Reciprocal relations between workplace bullying anxiety and vigor

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Abstract

This study examined longitudinal relationships between workplace bullying, psychological health, and well-being. On the basis of Conservation of Resources theory, we hypothesized that we would find reciprocal relations among study variables over time. We conducted a two-wave longitudinal study with a time lag of 6 months. The study sample consisted of 348 Spanish employees. Results of cross-lagged structural equation modeling analyses supported our hypotheses. Specifically, it was found that T1 workplace bullying was negatively related to T2 vigor and positively related to T2 anxiety. Additionally, T1 anxiety and vigor had an effect on T2 workplace bullying. Overall, these findings support the validity of the theoretical models postulating a reciprocal bullying-outcome relationship, rather than simple one-way causal pathways approaches.

Keywords: Workplace bullying; Mental health; Well-being; Causality models; Longitudinal research.

Workplace bullying has been classified as an extreme social stressor in work contexts, and has been repeatedly linked to several consequences for both individuals and organizations (for a meta-analysis, see Nielsen & Einarsen, 2012). For instance, Hauge, Skogstad, and Einarsen (2010), in a representative sample of the Norwegian working population, found that bullying was a significant predictor of several outcomes after controlling for the effect of other job stressors (job demands, decision authority, role ambiguity and role conflict). Specifically, among all job related stressors considered in the study, bullying was the strongest significant predictor of anxiety and depression. In this respect, there is wide empirical evidence of the negative effects of exposure to bullying behaviours. Consequently, models of workplace bullying have assumed that this phenomenon leads to health problems and reduced well-being (Einarsen, Hoel, Zapf, & Cooper, 2011; Høgh, Mikkelsen, & Hansen, 2011). However, the vast majority of bullying at work studies has employed cross-sectional and correlational research designs, which strongly limits conclusions about the direction and duration of its effects. Accordingly, very little is known about reversed or reciprocal relations of bullying and outcomes.

The current study aims to examine the reciprocal relationships between exposure to workplace bullying, psychological health (anxiety and depression) and well-being (vigor). Our study contributes to the field in several ways. First, by examining the longitudinal relationships we can better understand the processes linking bullying and its consequences. Despite the considerable amount of longitudinal research on bullying, most of the existing studies show important shortcomings. To the best of our knowledge, only a few studies have addressed the possibility of alternative causation between workplace bullying and well-being. Rodríguez-Muñoz, Baillien, De Witte, Moreno-Jiménez, and Pastor, (2009), comparing alternative models, found that time 1

bullying predicted time 2 decreased dedication and job satisfaction. Kivimäki, Elovainio, and Vahtera (2003) showed that bullying and depression mutually influence each other over time. More recently, Nielsen, Hetland, Matthiesen, and Einarsen (2012) found that workplace bullying leads to psychological distress, which, in turn, can contribute to even more bullying. However, a clear methodological limitation of these studies is that neither Kivimäki et al. (2003) nor Nielsen et al. (2012) carried out comparisons between causation models. The rest of the longitudinal studies only explored normal cross-lagged effects of bullying and intentions to leave (Berthelsen, Skogstad, Lau, & Einarsen, 2011), sleep problems (Hansen, Hogh, Garde, & Persson, 2013), health (Hoobler, Rospenda, Lemmon, & Rosa, 2010), and mental distress (Finne, Knardahl, & Lau, 2011; Lahelma, Lallukka, Laaksonen, Saastamoinen, & Rahkonen, 2012).

Second, most of these investigations have used a two-year time lag (Berthelsen et al., 2011; Hansen et al., 2013; Kivimäki et al., 2003; Finne et al., 2011; Lahelma et al., 2012; Nielsen et al., 2012). In this sense, Finne et al. (2011) have indicated that this time-lag is not the most appropriate to detect the consequences of workplace bullying on mental health, because does not capture its short-term effects. Furthermore, this seems important from a theoretical point of view. Bullying has been defined as an escalating process (e.g., Zapf, & Gross, 2001) and for a complete understanding of this phenomenon it is important to consider its short-term consequences. Moreover, it has been argued that the selection of the temporal lag between measurements should correspond with the "*causal interval*" of the process under study (Kenny, 1975; De Lange, 2005; Taris & Kompier, 2003). In this sense, as workplace bullying has been defined as a situation where an employee is exposed to repeated and enduring negative

acts on at least a weekly basis for a period of minimum 6 months (Einarsen et al., 2003; Leymann, 1996), we decided to employ a time lag of six months.

Third, there are two other methodological shortcomings of the existing studies that we aim to overcome with the present research. On the one hand, several studies have used a single question for the assessment of bullying. This method is known as the "subjective method", and consists of asking whether or not individuals perceive themselves to be a victim of bullying. This way of measuring bullying has been criticized for being too simple and less reliable than an inventory (Notelaers, Einarsen, De Witte, & Vermunt, 2006). It is difficult for a single indicator to adequately capture the breadth of a complex phenomenon like bullying. Moreover, the use of multiple items scales reduces measurement error (Nunnally & Berstein, 1994). On the other hand, none of the above mentioned studies, except the one by Rodríguez-Muñoz et al. (2009), have used structural equation modeling for testing cross-lagged relationships among the variables under study.

Taken all together, we can conclude that longitudinal dynamics between workplace bullying and well-being still remain unclear. Thus, we want to add to the literature by further enhancing insight in effects of bullying overtime. Based on the Conservation of Resources theory (Hobfoll, 1998), we propose reciprocal relationships between exposure to workplace bullying, mental health (i.e. anxiety and depression), and vigor.

Theoretical background and hypotheses

As mentioned above, definitions of workplace bullying usually have emphasized exposure to a range of repeated and enduring negative acts, directed towards one or more targets who typically end up unable to defend themselves (Einarsen, 2000; Einarsen,

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Hoel, Zapf, & Cooper, 2003). Although several definitions have been developed, nowadays most authors agree on the definition of bullying:

> *"Bullying at work means harassing, offending, socially excluding someone or negatively affecting someone's work tasks. In order for the label bullying to be applied to a particular activity, interaction or process it has to occur repeatedly and regularly (e.g. weekly) and over a period of time (e.g. about six months). Bullying is an escalating process in the course of which the person confronted ends up in an inferior position and becomes the target of systematic negative social acts" (Einarsen, Hoel, Zapf, & Cooper, 2011, p. 22)".*

Workplace bullying has been argued to be a more crippling and devastating problem for affected individuals than the effects of all other work-related stressors (Hauge et al., 2010). The potential negative effects of workplace bullying cover a wide range of possibilities. Bullying implies costs for the organization in terms of sickness absence, staff conflict, and increased turnover (Kivimäki, Elovainio, & Vahtera, 2000; Leymann, 1996). Bullying has also been shown to be strongly associated with lowered psychological well-being and increased levels of stress and psychosomatic symptoms. For instance, in a study conducted among victims of bullying, it was found that the prevalence of post-traumatic stress disorder was above 40% (Rodríguez-Muñoz, Moreno-Jiménez, Sanz-Vergel, & Garrosa 2010). A recent meta-analysis of cross-sectional and longitudinal evidence shows that bullying was specially related to anxiety and depression (Nielsen & Einarsen, 2012). This pattern is supported by previous meta-analysis (Bowling & Beehr, 2006) and longitudinal research (Finne et al., 2011; Lahelma et al., 2012). These findings suggest a noteworthy relationship between workplace bullying and psychological strain.

The conservation of resources (COR, Hobfoll, 1998) theory, constitutes a useful framework to understand how bullying impacts on health and well-being. The basic tenet of COR theory is that people strive to obtain, retain, and protect their resources. Resources include both material resources (e.g., transportation, housing) and

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psychosocial resources (e.g., self-efficacy, social support). According to COR, psychological stress occurs when individuals are (1) threatened with resource loss, (2) lose resources, or (3) fail to gain resources following resource investment. A basic principle of COR theory is that resource loss is more salient than resource gain because it represent a major threat to survival. This means that real or anticipated resource loss has stronger motivational power than expected resource gain (Gorgievski & Hobfoll, 2008). Resource loss is typically accompanied by negative emotions, impaired psychological well-being, and ultimately impaired mental and physical health (Westman et al., 2004). Primary resources (i.e., time and energy) are especially important, since individuals invest them to obtain other more highly prized resources, for instance, power and money (Hobfoll, 1989). In this context, vigor is particularly relevant due to its energetic nature. Vigor refers to high levels of energy and mental resilience while working, the willingness to invest effort in work, and persistence in the face of difficulties (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Therefore, initial energy loss is likely to lead to future losses.

Following this approach, we see the process of resource loss as primary in explaining workplace bullying. Being exposed to bullying behaviors may require that targets expend time and energy dealing with this stressful situation, besides focusing on job tasks. Therefore, workplace bullying can suppose a drain of resources. Indeed, research shows that bullying is related to several resource losses, such as decreased self-esteem (Vartia, 2001), self-efficacy (Mikkelsen & Einarsen, 2002), and lack of social support (Einarsen, Raknes, Matthiesen, & Hellesøy, 1996).

Hypothesis 1. Time 1 workplace bullying will be positively related to Time 2 anxiety and depression, and negatively to Time 2 vigor.

So far, many questions remain unanswered regarding the association between bullying and outcomes. Besides the generally assumed causal order from workplace bullying to health and well-being, some authors have also pointed a reversed and reciprocal causal relationships between these variables (Nielsen et al, 2012; Zapf, Dormann, & Frese, 1996). Deteriorated health may encourage targetization by adding to the employee's weak position and making him/her an easy target. In the same vein, psychological strain may lead to poorer job performance, and therefore receive less support from colleagues or supervisors or even aggressive behaviors (e.g., Felson, 1992). Hoel, Rayner, and Cooper (1999) have conceptualized bullying at work as an interactional response to norm-violations and as an instrument for social control. There is some empirical evidence of this reversed causality. For instance, Finne et al. (2011) showed that baseline levels of mental distress predicted subsequent bullying. Similarly, this reversed longitudinal effect of mental health on workplace bullying was found by Kivimäki et al. (2003), and Nielsen and Einarsen (2012).

From a theoretical point of view, different mechanisms have been proposed for explaining this strain-stressor relationship. De Lange, Taris, Kompier, Houtman, and Bongers (2005) using the so-called gloomy perception mechanism, suggest that unhealthy (e.g., anxious) employees may evaluate their environment more negatively and thus report less favourable work characteristics. Zapf et al. (1996) argued that individuals with bad health drift to worse jobs, where high job demands are more prevalent. Hence, employees with worse psychological health may have a negative perception of their work situation and report higher levels of workplace bullying. Thus, we proposed the next hypotheses:

Hypothesis 2a. Time 1 anxiety and depression will be positively related to

Time 2 workplace bullying.

Hypothesis 2b. Time 1 vigor will be negatively related to Time 2 workplace bullying.

Taken together the effects in both directions, it seems plausible to suggest reciprocal relationships between workplace bullying, vigor and mental health. According to COR theory, initial resource loss is likely to lead to loss spirals, to future losses of other resources, and to deteriorated well-being (Hobfoll & Shirom, 2000). Moreover, those individuals who lack resources are more vulnerable to resources loss and less capable of resource gain. Furthermore, the fewer resources an employee has to invest, the less he or she will be able to recoup the minimal resource investment, leading to a reinforcing cycle of resource loss (Hobfoll, 1998). These loss cycles are more momentous and move more quickly than gain cycles. Thus, in the case of workplace bullying a negative loop might also exist, where bullying leads to deteriorated mental health and decreased well-being which may act to worsen the situation for the target of bullying or their perception of the work situation. This reasoning leads to our final hypothesis:

Hypothesis 3. Workplace bullying, vigor and mental health (i.e. anxiety and depression) are reciprocally related.

Method

Procedure and Participants

Our hypotheses were tested in a two-wave longitudinal study with a time lag of 6 months. Data were collected by means of Computer Assisted Telephone Interviewing (Groves & Mathiowetz, 1984), using trained telephone interviewers with at least three years of experience in this methodology. Participants were drawn using stratified random sampling from the 17 Autonomous communities of Spain. The eligibility criteria for participation were (1) Individuals between 18 to 65 years of age and (2) who

needed to be working at the moment of the study. Furthermore, baseline respondents who changed job between time 1 and time 2 were not invited to participate at follow-up. The study took place between April and November 2012. In the first survey (T1), 1000 employees were invited to participate and 600 (response rate 60%) agreed to participate. This first sample was representative of the Spanish workforce. Six months later, at Time 2 (T2), all 600 employees were invited to participate again in the same telephone interview, and 348 participated (response rate 58%). Thus, the panel group that completed both interviews and that is used in the present study consists of 348 employees. To guarantee confidentiality, Time 1 (T1) and Time 2 (T2) responses were linked by means of anonymous codes. All interviewers explained the aims of the study, that participation was voluntary and assured that responses would be treated confidentially. The study was conducted in accordance with the World Medical Association Declaration of Helsinki and oral informed consent was obtained from all individuals.

The final study sample consisted of 131 men (37.6%) and 217 women (62.4%). Participants' mean age was 45.34 years ($SD = 8.83$). Most of the participants had a non-supervisory position (64.7%) and 45.4% held a college degree. Finally, 58.6% of the participants worked in the private sector, in companies with more than 500 employees (32.2%), and with a permanent contract (59.2%). To control for potential selection bias due to panel loss, we examined whether employees from the panel group ($N = 348$) differed from the dropouts ($N = 252$) with respect to their demographic characteristics and levels on the study variables. As can be seen in table 1, two samples neither differed regarding their demographic characteristics nor regarding their mean scores on our core-variables, suggesting limited selection effects.

Measures

Workplace bullying was measured with the Short-Negative Acts Questionnaire ('S-NAQ'; Notelaers & Einarsen, 2008). The nine items describe negative acts in terms of personal bullying (e.g. '*gossiping*') and work-related bullying (e.g. '*being withheld information*'). Respondents indicated how frequently they had been exposed to each of these negative acts during the last six months on a scale from 1 ('*never*') to 5 ('*daily*'). In line with previous studies in the field of bullying (e.g., Baillien, De Cuyper, & De Witte, 2011) all items were included in one scale. The scale showed adequate reliabilities at both waves ($\alpha = .84$ and $.87$, respectively).

Anxiety and *Depression* were assessed with the Hospital Anxiety and Depression scale (HADS-A, Zigmond & Snaith, 1983). The HADS is a widely-used 14-item self-report scale designed to briefly measure current anxiety (e.g., "*Worrying thoughts go through my mind*") and depressive symptomatology (e.g., "*I feel as if I am slowed down*") in non-psychiatric hospital patients. It contains two 7-item subscales, on a four point (0–3) response category. It excludes somatic symptoms, therefore avoiding potential confounding by somatic symptoms (Snaith & Zigmond, 1994). Cronbach's alpha was .76 and .77 for anxiety time 1 and 2, respectively, whereas .61 and .65 for depression time 1 and 2, respectively.

Vigor at work was assessed with four items from the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). On a scale from 0 ('*never*') to 6 ('*every day*'), respondents answered questions such as "*When I get up in the morning, I feel like going to work*" or "*At my work, I feel bursting with energy*". Cronbach's alpha was .74 and .77 for time 1 and 2, respectively.

Strategy of analysis

Data were analysed using structural equation modelling (SEM) in AMOS 7.0 (Arbuckle, 2006). We used an asymptotic distribution free (ADF) estimation as recommended in situations of violation of the normality assumption (Weston, & Gore, 2006), which applies to the highly skewed workplace bullying variable (Notelaers et al., 2006). We replaced missing data by regression imputation with structural equations. This method has been found to be superior to other missing-data techniques (e.g., mean substitution method) and to generally provide unbiased parameters (Arbuckle, 1996; Switzer, Roth, & Switzer, 1998). Scores were imputed only for respondents who had complete data on at least 90% of the items of each scale (Roth, 1994). Only 8 individuals needed this procedure. We tested the hypotheses by comparing competing models regarding the causal relationships between workplace bullying and psychological strain indicators. Estimating variables with several numbers of items may yield insufficient power or under-identification (Bentler & Chou, 1987). Therefore, we reduced the complexity of our SEM models by using manifest variables (Jöreskog & Sörbom, 1993).

We tested four competing models. First, the baseline or stability model (M_1) includes autocorrelations and synchronous correlations. The autocorrelations were specified as correlations between the corresponding errors of each construct across the two measurement times, and synchronous correlations were specified as correlations between the errors of the constructs measured at the same time. This approach has been used in previous studies (e.g., Pitts, West, & Tein, 1996; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Second, the normal causation model (M_2) resembles M_1, but includes additional cross-lagged paths from Time 1 workplace bullying to Time 2 outcomes (vigor, anxiety and depression). In contrast, the reversed causation model

(M_3) resembles M_1, but is extended with cross-lagged paths from Time 1 outcomes to Time 2 workplace bullying. Finally, the reciprocal causation model (M_4) resembles M_1, but includes additional reciprocal cross-lagged paths from workplace bullying to outcomes (vigor, anxiety and depression) and vice versa. The competing models were compared by means of the χ^2 difference test (Weston & Gore, 2006). Besides this statistic, we additionally inspected the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). Levels of .90 or higher for CFI and .08 or lower for RMSEA indicate a reasonable fit of the model to the data (Byrne, 2002).

Results

Measurement model

Before testing our hypotheses, and following the two-step approach procedure recommended by Anderson and Gerbing (1988), we tested the measurement models by means of item-level confirmatory factor analyses (CFA) for the two measurement points separately. These analyses showed that a four-factor measurement model (including workplace bullying, anxiety, depression, and vigor) showed an acceptable fit to the data at both T1 ($\chi^2(317) = 555.00$; CFI = .91, RMSEA = .05), and T2 ($\chi^2(317) = 546.29$; CFI = .92, RMSEA = .04). This model showed a significantly better fit as compared to the one-factor model, for T1: $\Delta\chi^2 (3) = 1091.80$, $p < .001$; for T2: $\Delta\chi^2 (3) = 1872.13$, $p < .001$), and to a three-factor model where anxiety and depression were represented in one single factor, for T1: $\Delta\chi^2 (1) = 83.4$, $p < .001$; for T2: $\Delta\chi^2 (1) = 1079.41$, $p < .001$). Thus, CFA supports the operationalization of the four different variables.

Descriptive statistics

The means, standard deviations, and correlations between the study variables for both studies are presented in Table 2. The pattern of correlations was in the expected

direction. Regarding the test-retest correlations of the variables under study, the stability effects ranged between .45 (for depression) and .53 (for anxiety); indicating that the variables under study show stability. Additionally, gender was related to anxiety at T1 (r = .13, p < .01) and T2 (r = .17, p < .01). Educational level showed significant associations with depression at T1 (r = -.27, p < .01) and T2 (r = -.14, p < .01). Therefore, gender and educational level were used as covariates in all following SEM analyses.

Cross-lagged relationships between the study variables

Table 3 displays the fit indices of the competing models, as well as the model comparisons. The chi-square difference test shows that the reciprocal model (M4) provided a better fit to the data than the stability model (M4 versus M1; $\Delta\chi2$ = 28.02, Δdf = 6; p < .01), the normal causal model (M4 versus M2; $\Delta\chi2$ = 21.85, Δdf = 3; p < .01), and the reversed causal model (M4 versus M3; $\Delta\chi2$ = 21.25, Δdf = 3; p < .01). In addition, reciprocal model M4 showed the best fit in terms of CFI, GFI and RMSEA. The model with reciprocal relationships between variables (M4) explains our data best.

[Insert Table 3 about here]

Figure 1 presents all significant standardized cross-lagged effects observed in M4 (reciprocal causation). Specifically, it was found that T1 workplace bullying positively predicted anxiety (β = .13, p < .05) and negatively predicted vigor (β = -.16, p < .01) at T2. Thus, hypothesis 1 was partially supported. Further, as predicted, T1 vigor was negatively related to T2 workplace bullying (β = -.18, p < .01), whereas T1 anxiety (β = .12, p < .05) was positively related to T2 workplace bullying. These findings provide partial support for Hypotheses 2a and full support for 2b. Finally, Hypothesis 3

was partially supported, since 4 out of 6 predicted reciprocal effects were significant (66.6%).

Discussion

The purpose of this study was to refine the existing longitudinal literature on workplace bullying by proposing reciprocal relationships between workplace bullying, psychological health and well-being.

Results of structural equation modeling analyses showed that the reciprocal model, where mutual relationships between workplace bullying, health and vigor were included, provided a better fit to the data than the alternative causality models. Overall, the findings largely supported our hypotheses. After controlling for age and educational level, results showed that bullying had a negative lagged effect on vigor, and a positive impact on anxiety. These findings are consistent with previous research which demonstrated that bullying lead to long term detrimental effects in those exposed to these negative behaviours. For instance, Rodríguez-Muñoz et al (2009) found that exposure to bullying positively predicted dedication at work six months later. Similarly, bullying also was longitudinally associated to mental distress (Finne et al., 2011) and anxiety symptomatology (Lahelma et al., 2012). The findings indicate that bullying is a stressor with negative effects on health and well-being.

There were also several reverse significant paths. Specifically, it was found that vigor at T1 predicted negatively T2 bullying and anxiety at T1 predicted positively T2 bullying. As it has been argued above, not being involved in one's work or showing an anxious behaviour may put employee in a weak position and making him/her an easy target. Results also showed that neither bullying predicted depression nor the other way around. A possible explanation to this pattern of results may be related to the time-lag used in the study. It is possible that the six-month interval of our study allows us to

focus on short-term outcomes while not capturing possible long-term effects, such as depression. In this respect, numerous studies have shown that anxiety tend to temporally precede depression (e.g. Moffitt et al., 2007). Indeed, Kivimäki et al. (2003), employing a longer time lag (2-year), detected a lagged effect of workplace bullying on depression.

Our long-term reciprocal relationships between workplace bullying, anxiety and vigor are in line with COR theory and the "*loss spiral*" hypothesis (Hobfoll, 1998). One of the corollaries of this theory is that when individuals lack resources to deal with stressful events, they are not only more vulnerable in that situation but also "*loss begets further loss*" of resources (Hobfoll, 2001, p. 354). Furthermore, the fewer resources an employee has to invest, the less he or she will be able to recoup the minimal resource investment, leading to a reinforcing cycle of resource loss (Hobfoll, 1998). Accordingly, those who lack resources attempt to employ their remaining resources, often producing self-defeating consequences by depleting their resource reserves. In this vein, Hobfoll (1998) has suggested that loss cycles have more impact on people's well-being than do gain spirals. Thus, applied to our study, workplace bullying will lead to high anxiety and low vigor, which may act to worsen the situation for the target of bullying or their perception of the work situation.

Limitations and future research

Some limitations of the current study need to be mentioned. One limitation is that observations were based solely on self-reports, which may increase the possibility of common-method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, the longitudinal full panel design which controls for baseline levels of the study variables diminishes the risk for problems related to common method variance. Additionally, confirmatory factor analysis in which all items loaded into a single factor fitted our data poorly. Thus, we are confident that common-method bias did not play a

significant role in our study. Nevertheless, it would be important for future research to replicate the present study by also including information on health from other sources, such as psycho-physiological parameters or medical records.

Second, although we test our hypotheses in a two-wave panel design, a more comprehensive examination of the cross-lagged relations between bullying and well-being would require a multi-wave study (Dormann & Zapf, 1999). Hence, future studies could apply multi-wave designs (three or more measurement points) for obtaining more insight in the processes underlying the causal relations between workplace bullying and its consequences.

A third drawback has to do with the fact that unmeasured variables may influence the relationships under study. However, we tried to rule out third variable explanations by controlling for potential confounders (gender and educational level). An additional related limitation of the study is that we did not control for the potential biasing effect of social desirability. Some have found evidence indicating that victimization reports may be influenced by social desirability, resulting in general underreporting aggression situations (Bell, & Naugle, 2007; Vigil-Colet, Ruiz-Pamies, Anguiano-Carrasco, & Lorenzo-Seva, 2012).

And last, our measure of depression showed a Cronbach's alpha below the .70 cut-off recommended by Nunnally and Berstein (1994), which may reduce the correlations with predictors (Aguinis, 1995). In this respect, it has been suggested that average inter-item correlation is a good measure of a scale internal consistency, even better than coefficient alpha, and recommend values should be within the range .15-.50 (Clark & Watson, 1995, p. 316). Mean inter-item correlations observed in the present study for depression were .20 in time 1, and .21 in time 2. Thus, the low alpha values

observed in the current research for this variable does not seem to threat the validity of our findings.

Conclusion

Notwithstanding these limitations, the present findings advance our knowledge on the dynamic relationships among workplace bullying and its outcomes. This study builds on previous cross-sectional and longitudinal evidence, but also expands previous research by addressing several methodological and design deficiencies. Our results may have important implications for both theory and practice. First, from a theoretical point of view, the reciprocal causal effects found in this study indicate the need to extend the traditional causal models. In fact, one-directional view of bullying-outcomes association may be too narrow. Therefore, our findings extend previous work by showing that both bullying and outcomes are causes and consequences, which means that a reciprocal perspective might constitute a good approach for explaining bullying-strain association.

Second, we offer several practical implications of our results. The first and most obvious is that bullying should be prevented in order to diminish the employee's strain levels. However, the reciprocal relationships found between bullying, anxiety and vigor indicate that we should bear in mind that psychological strain may affect workplace bullying as well. Therefore, another possible avenue for intervention is to increase the coping capacity of employees, which allow resource replenishment and indirectly combat bullying at work. According to Hobfoll (2001) one of the avenues of defense following loss is an optimisation strategy. In this way, individuals generate opportunities for optimizing their remaining resources. A coping strategy that may facilitate resource replenishment is psychological detachment from work during non-work time. Breaks after work might increase levels of vigor (Sonnentag, Mojza, Binnewies, & Scholl, 2008), which in turn decreases the vulnerability of further losses

or spiraling. In addition, being mentally away from work enables individuals to take control over their emotional reactions and decrease their levels of anxiety. In this sense, Moreno-Jiménez et al. (2010) showed that psychological detachment from work buffered the impact of bullying on psychological strain. Similarly, intervention strategies that focus on building employees' resources such as self-efficacy and social support may also reduce the perceptions of workplace bullying victimization. In this way, it is more likely to stop the cycle of resource loss within organizations.

References

Aguinis, H. (1995). Statistical power with moderated multiple regression in management research. *Journal of Management, 21*, 1141-1158. doi: 10.1177/014920639502100607

Anderson, J. C, & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*, 411-423. doi: 10.1037/0033-2909.103.3.411

Arbuckle, J. L. (2006). *Amos (Version 7.0)*. Chicago: SPSS.

Arbuckle, J. L. (1996). Full information estimation in the presence of incomplete data. In G. A. Marcoulides & R. E. Schumacker (Eds.), *Advanced structural equation modeling: Issues and techniques* (pp. 243–277). Mahwah, NJ: Erlbaum.

Baillien, E., De Cuyper, N., & De Witte, H. (2011). Job autonomy and workload as antecedents of workplace bullying: A two-wave test of Karasek's Job Demand Control Model for targets and perpetrators. *Journal of Occupational and Organizational Psychology, 84*, 191-208. doi: 10.1348/096317910X508371

Bell, K. M., & Naugle, A. E. (2007). Effects of social desirability on students' self-reporting of partner abuse perpetration and victimization. *Violence and Victims*, *22*(2), 243-256. doi: 10.1177/0886260512455518

Bentler, P. M., & Chou, C. (1987). Practical issues in structural modeling. *Sociological Methods and Research, 16*, 78-117. doi: 10.1177/0049124187016001004

Berthelsen, M., Skogstad, A., Lau, B., & Einarsen, S. (2011). Do they stay or do they go?: A longitudinal study of intentions to leave and exclusion from working life among targets of workplace bullying. *International Journal of Manpower, 32*, 178-193. doi: 10.1108/01437721111130198

Byrne, B.M. (2002). *Structural equation modeling with AMOS*. Mahwah, NJ: Lawrence Erlbaum.

Clark, L., &Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309-319. doi: 10.1037/1040-3590.7.3.309

De Lange, A. H., Taris, T., Kompier, M., Houtman, I. L. D., & Bongers, P. M. (2005). Different mechanisms to explain the reversed effects of mental health on work characteristics. *Scandinavian Journal of Work and Environment & Health, 31,* 3-14. doi: 10.5271/sjweh.843

Dormann, C., & Zapf, D. (1999). Social support, social stressors at work, and depressive symptoms: Testing for main and moderating effects with structural equations in a three-wave longitudinal study. *Journal of Applied Psychology*, *84*, 874-884. doi: 10.1037/0021-9010.84.6.874

Einarsen, S., Hoel, H., Zapf, D., & Cooper, C. L. (2011). *Bullying and harassment in the workplace. Developments in theory, research, and practice* (2nd ed.). Boca Raton, FL: CRC Press.

Einarsen, S., Hoel, H., Zapf, D., &Cooper, C.L. (2011). The concept of bullying at work. The European tradition. En S. Einarsen, H. Hoel, D. Zapf y C. L. Cooper (Eds.), *Workplace Bullying: Development in Theory, Research and Practice* (pp. 3-39). Boca Raton, FL: CRC Press.

Einarsen, S., Raknes, B. I., Matthiesen, S. B., & Hellesøy, O.H. (1996). Helsemessige aspekter ved mobbing i arbeidslivet. Modererende effekter av social støtte og personlighet. *Nordisk Psykologi, 48*, 116-137.

Felson, R. B. (1992). ''Kick'em when they're down'': Explanations of the relationship between stress and interpersonal aggression and violence. *Sociological Quarterly, 33*, 1-16. doi: 10.1007/s10979-009-9206-8

Finne, L. V., Knardahl, S., & Lau, B. (2011). Workplace bullying and mental distress–a prospective study of Norwegian employees. *Scandinavian Journal* of *Work, Environment & Health*, *37*, 276-287. doi: 10.5271/sjweh.3156

Gorgievski, M. J., & Hobfoll, S. E. (2008). Work can burn us out or fire us up: Conservation of resources in burnout and engagement. In J. R. B. Halbesleben (Ed.), *Handbook of stress and burnout in health care* (pp. 7–22). Hauppauge, NY: Nova Science.

Groves, R. M. & Mathiowetz, N. A. (1984). Computer assisted telephone interviewing: effects on interviewers and respondents. *Public Opinion Quarterly, 48*, 356-369. doi: 10.1086/268831

Hansen, Å. M., Hogh, A., Garde, A. H., & Persson, R. (2013). Workplace bullying and sleep difficulties: a 2-year follow-up study. *International Archives of Occupational and Environmental Health*, *3*, 1-10. doi: 10.1007/s00420-013-0860-2

Hauge, L. J., Skogstad, A., & Einarsen, S. (2010). The relative impact of workplace bullying as a social stressor at work. *Scandinavian Journal of Psychology, 51*, 426-433. doi: 10.1111/j.1467-9450.2010.00813.x

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524. doi: 10.1037/0003-066X.44.3.513

Hobfoll, S. E. (1998). *Stress, culture, and community: The psychology and physiology of stress.* New York: Plenum.

Hobfoll, S. E., & Shirom, A. (2000). Conservation of resources theory: Applications to stress and management in the workplace. In R. T. Golembiewski (Ed.), *Handbook of organization behavior* (Rev. 2nd ed., pp. 57–81). New York: Dekker.

Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory. *Applied Psychology, 50*, 337-421. doi: 10.1111/1464-0597.00062

Hoel, H., Rayner, C., & Cooper, C. L. (1999). Workplace bullying. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 195-230). Chichester: John Wiley & Sons.

Høgh, A., Mikkelsen, E. G., & Hansen, Å. M. (2011). Individual consequences of workplace bullying/mobbing. In S. Einarsen, H. Hoel, D. Zapf, & C. L. Cooper (Eds.), *Bullying and harassment in the workplace. Developments in theory, research, and practice* (2nd ed., pp. 107-128). Boca Raton, FL: CRC Press.

Hoobler, J. M., Rospenda, K. M., Lemmon, G., & Rosa, J. A. (2010). A within-subject longitudinal study of the effects of positive job experiences and generalized workplace harassment on well-being. *Journal of Occupational Health Psychology, 15*, 434-451. doi: 10.1037/a0021000

Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago: Scientific Software International.

Kivimäki, M., Elovainio, M., & Vahtera, J. (2000). Workplace bullying and sickness absence in hospital staff. *Occupational and Environmental Medicine, 57*, 656-660. doi: 10.1136/oem.57.10.656

Lahelma, E., Lallukka, T., Laaksonen, M., Saastamoinen, P., & Rahkonen, O. (2012). Workplace bullying and common mental disorders: a follow-up study. *Journal of epidemiology and community health, 66*, 3-3. doi: 10.1136/jech.2010.115212

Leymann, H. (1996). The content and development of mobbing at work. *European Journal of Work and Organizational Psychology, 5,* 165-184. doi: 10.1080/13594329608414853

Mikkelsen, E. G., & Einarsen, S. (2002). Relationships between exposure to bullying at work and psychological and psychosomatic health complaints: the role of state negative affectivity and generalized self-efficacy. *Scandinavian Journal of Psychology, 43*, 397-405. doi: 10.1111/1467-9450.00307

Moffitt, T. E., Harrington, H., Caspi, A., Kim-Cohen, J., Goldberg, D., Gregory, A. M., & Poulton, R. (2007). Depression and generalized anxiety disorder: cumulative and sequential comorbidity in a birth cohort followed prospectively to age 32 years. *Archives of General Psychiatry*, *64*, 651-660. doi: 10.1001/archpsyc.64.6.651

Moreno-Jiménez, B., Rodríguez-Muñoz, A., Pastor, J. C., Sanz-Vergel, A. I., & Garrosa, E. (2009). The moderating effects of psychological detachment and thoughts of revenge in workplace bullying. *Personality and Individual Differences*, *46*, 359-364. doi: 10.1016/j.paid.2008.10.031

Nielsen, M. B., & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress, 26*, 309-332. doi: 10.1080/02678373.2012.734709

Nielsen, M. B., Hetland, J., Matthiesen, S. B., & Einarsen, S. (2012). Longitudinal relationships between workplace bullying and psychological distress. *Scandinavian Journal of Work, Environment and Health, 38*, 38-46. doi: 10.5271/sjweh.3178.

Notelaers, G., Einarsen, S., De Witte, H., & Vermunt, J. (2006). Measuring exposure to bullying at work: The validity and advantages of the latent class cluster approach. *Work & Stress, 20*, 288-301. doi: 10.1080/02678370601071594

Nunnally, J. C., & Berstein, I. H. (1994). *Psychometric theory (3 ed.)*. New York, NY: McGraw-Hill.

Pitts, S. C., West, S. G., & Tein, J. Y. (1996). Longitudinal measurement models in evaluation research: Examining stability and change. *Evaluation and Program Planning, 19*, 333-350. doi: 10.1016/S0149-7189(96)00027-4

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879-903. doi: 10.1037/0021-9010.88.5.879

Rodríguez-Muñoz, A., Baillien, E., De Witte, H., Moreno-Jiménez, B., & Pastor, J.C. (2009). Cross-lagged relationships between workplace bullying, job satisfaction and engagement: Two longitudinal studies. *Work & Stress, 23,* 225-243. doi: 10.1080/02678370903227357

Rodríguez-Muñoz, A., Moreno-Jiménez, B., Sanz-Vergel, A. I., & Garrosa, E. (2010). Post-Traumatic symptoms among victims of workplace bullying: Exploring gender differences and shattered assumptions. *Journal of Applied Social Psychology, 40*, 2616-2635. doi: 10.1111/j.1559-1816.2010.00673.x

Roth, P. L. (1994). Missing data: A conceptual review for applied psychologists. *Personnel Psychology, 47*(3), 537-560. doi: 10.1111/j.1744-6570.1994.tb01736.x

Schaufeli, W. B., Salanova, M., Gonzalez-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A confirmative analytic approach. *Journal of Happiness Studies*, *3*, 71-92. doi: 10.1023/A:1015630930326

Snaith, R. P., & Zigmond, A. S. (1994). *HADS: Hospital Anxiety and Depression Scale*. Windsor: NFER Nelson.

Sonnentag, S., Mojza, E. J., Binnewies, C., & Scholl, A. (2008). Being engaged at work and detached at home: A week-level study on work engagement, psychological detachment, and affect. *Work & Stress*, *22*, 257-276. doi: 10.1080/02678370802379440

Switzer, F. S., Roth, P. L., & Switzer, D. M. (1998). Systematic data loss in HRM settings: A Monte Carlo analysis. *Journal of Management, 24*(6), 763-779. doi: 10.1016/S0149-2063(99)80083-X

Vartia, M. A. (2001). Consequences of workplace bullying with respect to the well-being of its targets and the observers of bullying. *Scandinavian Journal of Work, Environment & Health, 27*, 63-69. doi: 10.5271/sjweh.588

Vigil-Colet, A., Ruiz-Pamies, M., Anguiano-Carrasco, C., & Lorenzo-Seva, U. (2012). The impact of social desirability on psychometric measures of aggression. *Psicothema*, *24*(2), 310-315. doi: 10.7334/psicothema2012.152

Westman, M., Hobfoll, S., Chen, S., Davidson, R., & Lasky, S. (2004). Organizational stress through the lens of conversation of resources (COR) theory. In P. Perrewe & D. Ganster (Eds.). *Research in occupational stress and well-being* (Vol. 5, pp. 167–220). Oxford: Elsevier Science.

Weston, R., & Gore, P. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist, 34*, 684-718. doi: 10.1177/0011000006286345

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior, 74,* 235-244. doi: 10.1037/a0028292

Zapf, D., & Gross, C. (2001). Conflict escalation and coping with workplace bullying: A replication and extension. *European journal of work and organizational psychology*, *10*, 497-522. doi: 10.1080/13594320143000834

Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology, 1,* 145-169. doi: 10.1037/1076-8998.1.2.145

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavia, 67*, 361-370. doi: 10.1111/j.1600-0447.1983.tb09716.x

Table 1
Sample characteristics and drop-out: N (%)

		Participants only in the first wave (N = 252)	Participants in both waves (N = 348)	Difference
Gender	Male	96 (38.0)	131 (37.6)	$\chi^2 = 0.13$; $p = .91$
	Female	156 (62.0)	217 (62.4)	
Age	M (SD)	44.08 (10.3)	45.34 (8.83)	$t(598) = -1,55$; $p = .12$
Educational level	Primary	37 (14.7)	53 (15.2)	$\chi^2 = 1.62$; $p = .44$
	Secondary	112 (44.4)	137 (39.4)	
	University	103 (40.9)	158 (45.4)	
Supervision	Yes	86 (34.1)	123 (35.3)	$\chi^2 = 0.95$; $p = .75$
	No	166 (65.9)	225 (64.7)	
Workplace bullying	M (SD)	1.34 (0.49)	1.38 (0.56)	$t(598) = -0.86$; $p = .39$
Vigor	M (SD)	4.42 (1.13)	4.34 (1.16)	$t(598) = 0.85$; $p = .38$
Anxiety	M (SD)	0.67 (0.45)	0.73 (0.52)	$t(598) = -1.43$; $p = .15$
Depression	M (SD)	0.47 (0.38)	0.48 (0.39)	$t(598) = -0.50$; $p = .95$

Table 2
Descriptive statistics and correlations among the study variables (N = 348)

Variable	M (SD)	1	2	3	4	5	6	7	8
1. Workplace bullying T1	1.38 (.56)	---							
2. Anxiety T1	0.73 (.52)	.07	---						
3. Depression T1	0.48 (.39)	.06	.53**	---					
4. Vigor T1	4.34 (1.1)	-.08	-.17**	-.24**	---				
5. Workplace bullying T2	1.28 (.47)	.47**	.13*	.10*	-.20**	---			
6. Anxiety T2	0.65 (.52)	.10*	.53**	.41**	-.15**	.17**	---		
7. Depression T2	0.46 (.39)	.11*	.31**	.45**	-.15**	.15**	.53**	---	
8. Vigor T2	4.45 (1.0)	-.13**	-.11*	-.16**	.46**	-.23**	-.18**	-.32	---

* *p* < .05, ** *p* < .01.

Table 3
Goodness-of-fit indices and models comparisons (N = 348)

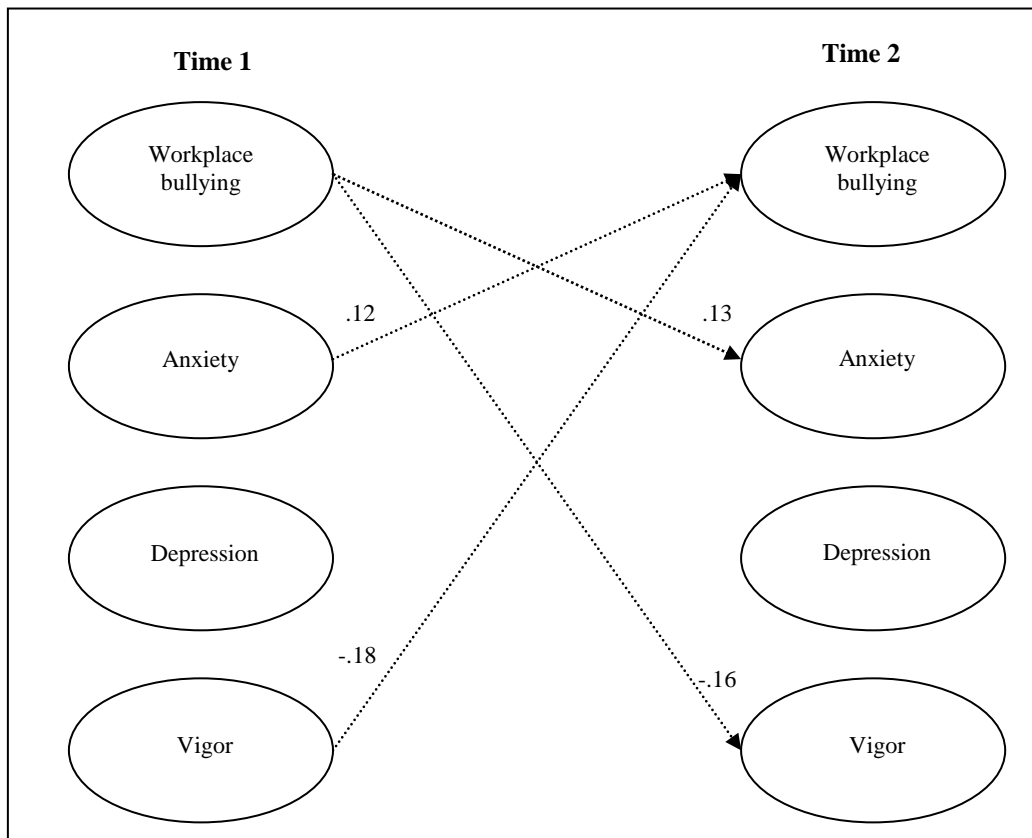| Factor Model	χ^2 (d.f.)	P	CFI	GFI	RMSEA	Comparison	$\Delta\chi^2$	Δd.f.
M1. Baseline or stability model	66.74 (22)	< .001	.825	.940	.077			
M2. Normal causation model	60.57 (19)	< .001	.879	.951	.070	M1- M2	6.17	3
M3. Reversed causation model	59.97 (19)	< .001	.881	.958	.069	M1-M3	6.77	3
M4. Reciprocal causation model	38.72 (16)	< .001	.910	.976	.051	M1-M4	28.02**	6
						M2-M4	21.85**	3
						M3-M4	21.25**	3

* $p < .05$, ** $p < .01$.

Figure 1. Reciprocal model of workplace bullying and outcomes

Note. Standardized coefficients greater than .13 are significant at p < .01; the rest of the values are significant at < .05.

For simplicity of the figure, values of the correlations between the corresponding errors of each construct across the two measurement times are omitted.