Workplace violence: an empirical analysis on job satisfaction and absenteeism at the European level

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Introduction and related literature

Workplace violence is a huge problem that affects the labour market and workers' lifestyles and has a direct impact on workers' and firms' productivity. The term "workplace violence" is intended as "*any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behaviour that occurs at the work site*" (Safety and Health Administration - United States Department of Labor Occupational).

Thanks to the data collected by the European Working Conditions survey, the aim of our analysis is to study a possible causal effect of workplace violence on job absenteeism and job satisfaction.

In literature many papers have treated this topic, but, in none of them, it has been possible to make a complete analysis of the different types of violence and their impact on the two response variables.

Scientific papers provide a clear negative effect of workplace violence on job satisfaction. Coyne et al. (2017) conducted an experiment to specifically study the effect of cyberbullying, intended as "*an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself* ", founding that it has a negative relationship with job satisfaction. The same negative relationship with job satisfaction has been evident in Merkin & Shah (2014) paper and in the Stoermer et al. (2019) where the variables taken into account are respectively sexual harassment and racial discrimination. Differently from these results, it's what has been underlined by Giorgi et al. (2015). The authors studied the effect of physical bullying on job satisfaction, they point out a U-shape relationship.

Looking at job absenteeism, literature provides similar results. Min et al. (2014) observe that racial discriminations and sexual harassment have a negative significant impact on the employee's health status, which is negatively correlated with job absenteeism. So, we can affirm that the two have a positive impact on job absenteeism and it should be possible to observe that when racial discrimination and sexual harassment increase, also job absenteeism grows. Also, as underlined by Nielsen et al. (2016) and Magee et al. (2017), bullying has a negative relationship with workers' health status and, as a consequence, it has a positive relationship with job absenteeism.

Data

We analyze the data that emerged from the 6th European Working Conditions Survey (EWCS), year 2015. The 6th Edition covers the 28 EU Member States, Norway, Switzerland, Turkey, Macedonia, Serbia, Montenegro and Albania and it was the first time that the EWCS used computer-aided personal interviewing (CAPI) across all countries and all interviews. Eurofound interviewed 43,850 workers using 106 questions about different aspects of their working life such as employment status, work organization, work-life balance, physical and psychosocial risk factors, training, voice and participation, health, and well-being as well as earnings.

So far, seven editions of the EWCS have been held, from 1991 to 2021. We do not exploit the pooled cross-sectional dataset that includes all the waves, but only the dataset of the 6th Edition (2015) for two reasons: a) the questions in the editions prior to 2015 were incomplete or different; b) the results of the 7th Edition (2021) could be biased by the presence of Covid-19.

Methods

Although 43,850 workers participated in the 6th Edition of EWCS, we analyzed only 23,891 observations, because the questionnaire includes the options "Don't know" and "Refusal", creating, therefore, missing values. We considered the possibility of imputing the missing values by exploiting the available responses, but we decided to avoid this option because this could have led us to incorrect conclusions. In particular, the workers that didn't know how to answer (e.g., because of memory effects) and those who refused to answer (e.g., due to the sensitivity of the question) may have on average different observable and unobservable characteristics from the respondents and, therefore, also their responses to the questions of interest could have been on average different (Table 1 and Table 2 in Appendix). For this reason, we drop all the observations that have missing values.

The dependent variables of our analysis are:
- Satisfaction (Q88): categorical variable for job satisfaction measured with a 4-point Likert scale (with categories "Not at all satisfied", "Not very satisfied", "Satisfied", "Very Satisfied").
- Absenteeism (Q82): self-reported number of days of sickness leave in the last 12 months.

The regressors of interest are two dummy variables that we define in the following way:
- Soft violence (Q80): equal to 1 if workers, over the last month, have been subjected at least once to verbal abuse, unwanted sexual attention, threats, or humiliating behaviors; 0 otherwise.

- Hard violence (Q81): equal to 1 if workers, over the last month, have been subjected at least once to physical violence, sexual harassment, or bullying/harassment; 0 otherwise.

First, we analyze the impact of soft and hard violence on job satisfaction using an ordered probit model. We start from a parsimonious model that includes only the main regressor (soft and hard violence), and then we saturate the model by including a vector of control variables to account for omitted variable bias. Particularly, we assume the following relationship between satisfaction and violence:

$$sat^* = \beta vio + \mathbf{X\delta} + \varepsilon$$

where sat^* is the variable for satisfaction, vio is the dummy variable for soft and hard violence and $\mathbf{X}$ is a vector of control variables. Since we cannot directly observe the dependent variable, sat^* is defined "latent response variable". To obtain the relationship between the actual ordinal response variable sat and the regressors we also need to define:

$$sat = k \ \leftrightarrow \ \alpha_{k-1} < sat^* < \alpha_k$$

where $k=1,\ldots,4$ are the classes of satisfaction and α_k are the thresholds (or cut points).

The control variables that we introduce in this model are gender (Q2a), age (Q2b), income (Q104), country (Country), a dummy variable for health and safety risk perception (Q73) and a dummy variable for discrimination (Q72). The latter is a dummy variable that we create to summarize different types of discrimination. It is equal to 1 if the employee, over the past twelve months, has been discriminated against at least once due to: age, race/ethnic background/colour, nationality, gender, religion, disability, or sexual orientation; 0 otherwise.

To analyze the impact of soft and hard violence on absenteeism, we implement an OLS regression. In this case, we first estimate a parsimonious model and then a model that also includes control variables, to account for omitted variable bias, for each type of violence separately. Then we also estimate a model in which both types of violence are considered together, to verify if the results change. The specification is the following:

$$abs = \alpha + \beta vio + \mathbf{X\delta} + \varepsilon$$

where abs is the self-reported number of days of sickness leave of the last 12 months, vio is the dummy variable for soft and hard violence and $\mathbf{X}$ is a vector of control variables. In this model, we introduce the following controls: gender (Q2a), age (Q2b), a dummy variable for presence of a health and safety committee in the company (Q71b), discrimination (Q72), a dummy variable for health and safety risk perception (Q73), a dummy variable for chronic illnesses (Q76) and country (Country).

Descriptive statistics and econometric results

Descriptive statistics

Before starting the econometric analysis of the relationship between violence, job satisfaction and absenteeism, we present in the following table some summary statistics about the variables of interest.

Variable	Obs	Mean	Std. dev.	Min	Max
Satisfaction	23,891	3.058097	0.705458	1	4
Days of sickness leave	23,891	6.445021	18.22084	0	365
Soft violence	23,891	0.1588464	0.3655405	0	1
Hard violence	23,891	0.0720355	0.2585521	0	1

Moreover, in Table 3 (in Appendix) we present the test on the difference in means of observables between the individuals who are exposed to violence and the ones that are not. The results suggest a possible negative correlation between exposure to violence and job satisfaction and a possible positive correlation between exposure to violence and absenteeism.

Results: impact of violence on job satisfaction

We first analyze the relationship between soft violence (defined as verbal abuse, unwanted sexual attention, threats, or humiliating behaviours) and job satisfaction (Table 4, regressions 1 and 2). The coefficient of soft violence is statistically significant and negative both considering only the regressor of interest and including controls. This indicates that, keeping all the other variables constant, people who are exposed to one or more of the forms of soft violence report to have lower levels of job satisfaction.

To evaluate the magnitude of this relationship, we first examine the Average Adjusted Probabilities of being in each level of job satisfaction given the exposure or lack of exposure to soft violence. According to the saturated model (Table 8), those who are exposed to soft violence have about 26.2% of probability of being "not at all satisfied" or "not very satisfied" compared to a probability of about 13.4% for those who are not exposed.

We then analyze the Average Marginal Effects (Table 9), which show that, keeping all the other things constant, people who are exposed to verbal abuse, unwanted sexual attention, threats or humiliating behaviours are 2.9% more likely than the others to be "not at all satisfied" and 7.7% more likely to be "not very satisfied". Moreover, they are 14.2% less likely than others to be "very satisfied" with their job.

The same analysis can be carried out also for the most severe forms of violence: physical violence, sexual harassment, and bullying/harassment (Table 4, regressions 3 and 4). Also in this case, the

coefficients of hard violence for the ordered probit models both with and without controls are statistically significant and negative. This is a signal of a negative relationship between exposure to one of the forms of hard violence and the level of self-reported job satisfaction.

Looking at the Average Adjusted Predictions (Table 12), we notice that the model predicts that 30% of those who are exposed to violence will report being "not at all satisfied" or "not very satisfied", compared to 14.8% of those that are not. At the same time, according to our model, 25.7% of those that are not exposed to hard violence report being "very satisfied", compared to 11.9% of those who are exposed.

Finally, also in this case we analyze the Average Marginal Effects (Table 13) that indicate that employees who are subject to hard violence are 3.4% more likely to report the level "not at all satisfied", 9% more likely to report the level "not very satisfied" and 16.6% less likely to report the level "very satisfied".

In conclusion, our models clearly indicate a negative correlation between both less and more severe forms of self-reported workplace violence and self-reported job satisfaction.

Results: impact of violence on absenteeism

For what concerns absenteeism, we analyze the impact of soft and hard violence on the self-reported days of sickness leave of the prior 12 months (Table 5). We initially consider models without control variables (regressions 1 and 3). The coefficient of soft violence is statistically significant, and it indicates that being subject to soft violence increases by about 3.701 days the number of days of absence from the workplace. The coefficient of hard violence is also statistically significant, and it indicates that the exposure to hard violence is correlated to an increase of 6.749 days of sickness leave.

We then consider the enriched models (regressions 2 and 4). Also in these cases, both the coefficients of soft and hard violence are statistically significant and positive. However, the number of additional days of sickness leave due to violence falls respectively to 1.174 and 3.185 days. For what concern the control variables, it is possible to notice that they are also relevant to explain the number of days of sickness leave, especially the perception of risks for health and safety in the workplace and the presence of illnesses that lasted more than 12 months.

Lastly, we implement a specification including both types of violence (regression 5). The results of this model show that only hard violence has a significant impact on absenteeism, whereas the coefficient of soft violence becomes not statistically significant. Moreover, the coefficient of hard

violence remains approximately similar to the one of the previous specification, indicating an increase in the days of sickness leave by 3.003.

Conclusions

The main goal of this research project was to find clear evidence of a negative impact of workplace bullying and violence on job satisfaction and absenteeism. Analyzing results from the 2015 European Working Condition Survey we found a negative correlation between workplace violence and job satisfaction and a positive correlation between workplace violence and absenteeism.

Nevertheless, we want to highlight some limitations that may affect our research analysis. First, we dropped out of the analysis the observations which reported missing values. Individuals who didn't answer some questions that were relevant variables in our analysis probably have different characteristics (like personal sensitivity to the topic) from those who managed to give some answer. For this reason, solving this problem by filling in missing values with common imputation methods like conditional means and including them in the econometric analysis would have resulted in incorrect conclusions. Moreover, the likely difference in unobservable characteristics between observations that reported missing values and the rest of the sample creates important limitations in drawing assumptions for the whole population, resulting in limited internal and external validity. Finally, the data used for the research project were collected on a subjective basis, as we were analyzing self-reported answers to a survey. This may lead to measurement errors due to: a) a likely different interpretation, on a personal basis, of the questions and options of ranking scales of associated answers; b) the difficulty of some individuals to remember information about events that happened in the past; c) the deliberate insertion of wrongful data in some answers by some individuals in topics that are regarded as particularly sensitive.

Furthermore, we want to provide some suggestions for further research. First, as an extension of this research project, it would be interesting to analyze wether the effect of violence on job absenteeism and satisfaction would change if we allowed for interactions between the main regressors and control variables. Second, if there will be more consistency in the questions related to these topics in future editions, a causal design could be implemented, also to get an insight into the Covid-19 effect in this context.

In conclusion, given the results proposed and the huge impact the job environment may have on the life of all employed people, it is advisable that the government enforces anti-harassment laws in the workplace and, if still not existing, considers introducing penal sanctions against abusive behaviors in the job environment, even for less severe forms.

Appendix

Differences in observables between respondents and non-respondents

Table 1 - Differences in observables between respondents and non-respondents to question Q88 (level of job satisfaction)

Variable	Mean for respondents	Mean for don't know/refusal	Difference		P-value
Soft violence	.1538579	.1551724	-.0013145		.9782523
Hard violence	.0687646	.1034483	-.0346837		.3938277
Gender	.5178811	.7068966	-.1890155	***	.0027422
Age	42.21768	46.84483	-4.62715	**	.026815
Health and Safety committee	.5287286	.3103448	.2183838	***	.0007554
Discrimination	.0768906	.0344828	.0424079	*	.0853408
Health and Safety risk perception	.2619878	.3103448	-.048357		.4337337
Chronic illness	.1864771	.2241379	-.0376609		.4985029
Income	7145.561	12061.21	-4915.646		.2604293

*** p<0.01, ** p<0.05, * p<0.1

Table 2 - Differences in observables between respondents and non-respondents to question Q82 (number of days of sickness leave)

Variable	Mean for respondents	Mean for don't know/refusal	Difference		P-value
Soft violence	.1588953	.0994126	.0594827	***	3.15e-18
Hard violence	.072115	.0334388	.0386762	***	3.37e-20
Gender	.519888	.5011297	.0187583	*	.0914707
Age	42.27334	41.73701	.5363264	*	.0660284
Health and Safety committee	.5429514	.3691821	.1737693	***	4.20e-56
Discrimination	.0771288	.0732038	.003925		.4986775
Health and Safety risk perception	.2665664	.213737	.0528294	***	9.40e-09
Chronic illness	.191861	.1292363	.0626246	***	2.05e-16
Income	7201.464	6669.788	531.6764		.2114773

*** p<0.01, ** p<0.05, * p<0.1

Descriptive statistics

Table 3 - Differences in observables between individuals exposed and not exposed to violence

Variable	Mean for not exposed	Mean for exposed	Difference		P-value
Satisfaction	3.119875	2.730962	.3889128	***	4.8e-157
Days of sickness leave	5.857186	9.557839	-3.700654	***	2.04e-21
Gender	.5107982	.5654809	-.0546827	***	5.23e-10
Age	42.50219	41.03979	1.4624	***	1.76e-12
Health and Safety committee	.5313993	.6068511	-.0754518	***	4.48e-18
Discrimination	.0485669	.2289855	-.1804186	***	1.7e-136
Health and Safety risk perception	.2297472	.4608696	-.2311224	***	7.7e-148
Chronic illness	.1722731	.2953887	-.1231156	***	7.84e-54
Income	7285.067	6673.891	611.1754		.233723

*** p<0.01, ** p<0.05, * p<0.1

Regressions tables

Table 4 - Regressions of violence on job satisfaction

VARIABLES	(1) Soft violence	(2) Soft violence	(3) Hard violence	(4) Hard violence
Soft violence	-0.590*** (0.0210)	-0.486*** (0.0223)		
Hard violence			-0.751*** (0.0300)	-0.565*** (0.0321)
Controls	NO	YES	NO	YES
Observations	23,891	23,891	23,891	23,891
Pseudo R2	0.0182	0.0765	0.0150	0.0733

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 - Regressions of violence on days of sick leave in the last 12 months

VARIABLES	(1) Soft violence	(2) Soft violence	(3) Hard violence	(4) Hard violence	(5) Both
Soft violence	3.701*** (0.387)	1.174*** (0.398)			0.326 (0.423)
Hard violence			6.749*** (0.696)	3.185*** (0.680)	3.003*** (0.729)
Gender		1.310*** (0.235)		1.276*** (0.234)	1.269*** (0.234)
Age		0.0389*** (0.00851)		0.0385*** (0.00852)	0.0391*** (0.00850)
Health & safety committee		1.305*** (0.239)		1.288*** (0.239)	1.285*** (0.240)
Health & safety risk perception		3.827*** (0.331)		3.681*** (0.323)	3.653*** (0.328)
Discrimination		1.374** (0.545)		1.084** (0.531)	1.025* (0.544)
Chronic illness		8.475*** (0.451)		8.417*** (0.450)	8.407*** (0.450)
Constant	5.857*** (0.121)	1.351* (0.758)	5.959*** (0.115)	1.459* (0.759)	1.412* (0.758)
Country dummies	NO	YES	NO	YES	YES
Observations	23,891	23,891	23,891	23,891	23,891
R-squared	0.006	0.070	0.009	0.071	0.071
Adjusted R2	0.00547	0.0684	0.00913	0.0698	0.0698

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Average Adjusted Probabilities and Average Marginal Effects for Job Satisfaction regressions

Table 6 - Average Adjusted Probabilities of soft violence without controls

	Not at all satisfied	Not very satisfied	Satisfied	Very satisfied
Not exposed	0.022	0.112	0.592	0.274
Exposed	0.076	0.226	0.581	0.117

Table 7 - Average Marginal Effects of soft violence without controls

	dy/dx	Delta-method std. err.	z	P>z	[95% conf. interval]	
Not at all satisfied	.0389656	.0018447	21.12	0.000	.03535	.0425812
Not very satisfied	.1007939	.0036508	27.61	0.000	.0936386	.1079493
Satisfied	.0440107	.0024417	18.02	0.000	.0392251	.0487963
Very satisfied	-.1837702	.0064249	-28.60	0.000	-.1963629	-.1711776

Table 8 - Average Adjusted Probabilities of soft violence with controls

	Not at all satisfied	Not very satisfied	Satisfied	Very satisfied
Not exposed	0.022	0.117	0.594	0.267
Exposed	0.059	0.203	0.597	0.141

Table 9 - Average Marginal Effects of soft violence with controls

	dy/dx	Delta-method std. err.	z	P>z	[95% conf. interval]	
Not at all satisfied	.0288329	.0015739	18.32	0.000	.0257481	.0319176
Not very satisfied	.0767897	.0035771	21.47	0.000	.0697787	.0838008
Satisfied	.0360085	.0021375	16.85	0.000	.0318191	.0401979
Very satisfied	-.1416311	.0064468	-21.97	0.000	-.1542666	-.1289956

Table 10- Average Adjusted Probabilities of hard violence without controls

	Not at all satisfied	Not very satisfied	Satisfied	Very satisfied
Not exposed	0.024	0.120	0.594	0.262
Exposed	0.110	0.267	0.540	0.083

Table 11 - Average Marginal Effects of hard violence without controls

	dy/dx	Delta-method std. err.	z	P>z	[95% conf. interval]	
Not at all satisfied	.0496239	.0024935	19.90	0.000	.0447368	.0545111
Not very satisfied	.1286656	.0051746	24.86	0.000	.1185236	.1388076
Satisfied	.0567684	.0034099	16.65	0.000	.050085	.0634517
Very satisfied	-.2350579	.0093386	-25.17	0.000	-.2533612	-.2167546

Table 12 - Average Adjusted Probabilities of hard violence with controls

	Not at all satisfied	Not very satisfied	Satisfied	Very satisfied
Not exposed	0.025	0.123	0.595	0.257
Exposed	0.074	0.226	0.581	0.119

Table 13 - Average Marginal Effects of hard violence with controls

	dy/dx	Delta-method std. err.	z	P>z	[95% conf. interval]	
Not at all satisfied	.0336364	.0021397	15.72	0.000	.0294426	.0378303
Not very satisfied	.0896435	.0051063	17.56	0.000	.0796352	.0996517
Satisfied	.0422538	.0029393	14.38	0.000	.0364929	.0480147
Very satisfied	-.1655337	.0093703	-17.67	0.000	-.1838991	-.1471683

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