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Exploring Risk Groups Workplace Bullying with Categorical Data

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Abstract: In this study, we first explore whether different exposure groups of workplace bullying exist, employing a large, heterogeneous sample. The results show six different exposure groups: almost 30.5% is *not bullied* since they report hardly any negative act at work at all, 27.2% face some *limited work criticism*, 20.8% face *limited negative encounters*, 8.3% is *occasionally bullied*, 9.5% are predominately *work related bullied*, and a total of 3.6% can be seen *victims* of severe workplace bullying. In a second step, the relationship between the identified target groups and social demographics were investigated using multinomial logistic regression to indentify risk groups of workplace bullying. Employees between the age of 35 and 54, public servants, blue-collar workers, as well as employees working in the food and manufacturing industries have a significantly elevated risk to be victims of workplace bullying. In contrast, employees younger than 25, employees with a temporary contract, teachers, nurses and assistant nurses are those least likely at risk. These findings are important for policymakers at the national and organisational level as they assist in focussing towards possible avenues to prevent workplace bullying.

Key words: Workplace bullying, Risks groups, Latent class cluster analysis, Multinomial regression

Introduction

"Workplace bullying" is a specific type of aggressive behaviour[1)]; it is about an employee's exposure to systematic and prolonged exposure to negative behaviours at work, be it from co-workers or superiors[2, 3)]. The behaviours involved are primarily of a psychological nature[1, 4)] and may include diverse acts such as persistent work criticism, belittling remarks, gossiping and social isolation. Many of these acts may be relatively common between employees and may not be perceived as a major problem per sé[3)]. However, when frequently and persistently directed towards the same employee, they may become a serious source of stress[5)], with a range of negative consequences for the victim (e.g. psychosomatic complaints, depression, irritation or even symptoms of post traumatic stress)[6–8)], bystanders[9)] and the organization (e.g., poor performance, turnover, low organisational commitment)[10–14)]. Thus, workplace bullying is not about single and isolated events of aggression, but instead is a gradually evolving process characterised by a series of negative behaviours systematically directed against employees who are often unable to counterattack in kind[15)], leading to a victimisation process for the targeted person.

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This type of aggressive behaviour has been found to take on epidemiological proportions in the European workforce. So far, research has shown that as many as 5–10% of the workforce is exposed to this problem at any given point in time[16]. On the basis of a representative survey among the Swedish workforce, Leymann[17] estimated the prevalence of bullying to be 3.5%. However, a study among Finnish university staff reported a prevalence rate of 16%[18]. Rayner[19] found that 50% of a UK sample had experienced exposure to bullying at work during their work life. After reviewing 31 European studies conducted between 1989 and 2001, it was[16] concluded that the prevalence of serious bullying, that is bullying in which the negative acts occur on a weekly or even daily basis, seems to be approximately 1–4%. Less serious cases in which bullying occurs less frequent than weekly, but still regularly and over a long period of time, seem to have a prevalence of 8–10%. In addition, some 10–20% of the workforce may sometimes face occasional aggression and occasional negative social behaviour at work which may not correspond to such a strict definition of bullying. A prevalence rate between 4–10% clearly indicates that bullying is a very serious problem for a substantial number of employees and cannot be neglected by neither employers nor work environment authorities.

When identifying workplace bullying, previous research has tended to reduce bullying to an either – or phenomenon by using a more or less arbitrary cut-off score to distinguish between targets and non-targets of bullying[20–23]. Consequently, the varied nature and extent of the bullying behaviours involved, is neglected[22]. In terms of prevention it may be more useful to look at bullying as dimension from low to high exposure, more than as an either-or phenomenon. Next to the identification of the type and scope of workplace bullying, it is important to understand the risk factors of workplace bullying as both aspects are an important basis for the development of prevention and intervention strategies to prevent workplace bullying[24]. Hence, the assessment of risk groups may be important for both policymakers and interventionists, as this may assist them with the development of tailor-made interventions. Therefore, the current paper aims to explore whether different target groups of exposure to workplace bullying exist in a large and heterogeneous sample of the workforce and therefore to assess the risk of different occupational groups regarding exposure to such bullying. First, we will use a latent class cluster technique[25] to the Negative Acts Questionnaire[26] to identify different (target) groups of workplace bullying[27] regarding the nature and prevalence of the exposure. Next, we will employ a multinomial regression model to identify the odds of different occupational groups to be exposed to these different types and levels of bullying.

Risk Groups of Workplace Bullying

With respect to gender, many studies have revealed more female than male victims. Yet, when comparing gender distribution among victims with the overall gender distribution in the samples, only four out of 15 studies conducted report more female victims[16].

Although Leymann[3] detected no difference between various age groups, other empirical research revealed a higher vulnerability for victimisation both in the case of older employees[28, 29] and young employees in a position with little formal or informal power[26, 30]. As it pertains to the latter, it may also be possible that being a newcomer is risky, as these workers may be put to the test before becoming accepted or a member of the (in) formal group. Thus, this so-called "rite de passage[31]" may be conceived of as bullying when being prolonged involving some kind of psychological mistreatment.

Empirical studies reporting organisational status as a risk factor for bullying are scarce and inconsistent in their findings[1]. Whereas Salin[32] found less bullying at higher levels of the organisation, others[33] found similar estimates of bullying for workers, supervisors and middle and senior management, with female managers particularly at risk. White-collar employees were found to be somewhat more exposed than lower white-collar employees or blue-collar workers[34]. In addition, the type of employment contract[10] has been portrayed as a risk factor. In particular, temporary employees may be targeted since they can be seen as a potential disturbance to the permanent working forces as they interfere in the social cohesion of the work group. Next, they may be more vulnerable[35], as they are easier to sack than permanent employees.

Although employees in the public sector have been found to be more at risk than their counterparts in the private sector[16], the decision on which sub sector of working life is the most hazardous in this field is still an open question. While Zapf[36] reported high rates of victimisation within public administration, other studies have reported a high bullying prevalence within the health sector[23, 37–39]. In some studies, high levels of workplace bullying have also been reported in the educational sector[3, 36], whereas others have shown teachers to be a low risk group[23]. Within the private sector, manufacturing industries[28, 40] seem to account for more victims than other private sectors. In the service sector, the most frequent exposure to bullying seem to occurre within trade and commerce[28] as well as within the hotel and restaurant industry[41].

While of value in highlighting possible risk groups of bullying, the results of former studies remain rather ambiguous, often contradicting each other. There are several possible explanations for this ambiguity. First, in some studies, self-selected samples of only highly exposed long-term victims of bullying are used to determine risk groups and risk sectors[42, 43]. Hence, these studies must be interpreted with care[44, 45]. For this reason, Zapf & Einarsen[46] urge future researchers to focus on and collect data from real working life samples. Secondly, the prevalence of victims of workplace bullying is very low, ranging between 1 to 10%. As a result, very large samples are required to contain a reasonable number of victims[44]. In the most recently available overview[16], only five out of 30 studies had a large sample size. Thirdly, most results stem from samples of very homogeneous populations. Next, a great majority of the studies reported bivariate results only. Thus, they capitalised on chance to report significant differences as demonstrated by an American study that focussed on the identification of risk groups for workplace aggression[24]. Finally, the method used for measuring the prevalence bullying varies across studies, both in type and quality. Some studies use a single item to measure exposure to workplace bullying by asking the respondent to label him or herself after a definition of bullying was presented[28]. Following the operational criterion in the definition, it is then more or less arbitrarily decided that subjects who stated that they were subjected on at least a weekly basis to workplace bullying are considered to be victims, where others subjects are only considered to be non-victims or non-targets irrespective of the intensity (now and then, monthly, weekly). In turn, others use a questionnaire to examine exposure to specific negative acts without employing self-labelling on behalf of the respondents[26, 33, 47]. Yet, in either case, rather arbitrary cut-off criterions are employed to distinguish target from non-targets, generally without making any distinction between the nature and frequency of the reported bullying behaviours[48]. The classification of employees into targets and non-targets, be it based upon self-labelling or the operational criterion method, leads to a reduction in the complexity of the phenomenon of workplace bullying that has been theoretically described as a gradually evolving process[49, 50] into a simple either-or phenomenon[27], as argued above.

Aim

The aim of the present study is therefore to explore the risk groups for workplace bullying in a large heterogeneous sample, taking into consideration the complex nature of the phenomenon. Since previous research has demonstrated bullying to be a heterogeneous phenomenon in which specific groups can be distinguished in function of the nature and extent of reported negative acts[27, 48, 51], we will apply latent class (LC) models[25, 52] to the items from the Negative Acts Questionnaire[26] to investigate the nature and prevalence of various target groups. In contrast to the above cited approaches, a LC approach does not reduce bullying to an either-or phenomenon in the workplace and is very well equipped for dealing with highly skewed and categorical data as is the case when measuring exposure to workplace bullying. A LC approach enables a researcher to empirically distinguish groups that differ both in the nature and level of reported bullying behaviours. As we are interested in determining which occupational position, branch of occupation, type of contract, type of working arrangement and age group that have an elevated risk for exposure to workplace bullying, a multinomial logistic regression model is applied. This method will yield odds ratios for being in a specific target group of workplace bullying as compared to not being bullied, while controlling for other possible risk groups. In short, these odds ratios will reveal the risks to be bullied, while controlling for other possible risk factors.

Methods

Sample

The present study is conducted with a dataset containing 8,985 Flemish speaking respondents within 86 firms spread over the main sectors of Flemish working life. The dataset is a combination of two databases having the same measurement of workplace bullying collected by the KU-Leuven Mobbing Group and the former Research Directorate for the Improvement of Working Conditions, respectively. The sample consisted of 46.4% females and 53.6% males. About 9% of the respondents have a temporary contract, whereas almost 91% have a fixed contract. Approximately 83% of the respondents have a full-time employment, while 17% has at least one part-time job, and one out of five respondents exerts a managerial position. Furthermore, the sample consists of 8% blue-collar workers, 27% white-collar workers, 7.6% nurses, assistant nurses or social servants, 27% public servants not holding a managerial position, 10% public servants having a managerial position, 6% with lower management positions (not public), 10% with higher managerial positions, and roughly 4% teachers. The distribution across five age groups is as follows: 4% is less than 25 yr of age, 27.5% is between 25 and 34 yr of age, 29% is between 35 and 44 yr of age, 29% is between 45 and 54 yr of

age, and 10.5% is older than 55 yr of age.

Compared to figures at the Belgian National Institute of Statistics (NIS) and the figures of the Belgian Social Security Department (RSZ), this very heterogeneous Flemish sample is near but to entirely representative for the Flemish working population. With respect to age, young employees (less than 25 yr old) are somewhat underrepresented, while older employees are slightly overrepresented. Next, employees with a low education level are underrepresented, while employees with a higher level of education, particularly those who have a higher non-university degree, are somewhat overrepresented. With respect to gender, there is no substantial difference between the Flemish sample and the official total. Overall, approximately 56% of the respondents in the current sample were employed in the private sector, while official registers reveal 65%. The current sample also has a bit more full-time equivalents then the population of the Flemish working force. In the current sample, approximately 9% of the employees held a temporary contract, whereas official statistics reveal a somewhat higher percentage[53]. Still, the present sample is a large and heterogeneous sample that reflects the main trends in the Flemish working population.

Although the overall sample estimates of the prevalence of workplace bullying cannot be interpreted as being equal to the estimate in the Flemish workforce, the discordance between the present heterogeneous sample and the Flemish working population does not interfere too much with the primary aim of this article, which is the estimation of risk groups for workplace bullying.

Questionnaire

To measure exposure to workplace bullying a Belgian version[22] of the Negative Acts Questionnaire (NAQ)[26] was used. The NAQ is the most widely used inventory to measure exposure to workplace bullying, with its psychometric quality proven to be good[22, 51]. Several papers originating from different countries employing an LCA to this scale have been published over the last few years[22, 48, 51]. Target clusters have been associated with a strong decrease in psychological well-being, and victims of bullying yielded a dramatic decrease in mental health[51, 54] and sleep problems[27]. The current version lists 16 items, containing three types of negative acts: work-oriented negative acts, person-oriented negative acts and acts of social isolation. Examples of items are: "Being deprived of responsibility or work tasks", "Gossip or rumours about you" and "Social exclusion from co-workers or work group activities". The scale contains four response categories: "never", "now and then", "once a month" and "once a week or more often".

Modelling a bullying typology and determining risk groups

The present authors have previously suggested using latent class (LC) analysis to account for the complex and dynamic nature of the bullying phenomenon[27, 51, 55] as measured by NAQ. This methodology has some interesting properties for research in relation to workplace bullying. LC can deal with the fact that the variables measuring exposure to workplace bullying are highly skewed[26]. Furthermore, in contrast to more classical cluster methods such as K-means, LC can easily treat categorical response variables as they are used in bullying research. Next, LC takes item properties such as item difficulty and discriminatory power into account which is not unimportant in cases using NAQ, since research has shown divergent item popularity[56] and divergent item discriminatory power[57] with NAQ.

LC analysis[25, 52, 58] is a statistical method that assumes that respondents belong to mutually exclusive groups, which are the categories of a not directly observable (latent) variable (e.g. being a target of bullying). These groups (the latent classes) differ in their responses to a set of observed variables (called indicator or items). Typically, a LC analysis starts with the estimation of a one-class model (assuming that the population is homogeneous), subsequently increasing the number of classes to two (e.g. not bullied/bullied), three, four, etc., until a model is found that statistically fits the data. An important difference with traditional cluster methods (such as *K*-means clustering) is that LC analysis is based on a statistical model that can be tested[59]. As a consequence, determining the number of latent classes is less arbitrary than when using traditional cluster methods. In a LC cluster approach, every subject is assigned to only one cluster based upon the modal assignment rule that classifies a subject to the class with the highest classification probability. These membership probabilities are being calculated upon the estimated parameters of the measurement model. In our study, we use the LC method to empirically test whether different target groups exist regarding bullying based on the responses to an inventory measuring exposure to various types of specific bullying behaviours[27, 55]. Note that if a latent class cluster solution finds more than one cluster, heterogeneity exists. If more than two clusters are empirically identified, only differentiating targets from non-targets is incorrect. We used version 4.0 of the Latent GOLD software for this part of our analysis[60].

After selecting a latent class model, individuals can be assigned to one of the encountered clusters (bullying classes) using the modal assignment rule[25]. As a next step, multinomial logistic regression analysis[61] was used

to determine the relative risk for the different types of target groups or latent classes; i.e. by including the relevant risk factor as explanatory variables in the model in which the classes serve as the observed dependent variable. For the identification of the model parameters, we use dummy coding, meaning that for both the dependent variable and the categorical predictors the parameters for one category (the reference category) are fixed to zero. More specifically, "not bullied", "daytime work", "no or low education", "white-collar worker", "service sector", "older than 55 yr", "zero years of seniority", "fixed contract" and "female" were used as reference categories. Before describing the specific odds ratios in detail, we tested the overall significance of the effect of the risk factors using likelihood ratio tests. This part of the analysis was performed using SPSS 15.

Results

Number and nature of the workplace bullying clusters

First, we determined the number of bullying clusters needed to describe the associations between the 16 items of NAQ. A six-class model with the items treated as nominal indicators and with three local dependencies showed an acceptable bootstrap *p*-value (0.07), and sufficiently explaining the initial associations among the 16 indicators. It is noteworthy that the classification into clusters based on the item responses is rather good: the estimated proportion of classification errors is 0.18 and the pseudo R^2 value quantifying how well class membership can be predicted by the item responses is 0.72.

The conditional probabilities for each cluster portraying the relationship between the 16 item responses and class membership are listed in Appendix 1. Table 1 gives a summary of these results; that is, for each bullying cluster it contains the average conditional probability (CP) of responding "Never", "Now and then", "Once a month" or "Once a week or more" across the 16 items. These mean conditional probabilities reflect the average probability for respondents in a given cluster or group to choose one of the four response alternatives when responding to the given items. The cluster labels given by us appear in the heading of Table 2. The second row represents the size of the clusters (i.e. the percentage of respondents in each cluster).

Respondents in the first cluster (30.5%) are predominantly characterised by a mean CP of 94% that they are "never" systematically subjected to any kind of bullying behaviour during the last six months. For that reason, the respondents in this cluster are labelled as "*Not bullied*". The respondents of the second cluster (27.2%) are also characterised by a high mean CP to answer "Never". This mean CP is 74.6%. Some negative acts, however, appear more frequently (see also: Appendix 2) such as: "withholding information", "getting work under level of competencies", "opinion is neglected" and "work not valued or appreciated". Hence, we labelled this cluster the "*limited work criticism*" cluster. The respondents of the third cluster (20.8%) are characterised by two mean CPs. The average CP that they have "never" been subjected to these types of behaviours during the last six months was 61.5%, while the average CP that they had been subjected "now and then" to these acts was 36.1%. Some negative acts were more frequently reported (see also: Appendix 2) such as: "withholding information", "insults", "degrading jokes", "spreading gossip", "negative remarks concerning one's private life", "work effort not appreciated or valued" and "one's opinion is neglected". We labelled these employees as a "*limited negative encounters*" category. The fourth cluster (8.3%) was characterised by a mean CP of 53.5% for being subjected "now and then" to any bullying behaviour. For some acts (see also: Appendix 2), the CP for "now and then" was substantially higher: "insults" and "silence or hostile reactions when approaching". This cluster was then labelled as the "*occasionally bullied*" cluster. The fifth cluster (9.5%) was characterised by a mean CP of 53.5% for answering "never" to all negative acts. Nevertheless, this cluster reported to be frequently subjected to various work-related negative acts such as "information is being withheld, making it difficult to perform task", "getting work under level of my competence", "work effort not valued or appreciated" and "opinion is neglected". As a consequence, we labelled this cluster as "*work-related bullying*". The last cluster (3.6%) had a very low CP for "never" being

Table 1. Mean conditional probabilities (expressed as a percentage) for four answer categories as a function of latent class cluster type

	Not bullied	Limited work criticism	Limited negative encounters	Some-times bullied	Work- related bullying	Victims
Size of the cluster %	30.5	27.2	20.8	8.3	9.5	3.6
Never	94	74.6	61.5	28.6	53.5	20.3
Now and then	6	23.0	36.1	60.4	29.8	32.3
Once a month	0	1.6	1.2	6.3	8.8	15.1
Once a week or more	0	0.8	1.1	4.7	7.9	32.3

exposed to negative acts and yielded the highest CP for being exposed "once a month or more" to any bullying behaviour. As they are intensively and over a long period of time confronted with several negative acts, thus being targets of systematic negative social acts of a varied nature[49], they are labelled "*victims*" of workplace bullying.

Risk groups and risk sectors for workplace bullying

The associations between the socio-demographic variables and the bullying clusters have been established by use of the Likelihood Ratio tests. As can be seen from the results reported in Table 2, that not all socio-demographic variables under investigation were significantly associated with the observed cluster solution. "Educational level", "seniority" and "having a leading position" had to be left out of the analysis because of multi-collinearity. The size of the company could not be taken into account for the model because the sample size of 8,985 was not sufficiently large.

Table 3 contains odds ratios that enable us to distinguish possible risk factors. In the columns, the five exposure clusters are compared to the not bullied cluster, and in the rows, the subcategories or possible risk groups are listed. For every socio-demographic variable, the last category in the table is the reference cat-

Table 2. Multinomial regression analysis/Likelihood ratio tests

Effect	–2 Log Likelihood of Reduced Model	χ^2	df	Sig.
Intercept	3,956.26	0.000	0	0.
Gender	3,972.10	15.84	5	0.007
Years of age	4,030.88	74.61	20	0.000
Occupational status	4,095.80	139.54	25	0.000
Sector	4,000.59	44.32	25	0.010
Employment contract	3,975.30	19.04	5	0.002
Working hours	3,989.65	33.39	5	0.000

Table 3. Identification of risk groups by means of odds ratios

		Latent Classes				
		Limited work criticism /not bullied	Limited negative encounters /not bullied	Sometimes bullied /not bullied	Work- related bullying /not bullied	Victims /not bullied
	Intercept					
Gender	Female	0.93(ns)	1.11(ns)	1.04(ns)	0.75**	1.02(ns)
	Male	.	.	.	.	.
Age	Less than 25	0.54**	1.52*	0.48*	1.31(ns)	1.26(ns)
	Between 25 and 34	1.18(ns)	1.22(ns)	0.73(ns)	1.78**	1.52(ns)
	Between 35 and 44	1.14(ns)	1.42**	0.95(ns)	1.52*	1.745*
	Between 45 and 54	1.19(ns)	1.48**	1.09(ns)	1.3(ns)	1.92*
	55 yr old and above	.	.	.	.	.
Profession	Public servant	1.54(ns)	1.49(ns)	3.13**	1.44(ns)	4.78**
	Teacher	0.65(ns)	0.83(ns)	0.36*	0.38(ns)	0.87(ns)
	Management	0.92(ns)	0.83(ns)	0.88(ns)	0.9(ns)	0.72(ns)
	Nurse/Social worker (assistant)	0.57**	1.26(ns)	0.66(ns)	0.3***	1.11(ns)
	Blue-collar	0.63**	1.96(ns)	1.45(ns)	0.59*	2.159*
	White-collar	.	.	.	.	.
Branch	Education	0.69(ns)	1.26(ns)	1.68(ns)	0.51(ns)	0.68(ns)
	Health	0.69*	1.05(ns)	1.2(ns)	1.14(ns)	1.15(ns)
	Government	0.49*	1.14(ns)	0.58(ns)	0.49(ns)	0.62(ns)
	Industry	0.88(ns)	1.24(ns)	1.36(ns)	1.07(ns)	1.93*
	Food	0.98(ns)	1.81*	2.53**	1.98(ns)	3.34*
	Services	.	.	.	.	.
Type of contract	Temporary	0.88(ns)	0.61**	0.81(ns)	0.79(ns)	1.02(ns)
	Permanent contract	.	.	.	.	.
Working schedule	Other time schedule	1.00(ns)	1.45**	1.49***	1.26*	1.16(ns)
	Daytime					

*0.01<p≤0.05, **0.001<p≤0.01, ***p≤0.0001.

egory. Since the choice of the reference category can determine the results, we need to elaborate further on some of the reference categories. As a consequence of Flemish working life being predominantly service-oriented, both the service sector and white-collar workers were taken as a reference group. To be able to assess the age of the respondents as a risk factor the oldest category (over 55 yr of age) was taken as a reference. The choice of other reference categories is more obvious, with the largest one being chosen as a reference category.

A first inspection of the significant odds ratios across the different clusters of bullying shows that age as well as occupational position are associated with the largest number of significant differences. Next, the work sector and the working schedule (daytime and shifts) are associated with a large number of significant odds ratios. Additionally, the type of contract and gender are also associated with some significant odds ratios.

With respect to the various branches, the odds ratios point towards the food industry as being a high risk sector. Compared to the reference branch (i.e. services), employees in the food industry have almost twice the risk of facing limited negative encounters (as compared to not being bullied), are 2.53 times more likely to be occasionally bullied (as compared to not being bullied) and are 3.3 times more likely to be a victim (as compared to not being bullied). The manufacturing industry is the second highest risk sector for workplace bullying as employees in this sector are almost two times more likely to be a victim of workplace bullying (as compared to not being bullied) in comparison to employees working in the service sector.

A close look at the results for the different age groups also reveals a clear trend. The youngest employees (those less than 25 yr of age) and the oldest employees (those above 54 yr of age) are least likely to be bullied at work. Respondents between 35 and 44 yr of age have the highest risk. Compared to the respondents above the age of 54, respondents between the ages of 35 and 54 are at least 1.7 times more likely to be a victim of bullying (as compared to not being bullied). These respondents are (in comparison to the oldest groups) also more likely to face limited negative encounters as compared to not being bullied (OR>1.4). When we look at the cluster facing work-related bullying, respondents between the ages of 25 and 34 also come into view: together with respondents between the ages of 35 and 44, they are at least 1.5 times more likely to face work-related bullying as compared to being in the cluster where respondents do not face any bullying behaviours.

Across occupational status categories there are also many significant differences with respect to exposure to bullying. Among the victims (compared to those not bullied), two odds ratios should attract our attention as they are not only significant, but also substantial. Blue-collar workers (as compared to white-collar workers) have an elevated risk (OR=2.1) to be a victim of bullying (as compared to not being bullied). The odds of being a victim (as compared to not being bullied) are even higher for public servants (as compared to white-collar employees) (OR=4.7). Additionally, public servants also have the highest risk of being occasionally bullied (as compared to not being bullied) (OR=3.1). In general, managers and teachers seem to not be exposed differently to workplace bullying than white-collar workers are. The odds ratios of teachers, however, are lower than that of managers, which were below 1. Hence, both groups may not have an elevated risk of being bullied. Nurses and social service employees also experience less bullying. Their risk of experiencing limited negative work criticism compared to experiencing no bullying is two times lower than that of white-collar workers, and their likelihood to be confronted with work-related bullying as compared to not being bullied is almost three times lower in comparison to white-collar workers.

Using working during the day as a reference reveals that working in shifts or having irregular working hours poses an elevated risk for exposure to workplace bullying. The odds ratios indicate significant differences for the limited negative encounters, the occasionally bullied and the work-related bullying clusters (as compared to those not bullied). No significant differences exist between these two groups when comparing both the limited work criticism cluster and the victims cluster with the not bullied cluster.

Comparing the risk of men and women shows that there are not many significant differences between both groups, although men are 1.33 times more likely to be exposed to work-related bullying, thereby making them a risk group for this particular type of workplace bullying.

Lastly, the likelihood for temporarily employed respondents to face bullying seems to be a bit lower than that of permanently employed respondents. However, only the odds ratio associated with being in the limited negative work encounters is significantly lower. Temporarily employed respondents are 0.6 times less likely to face limited negative encounters (as compared to facing no bullying) than are permanently employed respondents.

Discussion

Summary of the results

In line with existing theories[62, 63], the latent class cluster (LC) approach demonstrates that there are different and distinct target groups of bullying behaviour at work[22, 64]. While most respondents report little or no exposure to any type of bullying behaviour, others systematically report frequent exposure to a wide range of such behaviour[22]. The types or classes form distinct groups, which differ in terms of both the frequency and nature of the reported bullying. In the *limited work criticism* cluster (27.2%), employees reported only low of exposure to primarily work-related negative acts. In the *limited negative encounters* cluster (20.8%), employees reported, in addition to limited exposure to work-related negative behaviour, also low exposure to person-oriented negative acts. In the *occasionally bullied* (8.3%) cluster, employees are very likely to be occasionally subjected to a wide range of negative acts of both a work- and person-oriented nature and at attempts to isolate them. In the *work-related bullying* cluster (9.5%), employees experience monthly or even weekly exposure to work-related negative acts, while social isolation and person-oriented negatives acts occurred "only" occasionally. The respondents in the *victims* (3.6%) cluster had for all types of negative acts by large the highest probability of being exposed on a monthly or even a weekly basis. All in all, the results clearly indicate that repeated aggression and negative social behaviour appears in various configurations, and is distinguishable by the nature and frequency of the acts involved and is omnipresent in working life, as only a minority of respondents not appeared to face any kind of bullying behaviour at work (30.5%). However, in accordance with the definition of workplace bullying, only the last cluster can be perceived as victims of workplace bullying. As it pertains to the other four targets groups, it is debatable whether they can be perceived as targets in sensu stricto. Whatever the result of such a debate, the latent profile (see: Appendix 1) clearly demonstrated that the employees in the limited work criticism cluster and the limited negative encounters cluster had an increased probability to be occasionally exposed to some negative acts. Validation articles show that the effect on the employees in these two clusters on a wide range of stress and work-related difficulties is significant and important. To a higher degree, the occasionally bullied employees and the employees facing work-related bullying were also confronted with a wide range of negative acts. According to earlier validation research[27, 51], the effect on these employees was far worse, showing moderate to strong negative scores on outcomes such as job satisfaction, organisational commitment, recovery need, sleep quality, psychosomatic complaints and general health. Accordingly, employees in these exposure groups are also "at risk" with respect to workplace bullying, and the likelihood of being in one of these groups should be assessed.

The investigation of risk factors for being a target of workplace bullying yielded a few significant, as well as substantial differences. Age, occupational position and sector are all significant predictors of exposure to bullying, while gender, type of contract and work schedule were not. Compared to the oldest group of employees, the odds ratio for being a victim of bullying is higher for employees between the ages of 35 and 54. Next, the odds ratios for the youngest employees (in comparison to the oldest) are most often equal or smaller than 1, thus indicating a decreased risk for the youngest employees. Because of this, these findings do not support the idea that younger employees are more vulnerable to workplace bullying as a consequence of their likelihood to be more frequent in positions with little informal power that offer them less resources to defend themselves. Nor do our data support the idea of workplace bullying as a consequence of a baptismal process in which "inexperienced" workers are put to the test before possibly being integrated into the workgroup. On the contrary, the odds ratios of the youngest group for facing occasionally bullying are two times smaller. It may be that in some settings such a "rite de passage" does exist[65, 66], but there is no evidence that these "rites" are omnipresent in current working life. The odds ratio of 1.52 connected with limited work criticism may point to the fact that younger employees are still in a learning process, becoming acquainted with ordinary working procedures and expectations.

Be that as it may, we do find a higher likelihood for employees between the ages of 25 and 44 who are in the middle of their "active" working life regarding experiences of work-related bullying. In these age groups, careers are being planned, families are being funded and separated, and houses are being bought and sold. An empirical study underscores the fact that their life becomes somewhat more demanding. A comparison[67] of nine age groups with respect to job demands, job resources and fatigue showed a strong increase between the ages of 25 and 44. Later, similar findings were reported: between the age of 25 and 44 demands increase, while skill utilisation and social support decrease[68]. Hence, while important life resources are being fostered and/or lost, the work situation for employees between the ages 25 and 44 becomes more demanding and some resources decrease. This may perhaps open the door for more competition and frus-

tration at work, leading to bullying[69]. At least, these job characteristics have earlier been empirically related to the occurrence of workplace bullying[70–72]. Such an elevated level of certain job characteristics may explain why those employees reported being at a higher risk to a relatively high exposure level for negative acts most often related to their work situation.

The results also revealed that the oldest age groups is less confronted with workplace bullying, again a somewhat surprising finding as some studies have shown that being older is also a risk factor[26, 30]. However, it is possible that older employees have a more informal or formal power within the organisation or team, thus making it difficult to outrank them. It is also possible that the lower risk is related to the healthy worker effect: during the process of work and over an extended period of time, only those who are the fittest and strongest are able adapt and continue working[67], making them less receptive and vulnerable to negative behaviour from others.

Given the idea that a "higher" position or occupational status may be a "protective" factor, it is a bit awkward that having a managerial position is not associated with a significantly lower odds ratio. The results for occupational position also do not provide support for the idea that bullying is primarily a blue-collar phenomenon[28]. Nonetheless, blue-collar workers faced double the risk of being a victim of bullying. Public servants were even twice as likely to be a victim of workplace bullying than blue-collar workers. A comparison of the odds ratio for blue-collar workers and public servants for other types of bullying showed that blue-collar workers were significantly less likely to face limited work criticism and work-related bullying, while public servants were more likely to be occasionally bullied. Therefore, bullying may not be a blue-collar phenomenon per sé, but blue-collar workers are apparently a bit harsher with each other, as they have twice the risk for being a victim of bullying than white-collar workers. A reason for the higher risks of public servants may be the hierarchical structure, the fixed employment contracts and social benefits such as good pensions rewarding long tenure[73]. Previous research has shown that in cultures heavily dependent on the preservation of existing hierarchy, bullying occurs more often[65]. Research mapping the work characteristics of public servants in Belgium[74] identified prominent antecedents of bullying such as role conflicts[15, 72] and a non-supportive leader[75] as being characteristic and prominent features of the public servant's job. Additionally, if the actors involved cannot be fired or have positive prospects such as a good pension plan that would be strongly jeopardised if they would leave the organisation, one may argue that both the perpetrators and victims are trapped in a golden cage, a term public servants often refer to in describing their occupational position. In such a situation, long-term conflicts[14] and a lack of internal and external mobility opportunities that could have allowed the parties involved to cope with this difficult situation may constitute a fertile soil for workplace bullying[76].

In contrast to studies on workplace aggression[24, 40, 77, 78], our data suggested that being employed in high social contact, non-commercial professions such as teachers, social workers and nurses is associated with a lower likelihood of being exposed to workplace bullying. This may seem a bit unusual as these professions deal with clients, patients and students who may question their role and competences while directly interacting with them, thereby resulting in a type of interaction that is known to be associated with aggressive workplace behaviour. Still, our results may be explained in several ways. Although these professions are often emotionally demanding[79], their workload is relatively low and the level of autonomy relatively high compared to other professions[79], a combination that is presumed to be associated with a lower likelihood of being a victim of workplace bullying[44]. More importantly, clients, students or patients may not have the means or resources to systematically spread rumours, to attack one's private life and to socially exclude someone. For that reason, no matter how intrusive these encounters may be, it could prove difficult to pinpoint this type of aggressive behaviour as workplace bullying.

Our finding that temporary compared to permanent employment is associated with a lower risk of bullying is important because it does not provide empirical support for the hypothesis that temporary employees are particularly vulnerable to workplace bullying as they may fear being dismissed or not obtaining a contract renewal when standing up for and defending themselves in interpersonal conflicts[35]. It is possible that "volition", a key concept from psychological contract literature[80] should be added to the equation if we seek future empirical support for this hypothesis. Whether people have voluntarily chosen to be a temporary employee may serve to moderate this relationship. According to the stepping stone hypothesis[81], temporary workers may see jobs as a "rehearsal" for the possibility of achieving a better and more suitable job. Hence, they may change jobs before becoming victims or after perceiving themselves to be targets, which is in accordance with the entrapment hypothesis[81]. The entrapment hypothesis stipulates in particular that permanent employees are not inclined to move to other jobs when working conditions deteriorate since they have fixed pay and a contract. On the other hand, temporary employees may

seek a more beneficial working environment elsewhere when exposed to even low levels of bullying.

Limitations and Future Research

The present sample is a large and heterogeneous sample which is needed for this type of study, yet it is not representative in the strictest sense[45]. Research[68] on the DIOVA dataset, the largest contributor to the sample, has found it to be no different than a very large and representative sample of the Flemish workforce with regard to occupational stress[73]. Although this implies that the present sample may approximate the working force, it still does not allow us to make statistical inferences to this population, as our sample does not cover all industries and professions in the workforce. Next, the prevalence estimates of workplace bullying may be sensitive to sample fluctuations. Even so, there are no indications that the point estimates revealed in this study are inaccurate in relation to the subgroups in this study. Since only relative risks are presented in this study, our primary aim of detecting risk groups for workplace bullying was not jeopardised.

Despite the fact that we used a large and heterogeneous sample, the prevalence of the most extreme form of bullying at work, i.e. the "victim" cluster was "only" 3.6%, although it was still a finding in line with most studies in this field[16]. Nevertheless, the possibilities to estimate more complex multinomial regression models was limited. More specifically, it was not possible to simultaneously enter all socio-demographical variables into one regression model; that is, seniority and educational level had to be left out of the analysis because of their multi-collinearity with other predictors (such as age and seniority that correlate 0.7, or educational level that is a strong predictor for occupational position in Flemish working life (Phi 0.6))[68]. Next, possible interesting interaction effects, e.g. between gender and occupational position, could not be investigated.

Considering these limitations, it is quite obvious that large representative studies are needed[45]. With a very large sample size, it may be possible to assess risk groups and even interactions between socio-demographic variables in a more representative way. A good example of a large representative sample is found in Norway, where 2,500 observations of bullying were initially sampled. Nielsen *et al.*[48] reported only 1.1% of the 2,500 observations to be victims of bullying when using a latent class cluster method to distinguish among exposure groups. Following such a low prevalence, it can be argued that it would be difficult if not impossible to assess the risk sectors or occupations. As a consequence of this, important dynamics may remain undetected, which inflates the type II error. One possible solution may be an increase in the size of representative samples. Such a data collection however is very costly and may be unattainable for practical reasons. In addition, it may pose ethical difficulties to involve many people in research that is unlikely to be directly relevant to them[45]. Using large, heterogeneous but non-representative sample is relatively cheap, so if our findings are limited to the groups under investigation, this type II error may not come to the fore. The type I error, however, is inevitable for non-representative samples, especially if researchers or readers are not prudent and generalise findings to populations that were not sampled.

Practical Implications

Tailored intervention programmes against bullying will often be in need of information that provides fine distinctions on the frequency and nature of bullying, a requirement that was met in the present study by using a LC approach. The nature of the clusters may assist interventionists in adequately applying the hierarchy of intervention measures: informing about bullying at work, preventing bullying at work, managing more severe cases and assisting victims of workplace bullying. The results show that the first cluster hardly faces any systematic workplace bullying behaviour. The second and third clusters, in which both the type and intensity of the reported negative acts differ, only face a low exposure to workplace bullying behaviour. Since they are not really systematically exposed, information about how bullying affects people and their social climate, as well as communicating a policy that workplace bullying is not tolerated in the organisation, may be sufficient for preventing further escalation. In addition, improving conflict management skills among managers may be a fruitful measure. Informing employees may no longer be sufficient for respondents who are occasionally bullied, as they report to be sometimes exposed to different types of negative acts and further escalation must be prevented. Implementing practices with fair complaint procedures may also be an important and necessary intervention. For those respondents, analysing the causes of bullying may be necessary to counteract workplace bullying. In some cases, individual counselling may be needed to deal with the problem. Since work-related bullied respondents are characterised by a high and systematic exposure to work-related negative acts, a thorough analysis of the work environment may contribute to an explanation of their bullying experience. For the victims, informing and analysing the work environment may be a bit too little, and a bit too late.

Therefore, those individuals need assistance in order to be able to deal with their experience of being a victim of workplace bullying.

The results show that bullying is an omnipresent problem for the entire workforce. However, while designing interventions, policymakers could try to differentiate their efforts between prevention and assistance for the victims. For example, our results have shown that employees with a permanent contract and employees who are not working during the day may both benefit from a tailor-made intervention that aims to halt the escalatory process of workplace bullying. Ordering more research to investigate the reasons why these employees are targeted could be a first but nevertheless important step. The odds ratios for blue-collar workers and public servants may serve as yet another example to underscore the importance of differentiated efforts. The odds ratios show that blue-collar workers are more likely to face severe victimisation, although they face less work-related bullying. For that reason, campaigns geared towards getting along with your co-workers may probably be more important than campaigns that also focus on frequent work-related negative acts. The latter does not apply to public servants where attention is also required with respect to work-related negative acts. Of course, prevention is not enough for both risk groups as they are more likely to be victimised than others. Hence, direct interventions or employee assistance programmes are required to "cure" those severely exposed.

It is clear that policymakers may benefit from disentangling the problem of workplace bullying. Identifying the risk factors at the level of the workforce, the level of organisational stratification and the individual level may assist counsellors with the development of interventions to counteract the different types or forms workplace bullying may take. Still, identifying the type of and exposure to bullying and the risk groups is only a start. After risks are identified, various explanatory pathways[5, 49] at the organisational level, in addition to the job[70, 72, 82, 83] and the parties involved[84], must also be explored in order to systematically counteract this occupational hazard[85].

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Appendix 1. Profile output in Latent Gold

	Not bullied	Limited work criticism	Lim. negative encounters	Sometimes bullied	Work-related bullied	Victims
Cluster Size	0.306	0.272	0.208	0.083	0.095	0.036
Someone withholding necessary information so that your work gets complicated						
Never	0.827	0.389	0.508	0.176	0.203	0.115
Now and then	0.163	0.483	0.454	0.614	0.333	0.342
Once a month	0.008	0.095	0.026	0.132	0.251	0.169
Once a week or more	0.001	0.034	0.012	0.078	0.213	0.374
Ridicule or insulting, teasing						
Never	0.922	0.864	0.314	0.056	0.589	0.040
Now and then	0.076	0.129	0.632	0.707	0.315	0.253
Once a month	0.000	0.007	0.030	0.124	0.072	0.178
Once a week or more	0.002	0.001	0.024	0.113	0.024	0.529
Ordered to perform work below your level of competence						
Never	0.681	0.263	0.398	0.179	0.186	0.174
Now and then	0.268	0.551	0.468	0.583	0.356	0.371
Once a month	0.009	0.080	0.030	0.065	0.160	0.158
Once a week or more	0.043	0.106	0.106	0.173	0.298	0.297
Being deprived of responsibility or work tasks						
Never	0.953	0.725	0.823	0.416	0.415	0.410
Now and then	0.047	0.243	0.172	0.430	0.378	0.298
Once a month	0.000	0.020	0.005	0.061	0.119	0.122
Once a week or more	0.000	0.012	0.000	0.023	0.088	0.170
Gossip or rumours about you						
Never	0.768	0.541	0.118	0.016	0.260	0.029
Now and then	0.220	0.426	0.744	0.622	0.422	0.189
Once a month	0.007	0.026	0.060	0.146	0.151	0.198
Once a week or more	0.004	0.007	0.080	0.216	0.167	0.584
Social exclusion from co-workers or work group activities						
Never	0.994	0.918	0.812	0.383	0.680	0.218
Now and then	0.007	0.080	0.184	0.570	0.255	0.379
Once a month	0.000	0.002	0.004	0.032	0.037	0.126
Once a week or more	0.000	0.000	0.000	0.015	0.028	0.278
Repeated offensive remarks about you or your private life						
Never	0.948	0.895	0.532	0.236	0.711	0.159
Now and then	0.052	0.105	0.413	0.627	0.249	0.381
Once a month	0.000	0.000	0.026	0.096	0.030	0.206
Once a week or more	0.000	0.000	0.029	0.041	0.010	0.254
Verbal abuse: insults						
Never	0.994	1.000	0.632	0.224	0.854	0.051
Now and then	0.005	0.000	0.356	0.742	0.125	0.407
Once a month	0.001	0.000	0.006	0.028	0.014	0.196
Once a week or more	0.000	0.000	0.006	0.006	0.007	0.346
Hints or signals from others that you should quit your job						
Never	0.997	0.974	0.927	0.629	0.793	0.378
Now and then	0.003	0.026	0.072	0.353	0.167	0.351
Once a month	0.000	0.000	0.000	0.016	0.028	0.155
Once a week or more	0.000	0.000	0.001	0.002	0.012	0.116
Repeated reminders about your blunders						
Never	0.967	0.879	0.675	0.279	0.559	0.241
Now and then	0.033	0.120	0.319	0.684	0.377	0.469
Once a month	0.001	0.001	0.005	0.031	0.044	0.133
Once a week or more	0.000	0.000	0.002	0.006	0.011	0.157
Silence or hostility as a response to your questions or attempts at conversations						
Never	0.995	0.892	0.760	0.250	0.516	0.103
Now and then	0.005	0.105	0.237	0.710	0.355	0.359
Once a month	0.000	0.002	0.003	0.038	0.089	0.210
Once a week or more	0.000	0.001	0.001	0.002	0.040	0.328
Devaluing of your work and efforts						
Never	0.710	0.120	0.290	0.050	0.078	0.097
Now and then	0.273	0.665	0.593	0.615	0.439	0.311
Once a month	0.001	0.083	0.050	0.162	0.222	0.151
Once a week or more	0.017	0.053	0.067	0.173	0.261	0.441
Neglect of your opinions or views						
Never	0.675	0.261	0.227	0.063	0.105	0.072
Now and then	0.293	0.658	0.742	0.689	0.509	0.397
Once a month	0.017	0.052	0.027	0.150	0.236	0.227
Once a week or more	0.015	0.029	0.004	0.098	0.150	0.304
"Funny" surprises						
Never	0.992	0.990	0.846	0.497	0.883	0.325
Now and then	0.008	0.011	0.153	0.491	0.094	0.392
Once a month	0.000	0.000	0.001	0.012	0.013	0.130
Once a week or more	0.000	0.000	0.000	0.000	0.010	0.153
Exploitation at work. such as private errands						
Never	0.998	0.968	0.957	0.730	0.891	0.613
Now and then	0.002	0.031	0.038	0.257	0.085	0.238
Once a month	0.000	0.001	0.001	0.010	0.017	0.083
Once a week or more	0.000	0.000	0.003	0.003	0.007	0.066
Reactions from others that you work too hard						
Never	0.941	0.772	0.641	0.350	0.639	0.287
Now and then	0.057	0.214	0.328	0.574	0.258	0.340
Once a month	0.001	0.008	0.013	0.048	0.063	0.124
Once a week or more	0.001	0.006	0.017	0.028	0.040	0.249

Appendix 2. Distribution of occupational groups across bullying typology

		Not bullied	Limited work criticism	Limited negative encounters	Occasionally bullied	Work-related bullying	Victims
Gender	Female	33.9	25.7	21.9	7.8	7.3	3.4
	Male	30.9	27.7	20.0	8.4	9.5	3.5
Working hours	Other working hours	32.9	18.0	26.3	11.0	7.5	4.4
	Irregular hours	29.0	23.1	26.2	8.54	8.7	4.4
	Shift work	28.7	20.0	27.9	10.6	8.9	3.8
	Daytime	33.2	28.6	18.9	7.6	8.5	3.2
Profession	Public servants	29.8	24.2	23.3	10.5	7.1	5.2
	Teachers	47.6	21.4	21.8	4.8	2.7	1.7
	Managers	34.0	33.1	13.7	6.3	11.0	1.7
	Nurse/Social worker (assistant)	41.7	16.0	27.7	6.9	4.3	3.3
	Blue collar	26.8	15.4	33.5	11.2	6.9	6.2
	White collar	31.7	33.5	15.9	6.1	11.0	1.8
Seniority	More than 25 seniority	31.6	25.3	21.9	10.1	6.8	4.3
	Between 21 and 25 seniority	28.1	25.4	25.4	11.2	6.5	3.3
	Between 16 and 20 seniority	30.2	23.6	25.7	9.3	7.4	3.9
	Between 11 and 15 seniority	30.3	27.5	24.2	6.8	7.2	3.9
	Between 6 and 10 seniority	29.6	27.7	20.3	9.0	9.8	3.5
	Between 3 and 5 yr	31.6	28.8	18.5	7.2	11.0	3.3
	Between 1 and 2 yr	31.3	33.2	15.9	6.7	11.0	2.2
	Less than 1 yr seniority	35.5	27.0	19.1	5.5	9.9	3.0
Educational level	University degree	36.0	31.5	16.0	4.2	10.0	2.0
	High education outside university	32.6	32.3	16.4	6.4	10.0	2.3
	High school	31.5	23.8	23.4	9.5	7.8	4.0
	Max low school	28.8	17.6	29.6	13.0	5.2	5.9
Age	Less than 25 yr	41.5	14.5	28.4	4.8	7.6	3.1
	Between 25 and 34	33.0	28.6	18.8	6.4	10.0	3.0
	Between 35 and 44	31.6	26.4	21.8	8.3	8.3	3.6
	Between 45 and 54	30.2	26.3	22.9	9.8	6.8	4.0
	55 yr and older	35.3	26.8	18.3	10.4	6.9	2.5
Sector	Education	45.0	21.3	22.1	6.5	3.3	1.9
	Health care	36.5	19.3	24.0	8.7	8.0	3.5
	Government	30.1	24.1	23.6	10.1	6.9	5.0
	Industry	29.9	27.1	21.5	7.8	10.0	3.5
	Food	21.9	15.3	30.8	13.9	9.5	8.8
	Services	32.9	34.4	15.0	5.7	10.0	1.6
Number of employees	Less than 100 Employees	32.3	27.0	21.6	9.4	4.7	4.9
	Between 100 and 250	31.1	29.5	17.9	8.1	9.6	3.7
	Between 250 and 500	35.6	22.4	22.7	7.8	8.1	3.4
	More than 500	30.4	29.3	19.6	8.0	9.3	3.4
Type of contract	Temporary	40.1	24.0	17.9	7.0	7	4.1
	Fixed contract	31.6	27.1	21.1	8.2	8.6	3.4
Leading position	Leading position	30.8	29.8	18.8	8.2	9.6	2.8
	Not leading positon	32.8	25.9	21.4	8.1	8.2	3.7