	Lack of resources	0.91	0.62–1.33	0.97	0.74–1.27
	Shortage of knowledge	1.13	0.55–2.34	1.06	0.60–1.88
	Lack of time resources	0.93	0.57–1.53	1.02	0.68–1.54

*p<0.05; **p<0.01; ***p< 0.001. [1]The "standardised" odds ratios indicate the relative change in risk of bullying with the increase of one standard deviation of the factor (in this case after adjustment for all other factors in the Table).

for men.

Organisational changes – i.e. new recruitment, downsizing and transfers to other positions taking place several times during the past two years or that persons were given radically altered tasks − involved an increased risk of persons reporting bullying in the follow-up. The explanation for this, we suggest, is that reorganisation involves personnel changes that give rise to organisational instability. In this situation the employees not only experience employment insecurity but also tend to act to protect their own position and/or seize the chance of bettering it. Internal information channels also change with any reorganisation process, which can lead to gossip and faulty interpretations[2, 14].

Procedural justice concerning decision making within the organisation – i.e. that decisions are made on the basis of correct information and with the possibility of getting more information if necessary for understanding the decision; that wrong decisions can be altered; that all parties are represented in the decision-making process; that decisions are consistent; that all have freedom of expression regarding the things that concern themselves; that the consequences of decisions taken are followed up – is a protective factor for men and presumably intimately connected with the leadership style of the organisation. We believe that this factor can be vital for countering the emergence of workplace bullying[22].

Employment insecurity was not conclusively related to increased risk of bullying but approached statistical significance as an independent predictor in men (1.86, 0.97–3.56). If it is true that this is a risk factor it could be explained by a tendency of the future victims to always feel more threatened in their positions from the start than other employees. In a German study[14] a similar observation was made that 91 per cent of the employees who reported bullying interpreted the fact that they were being bullied as a way of forcing them out of the workplace. One explanation is that in times of insecurity and faced with the threat of possible dismissal, individuals do everything they can to protect their own employment. One way of reducing the risk to oneself of having to go is to get others to leave.

Among men, being expendable is an important predictor of bullying. This factor has not been studied previously in relation to bullying at work.

Dictatorial leadership tends to limit employees' own control over their work and is also considered in most parts of the world to be an obstacle against effective

leadership. It has been shown in previous research to increase the likelihood of long term sick leave in men[24]. In the present study, men who experienced their superior as dictatorial and women who reported that no one seemed to care about them at work ran a far greater risk of future bullying than others; so superiors' dictatorial or the opposite, avoidant, behaviour[24] can clearly lay the ground for bullying processes. Gender factors such as female/male dominance in worksites and sexual preference[25, 26] could be of importance in explaining bullying but unfortunately we have no data regarding these factors.

Although we have recruited a random sample of the working population for this study it is not fully representative. The participation was only 60% in the prospective part and the study sample was limited to subjects working in workplaces with at least five employees. The prospective analysis was limited to those who did not change workplace between 2006 and who had not reported that they were bullied at start. The latter fact is a strength of the design of this study: only subjects who did not feel bullied in 2006 were included. This means that the description of the work environment was not flavoured by the tense atmosphere surrounding a bullying process. Therefore the work environment factors recorded in 2006 as predictive of bullying processes in 2008 are of particular interest. A weakness in the study design is that the question regarding bullying pertains to the past 12 months only. Accordingly, since the prospective analysis is based upon a two-year follow-up it is possible that some subjects may have been bullied during the first year of follow-up and not during the second year. In addition only employees who could respond to the questions about leadership were included. Finally there were internal losses since some subjects did not respond to all questions. It is impossible to know how these limitations affect our results. Judging from Table 1 there seems to be an overrepresentation of subjects with higher education and a corresponding underrepresentation of subjects with lower education. Education, however, was not significantly related to risk of being bullied. It should be pointed out that Sweden's labour market was stable during the period 2006–2008 according to official statistics. Therefore it is unlikely that our findings have been influenced by an unusual turmoil in our society.

Our findings point at a number of interventions that could lead to decreased risk of bullying. Improved leadership is one aspect of this. Fewer conflicting demands and fewer and more well-planned re-organisations are other such aspects.

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