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Distress and job satisfaction after robbery assaults: a longitudinal study\*

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Abstract

Background – External/intrusive violence at work can result in psychological distress and can be

an important risk to employee health and safety. However, the vast majority of workplace

violence studies have employed cross-sectional and correlational research, designed to examine

immediate reactions after being assaulted at work.

Aims – To explore whether exposure to robbery as a traumatic event may contribute to the onset

of typical symptoms of psychological distress (anxiety depression, dysphoria and loss of

confidence) and job dissatisfaction over time.

Methods – We collected data by using a two-wave panel design, in which employees working

the days of bank robberies, in an Italian bank, filled in a questionnaire between 48 hours to 1

week after the robbery (T1) and two months after the robbery (T2). We performed structural

equation models (SEM) to evaluate the fit of different models to our data.

Results: There were 513 participants at T1 (58% women) and 175 (34%) participants at T2 (62%

women). There was a simultaneous association in which psychological distress lead to job

dissatisfaction both following robbery (T1, n = 513), and two months later (T2, n = 175).

Conclusion – Our findings supported a synchronous effects model and suggest that interventions

after suffering physical assaults, apart from helping employees to recover their health, should

consider restoring their trust and confidence in the organization. This study contributes to

understanding the dynamic relationships between a robbery at work and its outcomes over time,

by addressing several methodological and design deficiencies in previous longitudinal studies.

Key words: well-being, work, stress, stress management, workplace hazard

#### Introduction

Workplace violence can take various forms (from abusive language to physical assault and homicide) and can be initiated by different actors (from employees to members of the public) [1, 2]. Although not the most frequent form of workplace aggression and violence, non-fatal workplace assaults are usually perpetrated by organizational outsiders [3] and can be particularly threatening for employee health and well-being [4,5].

Literature review of longitudinal studies focusing on violence from outsiders, revealed only a handful of studies which explored the long-term consequences of being assaulted at work [4]. For example, Hogh et al. [6] found that workplace violence predicts fatigue at work, after controlling for key covariates in a 5-year follow-up cohort study of a representative sample of the Danish workforce. Regarding health consequences of being assaulted at work, Fisher and Jacoby [7] found that the assaulted group showed higher psychological distress than the focal-local control group at the initial assessment, in a prospective study of bus drivers in London. Indeed, 5 of the 22 assaulted bus drivers (23%) had PTSD symptoms at the first interview, which took place within 6 months of the assault. At 18 months' follow-up, the number of bus drivers with a PTSD diagnosis decreased from 5 to 2 (13% of 15 bus drivers at the second interview).

Similarly, Wykes and Whittington [8] found that assaulted psychiatric nurses reported poorer mental health (5% (2/39) met diagnostic criteria for PTSD) than nurses in the focal-local control group. More recently, Richter and Berger [9] replicated Wykes and Whittington's study with similar results: 17% (8/46) of psychiatric nurses met the criteria for PTSD diagnosis after the incident (physical assault). Three of these assaulted nurses still exhibited PTSD symptoms at two and six months follow-up.

In addition, Rogers and Kelloway [10] found that fear of future violence serves as a mechanism explaining the relationship between experiencing workplace violence (i.e., physical assaults) and health (psychological well-being and somatic complaints) in a sample of 194 bank tellers from a United States company. Schat and Kelloway [11] replicated these findings later, in different work settings (i.e. the healthcare sector); however, as Richards [12] highlighted, among victims of bank robberies, symptoms of post-traumatic stress and mental health problems manifest immediately following the robbery (-and they reduced significantly over time). In that sense, the average duration of bank robberies in Italy revolves around three minutes, and on average there is a robbery every 15-20 bank offices and every two days [13]. Furthermore, the thought of further violence may influence the workers' evaluation of their working environment, decreasing their job satisfaction [14]. Similarly, Lapierre, Spector and Leck [15] conducted a meta-analysis on workplace aggression studies and suggested that victims of workplace aggression might blame their organization for allowing the violence to be perpetrated on them, prompting the development of negative feelings and emotions towards the organization (i.e. job dissatisfaction). Accordingly, research has shown that workplace aggression has detrimental consequences for employee well-being and workers' negative attitudes and behaviours towards their workplace [5]. In particular, Hershcovis and Barling [16] conducted a meta-analysis, in which they explored the consequences of workplace aggression and violence, depending on the perpetrator. They found a significant correlation between outsider aggression and relevant outcomes such as job satisfaction ( $r_c = -.14$ ).

Hence, we hypothesised that robbery victims might experience psychological distress, which, in turn, could lead to reduced overall job satisfaction. Indeed, the meta-analysis of Faragher et al. [17] which included almost 500 studies, involving around 250000 employees,

showed a strong association of psychological well-being with job satisfaction. Moreover, Judge et al., [18] highlighted that there is some stability in workers' job satisfaction over time and across situations. This compelled us to hypothesize a simultaneous effect model over time, in which psychological distress is associated with job dissatisfaction one week after a robbery (T1) and two months later (T2) (see Figure 1).

#### --Please insert Figure 1 here--

The main purpose of this research was to analyse the association of exposure to robbery with psychological distress and job satisfaction, measured both a few days and two months after the robbery. In particular, we aimed to test whether exposure to the robbery as a traumatic event contributed to psychological distress and job dissatisfaction over time.

#### Methods

This study was part of a research project on psychosocial risks in a national bank with offices across Italy. The ethics committee of the University of Firenze gave its consent for conducting this research.

Data were collected between 2012 and 213 as follows: when a robbery in a bank office occurred, it was notified to the bank's Health and Safety Department, whose staff went to the specific bank office accompanied by a researcher for collecting data between 48 hours to one week after the robbery (T1). The employees working on the day of the bank robbery in each specific office that accepted participating in the study completed a questionnaire during work, in a room provided by the bank and in the presence of a researcher who informed each participant of the purpose of the study. Participation in the study was voluntary and although both anonymity and confidentiality was guaranteed, participants provided their working identification

number to link their responses at two points in time. Thus, employees that participated at T1 were invited to participate again in the same questionnaire two months later (T2). The time-lag of two months was chosen because literature has shown that chronic stress might develop during this time frame [19].

Regarding the content of the questionnaire, the Italian version of the 12 item General Health Questionnaire (GHQ-12) scoring method 0-3 was used to assess psychological distress [20, 21]. This well-known questionnaire gives a total score ranging from 0 to 36 points, in which a higher score indicates a worse degree of mental disorder. In the present study, Cronbach's alpha for this scale was .84 at Time 1, and .88 at Time 2 (see also [22] for detailed current validity of this scale in the Italian context). Job satisfaction was assessed using a single item measuring overall satisfaction (*How satisfied have you been with your work?*). This single item had shown sufficient validity and correlated positively with more comprehensive measures of theoretically related constructs [13, 15, 17]. The responses were obtained on a 10-point scale in which a higher score indicates a higher job satisfaction. A single item tailored for this research was used to assess if the victim was directly exposed to the robbery or whether they were only a bystander.

In order to examine the hypothesized paths in our theoretical model, we performed structural equation models (SEM) with the maximum likelihood estimation procedure of MPlus, version 6.1 [23]. SEM offers the advantages of: a) controlling for measurement errors when the relationships among variables are analyzed and, b) comparing the goodness-of-fit of the hypothesized model with that of alternative models [23]. Because the ratio of sample size to the number of model parameters did not meet the standard requirements and because the study's

main objective was verifying structural paths rather than validating the measurement model, we used the single-indicator approach in testing the hypothesized structural model.

To evaluate the model fit, we considered model chi-square (the higher the values the worse the model's correspondence to the data) and the following fit indexes: the standardized root mean square residual (SRMR), for which values of less than .08 are favourable; the root-mean-square error of approximation (RMSEA), which should be less than .08; and the comparative fit index (CFI), for which values of .90 or greater are recommended. Additionally, the Aikaike's information criterion (AIC) and the Bayesian information criterion (BIC) were used to compare models with the same degrees of freedom (the smaller the value, the better the model fit) [23].

#### **Results**

The initial sample (T1) consisted of 513 workers with a mean age of 41.4 years old (SD = 9.8) and of who 58% (299) were women. At T2 there were 175 participants (34% of the participants at T1) of who 62% (108) were women. An independent samples t-test showed no significant differences for mental disorder and job satisfaction by sex at either time.

Table 1 reports descriptive statistics and zero-order correlations of the study variables. Prior to testing hypotheses, we conducted an independent samples t-test to assess whether there were significant differences in mental disorders and job satisfaction (T1 and T2) between the participants exposed to the robbery and those who observed the robbery (i.e., bystanders). There were no significant differences in either mental disorders at T1 or job satisfaction at T1 and T2. However, a significant difference in the level of mental disorder at T1 ( $T_{[305.31]} = 4.84$ , p < 0.01) was found between those exposed to the robbery or victims (scores in mental disorders: *Mean* =

11.70, SD = 5.67) and those bystanders who observed the robbery (M = 9.48, SD = 3.46), such that victims ehxibited a higher level of mental disorder than bystanders. Overall, these findings can be expected, considering that exposure to robbery was hypothesized to directly influence mental disorder at T1, and to indirectly affect mental disorders at T2 and job satisfaction at T1 and T2. It was therefore meaningful to empirically test the hypothesized model.

We therefore tested our proposed structural model (Model 1) and compared it with alternative models. The hypothesized model displayed a good fit to the data ( $\chi^2$  (5) = 3.64, Comparative Fit Index -CFI = 1.00; Root Mean Square Error of Approximation -RMSEA = .00; Standardized Root Mean Square Residual -SRMR = .02, Akaike Information Criterion -AIC = 1581, Bayesian Information Criterion -BIC = 1648). Additionally, all specified paths were significant, which provides support to our hypotheses.

To assess whether model 1 was the best representation of the data, we further compared its fit to that of other competing models. First, models 2 and 3 allowed verifying whether the indirect influence of independent variables on dependent variables were fully or partially explained by mediating variables. Specifically, in model 2, we included additional paths from exposure to robbery to T2 mental disorders and to T1 and T2 job satisfaction, in order to assess whether mental disorders partially or fully mediated these paths. Likewise, in model 3, an additional path from T1 mental disorder to T2 job satisfaction was added to assess whether T1 job satisfaction fully or partially mediated this link. Second, because job satisfaction and mental disorders were measured at the same time, a reversed relationship could also be expected between the two variables. Accordingly, we specified model 4 to assess whether a reversed pattern of relationships between the two variables, at both T1 and T2 was a better representation of the data than the hypothesized pattern.

The fit of models 2 and 3 was not significantly better than that of the hypothesized model. Moreover, none of the additional direct paths was significant: exposure to robbery  $\rightarrow$  T2 mental disorders,  $\beta = .03$ , ns; exposure to robbery  $\rightarrow$  T1 job satisfaction,  $\beta = .10$ , ns; exposure to robbery  $\rightarrow$  T2 job satisfaction,  $\beta = .07$ , ns; T1 mental disorders  $\rightarrow$  T2 job satisfaction,  $\beta = .05$ , ns. These results suggest that the fully mediated model (model 1) was a better representation to the data than the partially mediated models (model 2 and model 3). Additionally, the fit of model 4 was worse than that of model 1. Accordingly, model 1 was retained as the best-fitting and most parsimonious model, which is in accordance with our hypothesis. Completely standardized path coefficients for this model are depicted in Figure 2.

Finally, to further estimate the indirect relationships among our study variables, we conducted the joint significant test, which has been shown to provide an optimal balance of statistical power and type I error [23]. We also provided confidence intervals (95%) to determine the significance of the indirect effect. Results indicated that all the indirect effects were statistically significant (see Figure 2 notes).

#### **Discussion**

This study found that exposure to bank robberies affected early experiences of psychological distress and job satisfaction (T1), and that these experiences had long-term effects on psychological distress and job satisfaction (T2). To the authors' knowledge, this is the first study which examined the consequences of physical violence on job satisfaction over time in the banking sector. Although several stress theories have attempted to explain the consequences of being exposed to external violence on employee well-being, its association with job satisfaction remained unclear. Our model showed that direct exposure to robbery (rather than being a

bystander) increased the incidence of reported mental health problems. This result fits with the research literature [14]. Our results also showed that a synchronous effects model fit best with the data when compared to alternative theoretical models. Thus, there is a simultaneous association, in which psychological distress leads to job dissatisfaction both following a robbery (T1) and two months later (T2) (see model 1).

According to transactional stress theories, victims of robbery might experience psychological distress, which might reduce their overall job satisfaction. Indeed, research has shown that both the cognitive appraisal of the situation and its associated emotions go hand-in-hand. For example, Di Giacinto et al. [24] suggested that fear conditioning is the crucial factor that determines the development of PTSD symptoms in victims of a bank robbery.

Despite these compelling results, this study has some potential limitations that should be addressed in future research. Although several studies have confirmed the strong association of PTSD with poorer mental health and with psychological problems, such as depression and anxiety [25], PSTD was not addressed in this study as a potential outcome of being exposed to bank robbery. Similarly, future studies should try to rule out third variable explanations, by including other variables and controlling potential confounders [26]. In addition, although the two-wave panel design diminishes the risk for problems related to common method variance [27], future studies should include information from other sources rather than rely solely on self-reports, as well as examine cross-lagged relations between psychological distress and job satisfaction after applying multi-wave designs [28]. Furthermore, our study assessed psychological distress and job satisfaction only after the occurrence of a robbery, thereby neglecting prior levels of these psychological states. Thus, in order to more thoroughly analyse and interpret the impact of exposure to robbery on psychological distress and job satisfaction,

future studies should assess these states before the violent incident takes place and should also include control groups.

While the present investigation was focused on the robberies in the banking sector, it is worth mentioning that robberies are progressively expanding in other domains, especially in the Italian context. This suggests that primary interventions aimed at addressing crime are needed but also that future studies are warranted to further assess the detrimental influence of exposure to robberies in different industry sectors in order to contribute to the external validity of the present research findings.

Finally, while our study advanced knowledge on the effects of exposure to robberies on employee psychological health, the consequences of such event are still relatively underexplored. Hence, future studies might address how exposure to robberies affects relevant affective, motivational and attitudinal states, such as organizational commitment, work engagement, and intention to leave. Likewise, behavioural work-related outcomes of exposure to robberies could be examined in future research. Such outcomes may include work performance, organizational citizenship behaviours, and proactive conducts (i.e. creative and innovative behaviours).

Acknowledging these limitations, this study also contributes to understanding the dynamic relationships between experiencing robbery at work and its outcomes. Previous studies have shown that the main risk factors for PTSD after a traumatic event are lack of social support (including poor leadership) and avoidance of further stressors close to the index event [29,30], Therefore this should be addressed from a preventive approach by introducing primary measures such as a proper risk assessment strategy that includes psychological risk. It should also consider HR initiatives for enhancing social and group support i.e., certain protective factors, such as organizational support or positive relational experiences, which have the power to mitigate the

detrimental effects of exposures to robberies [12]. In addition, in this study we pointed out that job satisfaction can also be seriously affected by exposure to violence. Consequently, secondary interventions should also take into consideration measures aimed to restore employees' trust and confidence in the organization as well as to improve the job satisfaction of the victims, such as job enrichment programs or job satisfaction training.

In summary, this study expands previous research by addressing several methodological and design deficiencies in previous longitudinal studies. From a theoretical point of view, the simultaneous association of psychological distress and job satisfaction support transactional stress theories, while from a point of view of the clinicians or policymakers, the current research has also highlighted the need to include both preventive measures aimed at reducing the risk of being assaulted at work and secondary measures aimed at providing social support and restoring job satisfaction.

## **Key points:**

- This study tested the longitudinal association between psychological distress and job satisfaction in victims of bank robbery.
- Exposure to robbery affected psychological distress and job satisfaction at two time points, and there was a synchronous relationship between distress and satisfaction over time.
- Elucidating these long-term consequences of bank robberies is crucial to formulate preventive measures and tailored treatment and rehabilitative interventions for victims.

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Table 1

Descriptive Statistics and Correlations

Variables	M	SD	1	2	3	4	5	6	7
1. Age	41.22	1.41							
2. Gender	_	_	28**	_					
3. Exposure to robbery	_	_	.01	.11*	_				
4. T1 mental disorders	11.19	5.42	.02	.04	19**	_			
5. T1 job satisfaction	6.26	2.04	01	.01	.03	.24**	_		
6. T2 mental disorders	10.19	5.27	.12	05	10	18**	.49**	_	
7. T2 job satisfaction	6.00	2.02	.00	.06	09	.48**	15*	12	-

*Note.* N = 175. \*p < .05; \*\*p < .01.

Figure 1. Conceptual model.

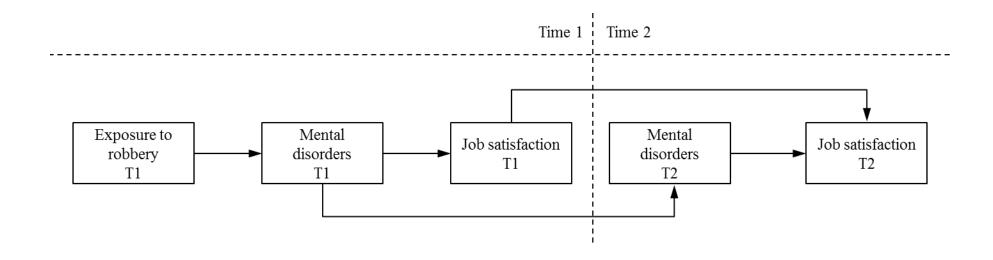


Figure 2. Completely standardized path coefficients for Model 1. \*p < .05; \*\*p < .01. Summary of indirect effects: exposure to robbery  $\rightarrow$  mental disorders (T1)  $\rightarrow$  job satisfaction (T2) (indirect effect = -.04, p < .05; 95% CI = -.07, -.01); exposure to robbery  $\rightarrow$  mental disorders (T1)  $\rightarrow$  mental disorders (T2) (indirect effect = .11, p < .01; 95% CI = .07, .15); mental disorders (T1)  $\rightarrow$  job satisfaction (T1)  $\rightarrow$  job satisfaction (T2) (indirect effect = -.11, p < .05; 95% CI = -.18, - .03); mental disorders (T1)  $\rightarrow$  mental disorders (T2)  $\rightarrow$  job satisfaction (T2) (indirect effect = -.09, p < .05; 95% CI = -.16, -.03).

