

Workplace Bullying and Suicidal Ideation: A 3-Wave Longitudinal Norwegian Study

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Suicide is a leading cause of death around the globe. Estimates show that more than 800 000 people take their own lives every year.¹ In Norway (with a population of 5 165 802) there are about 530 reported suicides every year.² In the United States, 12 suicide deaths per 100 000 people were reported in 2010, making suicide the 10th leading cause of death among Americans.³ Altogether, 1719 employees committed suicide in US workplaces between 2003 and 2010.⁴

Although psychiatric disorders are involved in the majority of suicide attempts,⁵ most psychiatric patients do not commit suicide. A psychiatric disorder alone is, therefore, an insufficient condition for suicide.⁶ To identify other risk factors, we must look beyond the presence of a psychiatric syndrome and understand the underlying factors of suicide and suicidal ideation. Among many potential causes, exposure to workplace bullying has been proposed to be an important predictor of both suicidal ideation and actual suicide.^{7,8}

To date, bullying as an antecedent to suicide has been examined only with anecdotal evidence^{9,10} and cross-sectional research designs.^{11,12} Einarsen et al.¹³ established that severely bullied workers were 6 times more likely than nonbullied workers to report suicidal ideations. Sterud et al.⁸ found that workplace bullying was positively associated with suicidal ideation in a nationwide sample of 1022 Norwegian ambulance personnel. Bullying was more strongly associated with suicidal ideation than were gender, neuroticism, anxiety, somatic complaints, depersonalization, and job dissatisfaction.

Cross-sectional research cannot provide adequate evidence for anything more than that suicidal ideation is a correlate of bullying. To understand the directional nature of the association, longitudinal research is needed. In this representative, longitudinal study, we contribute to the literature by examining whether victimization from bullying is related

Objectives. We examined whether victimization from bullying is related to an increased risk of suicidal ideation over time and whether suicidal ideation is related to subsequent bullying.

Methods. In a longitudinal study (2005–2010), we used well-established single-item measures to assess victimization from bullying and suicidal ideation. We used latent Markov models to determine forward and reverse relationships between variables at 3 time points with 2 or 3 years between the measurement points among a randomized nationwide sample of 1846 employees in Norway.

Results. Victimization from bullying was associated with subsequent suicidal ideation (odds ratio = 2.05; 95% confidence interval = 1.08, 3.89). Suicidal ideation at baseline was not related to subsequent victimization from workplace bullying.

Conclusions. Workplace bullying may be a precursor to suicidal ideation, whereas suicidal ideation seems to have no impact on subsequent risk of being bullied. Regulations against bullying should be integrated into work-related legislation and public health policies. (*Am J Public Health.* 2015;105:e23–e28. doi:10.2105/AJPH.2015.302855)

to increased risk of suicidal ideation over time and whether suicidal ideation is related to subsequent bullying.

Workplace bullying refers to a situation in which 1 or several individuals persistently perceive themselves to be on the receiving end of negative actions from superiors or co-workers and in which the targets find it difficult to defend themselves against these actions.^{14,15} Following this definition, there are 3 main characteristics of workplace bullying: (1) an employee becomes the target of systematic negative and unwanted social behavior in the workplace; (2) the exposure occurs over a prolonged period, often with ever more escalating intensity and frequency in the attacks; and (3) targets feel they cannot easily escape the situation or stop the unwanted treatment. This third characteristic, the feeling of being victimized by the harassment, distinguishes bullying from other forms of mistreatment in the workplace.¹⁵ Globally, about 11% of workers perceive themselves as victims of bullying,¹⁶ and 5% of the Norwegian working population is victimized by bullying at any time.¹⁷

The interpersonal theory of suicide (ITS)⁵ provides a theoretical foundation for how

exposure to such bullying may be related to suicide. The theory posits that fundamental to suicidal ideation and behavior is that an individual has both the desire and the ability to die by suicide.¹⁸ With regard to the desire to die, displayed through suicidal ideation, the ITS asserts that when people over a prolonged period perceive themselves to be socially alienated from others and simultaneously feel that they are a burden on others, they develop a desire for death.¹⁹ As for the ability to commit suicide, displayed through suicidal behavior, the ITS proposes that people who are repeatedly exposed to painful and provocative events will lose any fear of pain, injury, and death and thereby be able to overcome the instinct of self-preservation.

Because of its focus on persistent exposure to painful events and social alienation, the ITS strongly suggests that repeated and long-term exposure to negative treatment and social exclusion from one's peers or supervisors at work constitutes a risk factor for suicidal ideation and behavior.

Although previous research has assumed bullying to be an antecedent to suicidal ideation, it is possible that the established cross-sectional

association reflects a relationship in which suicidal ideation is a precursor to bullying. Two different mechanisms can explain such a reverse association. First, employees with suicidal ideation may report less favorable work characteristics because their distress makes them evaluate their work environment increasingly more negatively.²⁰ Second, employees with suicidal ideations may elicit aggressive behavior in others because their psychological state creates aversive feelings among co-workers and supervisors.^{21,22}

To provide better indications of how workplace bullying is related to suicidal ideation, we investigated direct forward and reverse associations with longitudinal data. We tested the following hypotheses:

Hypothesis 1: Victimization from bullying is associated with an increased risk of later suicidal ideation.

Hypothesis 2: Suicidal ideation is associated with an increased risk of later victimization from bullying.

METHODS

A nationwide sample of the Norwegian workforce participated in 3 surveys with a time lag of approximately 2 years between baseline (T1; 2005) and the second measurement point (T2; 2007), and 3 years between the second and third measurement points (T3; 2010). These time lags represent the typical length of a bullying episode¹⁵ and are in line with the majority of previous prospective studies on bullying.²⁰ They have also been found to be optimal for detecting long-term stressor-strain relationships.²³ We have extended the literature²⁴⁻²⁵ from the same data collection by being the first to include 3 time points and examine associations between bullying and suicidal ideation.

In 2005, we drew a random sample of 4500 employees from the Norwegian Central Employee Register by Statistics Norway. Sampling criteria were being aged between 18 and 65 years, being employed during the last 6 months before the survey in an enterprise with a staff of 5 or more, and having a mean work week of more than 15 hours. We distributed questionnaires through the Norwegian Postal Service to the respondents' home addresses. Altogether

2539 questionnaires were returned (response rate = 57%).

We conducted the second and third surveys using the same procedure. We asked all respondents from the baseline survey to participate in both follow-ups. Of the T1 respondents, 1775 (70%) participated at T2, whereas 1613 (64%) participated at T3. Altogether 1291 persons participated at all 3 time points (overall response rate = 51%). The final sample is representative of the Norwegian working population with regard to demographic characteristics.²⁶⁻²⁸

Cohort

We included respondents who participated in the survey at least twice and who answered the questions about bullying and suicidal ideation ($n = 1846$). At baseline, the mean age was 44.3 years, with 96.1% employed in a full-time (77.3%) or part-time (18.8%) position and 3.9% on temporary sick leave, paid leave, or vocational rehabilitation. About 22.0% of the respondents had changed jobs between baseline and the third follow-up measurement.

Attrition analyses showed no age differences between the final cohort and dropouts ($t = 0.38$; $df = 2537$; $P = .71$). Systematic gender differences ($\chi^2 = 10.78$; $df = 1$; $P < .001$) were revealed between cohort (54% women) and dropouts (47% women) at baseline. We found no differences between cohort and dropouts for bullying ($\chi^2 = 0.96$; $df = 4$; $P = .92$) or suicidal ideation ($\chi^2 = 1.97$; $df = 3$; $P = .58$) at baseline. Analyses of attrition from T1 to T2 and T3 and from T2 to T3 revealed similar patterns of attrition. The only significant differences between stayers and dropouts were those related to gender. This suggests that, with the exception of gender distribution, the follow-up samples are representative of the baseline sample and thereby the general Norwegian working population.

Instruments

We measured workplace bullying with the well-established self-labeling method.²⁹⁻³² We presented respondents with the following definition:

Bullying (harassment, badgering, niggling, freezing out, offending someone) is a problem in some workplaces and for some workers. To label something bullying it has to occur repeatedly over a period of time, and those confronted have

to have difficulties defending themselves. It is not bullying if 2 parties of approximately equal "strength" are in conflict or the incident is an isolated event.

We then asked them, "Have you been subjected to bullying at the workplace during the last 6 months?" The response categories were "no," "rarely," "now and then," "once a week," and "several times a week."

We examined suicidal ideation with a single item from the 25-item version of the Hopkins Symptoms Checklist,³⁰ which asked respondents if they had experienced "thoughts about ending your life" during the past 7 days.

Respondents provided answers on a 4-point severity scale ranging from "not at all" through "sometimes" and "very often" to "extreme." This single-item method has previously been established as a valid approach to the measurement of suicidal ideation.³³⁻³⁵

We included gender, age, and whether the respondents had changed jobs or workplaces as covariates in the analyses.

Statistical Analysis

Because we measured suicidal ideation and bullying with categorical single-item measures, we employed a dual-process latent Markov model (LMM) in Latent Gold 5.0³⁶ to analyze the data. A description of this statistical method is available as a supplement to the online version of this article at <http://www.ajph.org>. We followed a model comparison procedure for nested models to determine the direction of the relationship between bullying and suicidal ideation. Compared with approaches that examine between-person changes, the LMM method assesses within-person changes over time.

The LMM procedure compares models on the basis of their log-likelihood squared (L^2) and degree of freedom (df). In the first model, labeled "the stability model," previous latent states of bullying (WB_{t-1}) predicted subsequent latent states of bullying (WB_t), and previous latent states of suicidal ideation (SI_{t-1}) predict subsequent states of suicidal ideation (SI_t). Extending the associations included in the stability model, the second model added relationships between previous latent states of bullying (WB_{t-1}) and subsequent latent states of suicidal ideation (SI_t ; forward relationships). In the third model, we added a cross-lagged

TABLE 1—Prevalence Estimates (%) and the Spearman r Intercorrelations for Bullying and Suicidal Ideation: Norway, 2005–2010

Variable	Prevalence Estimate, % ^a	1	2	3	4	5	6
1. Bullying, 2005	4.3	...					
2. Bullying, 2007	4.6	0.31***	...				
3. Bullying, 2010	4.2	0.24***	0.24***	...			
4. Suicidal ideation, 2005	3.9	0.12***	0.13***	0.10***	...		
5. Suicidal ideation, 2007	4.9	0.10***	0.16***	0.06	0.45***	...	
6. Suicidal ideation, 2010	4.0	0.09***	0.17***	0.10***	0.35***	0.47***	...

^aPercentage of respondents with positive responses to the questions about bullying (“Yes, rarely,” “Yes, now and then,” “Yes, once a week,” and “Yes, several times a week”) and suicidal ideation (from “sometimes” and “very often” to “extreme”). ****P* < .001 (2-tailed).

effect from SI_{t-1} to WB_t (reverse relationships) to the stability model. Finally, we tested a model with bidirectional associations, from SI_{t-1} to WB_t and from WB_{t-1} to SI_t , to determine reciprocal relationships.

We calculated the change parameter estimates of the examined relationships as odds ratios (ORs). These estimates show the calculated odds for changing from a previous state (i.e., state at a previous measurement occasion; labeled “T–1”) to a later state (i.e., state at a later measurement occasion; labeled “T”). The stability logits associated with the change in bullying states and in suicidal ideation states served as reference categories for estimating model parameters.

RESULTS

The prevalence of workplace bullying and suicidal ideation and the intercorrelations

between study variables are presented in Table 1. At T1, 3.9% of the respondents reported suicidal ideation. The corresponding numbers at T2 2 years, and T3 5 years later were 4.9% and 4.0%, respectively. Altogether, 4.3% at T1, 4.6% at T2, and 4.2% at T3 reported bullying. Cross-tabulation analyses showed no significant differences between men and women with regard to bullying ($\chi^2 = 0.72$; *df* = 4; *P* = .95) and suicidal ideation ($\chi^2 = 3.80$; *df* = 1; *P* = .053). No significant differences were established between non-bullied and bullied respondents (*t* = 0.16; *df* = 2367; *P* = .88) or between nonsuicidal ideation and suicidal ideation respondents (*t* = 0.66; *df* = 2363; *P* = .51) with regard to age.

Moderate stability was found for bullying (Spearman *r* = 0.24–0.31; *P* < .001), whereas moderate to high stability was found for suicidal ideation (Spearman *r* = 0.35–0.47; *P* < .001). In support of hypothesis 1, bullying

at T1 was positively associated with suicidal ideation at both T2 (Spearman *r* = 0.10; *P* < .001) and T3 (Spearman *r* = 0.09; *P* < .001). In support of hypothesis 2, suicidal ideation at T1 was positively related to subsequent bullying at T2 (Spearman *r* = 0.13; *P* < .001) and T3 (Spearman *r* = 0.10; *P* < .001).

Identification of Latent States

The Bayesian information criterion for the different models (Table 2) suggested that a dual-process LMM with 2 latent states for bullying and 2 latent states for suicidal ideation had the best fit to the data. Distinguishing more states leads to a deterioration of fit. In the first bullying state, the probability of responding “no” to the question about bullying varied from 98.4% to 99.8% over the 3 time points, indicating that the respondents in this latent state were not bullied at any time point.

In the second latent bullying state, the probability of responding “no” varied between 36.5% and 55.5% over time. Hence, the respondents in the second latent state perceived themselves as bullied to some extent over the 3 time points. We allowed the relationship between time and the self-labeling item because of the high bivariate residuals between time and the bullying item. The estimates of the measurement model demonstrated that this partial variance entails that over time targets were more likely to agree with all response categories except “no,” indicating a higher frequency or intensity of bullying. On the basis of these findings, the states were labeled “not bullied” and “bullied.” As for the latent states of suicidal ideation, the respondents in the first state had a 99.3% probability of not reporting suicidal ideation over the time points. The second latent state was characterized by a 56.0% probability of experiencing some suicidal ideation over time. The states were labeled “no suicidal ideation” and “suicidal ideation.”

Cross-Lagged Associations Between Bullying and Suicidal Ideation

The model fit for and comparisons of different causal models are presented in Table 3. Our findings show that only model 2, in which bullying predicted later suicidal ideation, gave a significant improvement fit at the 0.05

TABLE 2—Fit Statistics to Determine Number of Latent States for Bullying and Suicidal Ideation: Norway, 2005–2010

Model of LS Suicidal Ideation	LL	BIC(LL)	Npar	L ²
1: LS bullying 1	-2158.68	4434.305	15	2993.68
2: LS bullying 2	-1973.12	4187.948	31	2622.57***
3: LS bullying 2	-1964.32	4263.903	43	2604.97***
2: LS bullying 3	-1966.51	4260.480	42	2609.34***
3: LS bullying 3	-1953.58	4351.579	57	2583.49**

Note. BIC = Bayesian information criterion; LL = log likelihood; L² = log likelihood squared; LS = latent states; Npar = number of parameters. ***P* < .01; ****P* < .001.

TABLE 3—Fit Statistics and Multiple Comparison for Establishing Direction of Relationships Between Bullying and Suicidal Ideation: Norway, 2005–2010

Model	BIC(LL)	L ²	df	P	ΔL ² (Δdf)	ΔL ² (Δdf)
0: Baseline	4434.3	2993.68	2418	.001		
1: Stability	4176.7	2626.96	2404	.001		
2: Normal. Bullying → suicidal ideation	4180.2	2622.66	2403	.001	model 1 vs model 2: 4.30*	
3: Reversed. Suicidal ideation → bullying	4184.1	2626.52	2403	.001	model 1 vs model 3: 0.44(1)	model 2 vs model 3: 3.86(0)
4: Reciprocal	4187.9	2622.57	2402	.001	model 1 vs model 4: 4.39(2)	

Note. BIC = Bayesian information criterion; df = degrees of freedom; LL = log likelihood; L² = log likelihood squared; Δ = changes in L²/df. *P < .05.

level over the stability model. Neither the reverse model, in which suicidal ideation predicted subsequent victimization from bullying, nor the reciprocal model, which specified a bidirectional association between the variables, improved the model fit compared with the stability model. As the fit for model 2 was significantly better compared with the reverse and reciprocal models, our findings support hypothesis 1 by showing that existing bullying

predicted later suicidal ideation. Hypothesis 2 was not supported, as suicidal ideation was not associated with subsequent bullying.

Change parameter estimates of the relationships in model 2 are displayed in Figure 1. The ORs show that respondents who were not bullied at previous measurement occasions were unlikely to be bullied at later measurement points (OR = 0.005; confidence interval [CI] = 0.001, 0.015; P < .001). Respondents

who previously reported no suicidal ideation were unlikely to report later suicidal ideation (OR = 0.028; CI = 0.027, 0.029; P < .001). As the odds for reporting suicidal ideation were twice those for reporting bullying at a previous time point compared with reporting no bullying (OR = 2.050; CI = 1.08, 3.89; P < .05), bullying was significantly associated with later suicidal ideation. Detailed calculations from the LMM analyses are available as a supplement to the online version of this article at <http://www.ajph.org>.

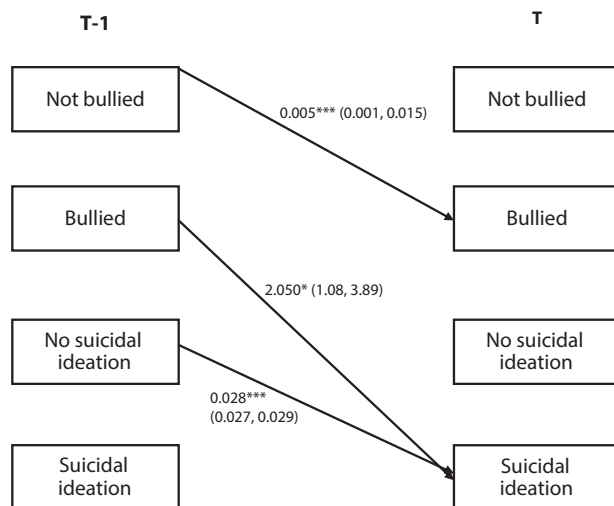
We repeated the analyses and adjusted them for the potential impact of gender, age, and changing job or workplace on the initial states, the transition probabilities, and the cross-lagged associations. Our findings showed that the adjusted models were all associated with a higher Bayesian information criterion and thereby a deterioration of fit. In addition, the covariates were not significant related to the model parameters.

DISCUSSION

Supporting hypothesis 1, the findings revealed that victimization from bullying was positively related to later suicidal ideation. Hypothesis 2 was not supported, as suicidal ideation was unrelated to subsequent reports of bullying. Our results are in line with the main assumption of the ITS¹⁸ by showing the importance of negative life events as antecedents of suicidal ideation. The positive association between bullying and suicidal ideation is consistent with previous cross-sectional findings among adults^{8,11,12} and children and adolescents.^{37–39} As bullying is a form of social exclusion from work, the results are also in line with findings on social isolation as a predictor of suicidal ideation.⁵

The main theoretical contribution of our study is that bullying is established as a risk factor for later suicidal ideation. The odds for suicidal ideation at a later time point were 2.05 higher among those bullied than among those not bullied. Although the ITS provides a theoretical rationale for how bullying is related to suicidal ideation, it should be emphasized that we adjusted the findings only for demographic control variables, as we did not examine any other variables.

Further studies are needed to discern whether bullying contributes to the variance in



Note. T-1 = previous measurement/state; T = current measurement/state. Numbers indicate odds ratios with 95% confidence intervals in parentheses. Stability parameters served as reference categories for estimates. Odds Ratios were calculated on the basis of standard errors of logit parameters. Only significant paths are shown. *P < .05; ***P < .001.

FIGURE 1—Parameter estimates of change expressed as odds ratios in the forward relationships model between bullying and suicidal ideation: Norway, 2005–2010.

suicidal ideation over and above other work-related factors. There is also a need for research that determines mediating and moderating factors explaining how, when, and for whom bullying is related to suicidal ideation. On the basis of the ITS, psychological distress, hopelessness, and alienations are potential mediators, whereas opportunity for interaction with others is an important moderator, which should be examined in future studies.

Contrasting research that shows reciprocal relationships between bullying and mental distress,^{20,40} we found no associations between suicidal ideation and the subsequent risk of being bullied. An explanation for this may be that previous research has investigated general symptoms of mental distress,^{41–43} whereas we focused specifically on suicidal ideation. Consequently, it may be that the risk of being exposed to bullying is more strongly influenced by other symptoms of mental health problems. To add to the further understanding of how mental distress relates to later bullying, research should investigate specific aspects of mental distress that predict bullying.

Strengths and Limitations

Strengths of this study are the longitudinal survey design, the nationwide and representative sample, and response rates that are above average for survey research.⁴⁴ Hence, the findings may be considered more reliable and valid than are findings from nonrandom cross-sectional studies. As analyses were longitudinal, we can be relatively sure of the direction of the association from exposure to response. Because of its latent variable approach to changes, the use of latent Markov methodology enables the isolation of the true states from measurement error.⁴⁵

We assessed both bullying and suicidal ideation with single-item questions. It has previously been shown that single-item measures have high content and criterion validity with regard to assessing job stressors.⁴⁶ Furthermore, single-item measures are reliable, as estimated by test–retest correlations; they also correlate strongly with multiple-item scales and predict outcomes effectively.⁴⁷ Other advantages are greater cost effectiveness, greater face validity, and reduced response burden. The use of a single suicide item derived from a depression scale is a valid approach to assessing

suicidal ideation.³¹ The single-item question we used is considered the state-of-the-art method for measuring victimization from bullying.²⁹

As for limitations, we collected data using self-report questionnaires. This may increase the risk of common method variance and response set tendencies. Yet, the time lags between measurement points should reduce the impact of these biases. Although the time lags we used are adequate for detecting stressor–strain relationships,²³ other results may have been obtained with longer or shorter lags. Relying on self-report methodology may be problematic with regard to assessing bullying and suicidal ideation because of feelings of shame and guilt among respondents,²⁵ and although anonymity is ensured, individuals may underreport both bullying and suicidal ideation. Underreporting may attenuate correlations between the variables because error is introduced in the observed relationship.⁴⁸ We controlled whether demographic factors affected the initial states, the transition probabilities, and the cross-lagged effects. There are, however, other unaccounted covariates and confounders that may have affected our results. The findings should therefore be interpreted with caution.

We assessed workplace bullying with a 6-month time frame and examined suicidal ideation with a week as a reference. Although this difference may have influenced the results, the time frames we employed are in line with previous studies using the same items. Hence, the findings should be comparable to other studies on these variables.

Conclusions

We have advanced existing theory and research on work factors and suicide by clarifying the time-ordered relationships between bullying and suicidal ideation. Having established a significant association between victimization from bullying and subsequent suicidal ideation, our findings suggest that bullying may be a cause of suicidal ideation. The findings pinpoint the importance of effective preventive measures against bullying because employees who are exposed to bullying may have an increased probability of considering ending their lives.

At the primary level, our findings suggest that regulations against bullying should be

included in work-related legislation and public health policies. If bullying is allowed to escalate in organizations, it is vital to provide help and support to those targeted. Following the ITS, it may be especially important to help victims rebuild their experience of self-worth and self-esteem to help them establish more positive basic assumptions about life. From a public health perspective, it is essential to develop forms of rehabilitation that can help victims readjust their view of the world, others, and themselves to make them better prepared to meet the requirements of a demanding workforce.⁴⁹ Fair management of, and intervention in, specific cases may also reassure victims of bullying that the world is still comprehensible, manageable, and meaningful and that they are an integral and valued part of a well-functioning social group. ■

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Contributors

M. B. Nielsen participated in data collection, initiated the study, and was responsible for hypotheses development, preliminary data analyses, and the writing of the article. G. H. Nielsen contributed to the idea development and writing of the article. G. Notelaers was responsible for data analyses and participated in all parts of study development. S. Einarsen was responsible for the data collection and the overall project and participated in the writing of the article.

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Human Participant Protection

The overall project, including this study, was approved by the Regional Committee for Medical Research Ethics in Western Norway.

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