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Psychosocial safety climate (PSC) and enacted PSC for workplace bullying and psychological health problem reduction

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ABSTRACT

Bullying at work has profound effects on both the individual and organization. We aimed to determine if organizational psychosocial safety climate (PSC; a climate specific to worker psychological health) could reduce workplace bullying and associated psychological health problems (i.e., distress, emotional exhaustion, depression) if specific procedures were implemented (PSC enactment). We theorized that the PSC enactment mechanism works via psychosocial processes such as bullying mistreatment climate (anti-bullying procedures), work design (procedures reduce stress through work redesign), and conflict resolution (procedures to resolve conflict). We used two-wave national longitudinal interview data from 1,062 Australian employees (Australian Workplace Barometer project) and structural equation modelling to explore relationships over 4 years. PSC Time 1 predicted enacted PSC and reduced bullying 4 years later. PSC Time 1 was indirectly negatively related to poor psychological health Time 2 through enacted PSC and bullying. Bullying Time 1 also gave rise to procedures which in turn reduced bullying Time 2. Our findings suggest a multi-component approach to prevent or reduce bullying. Procedures (to reduce psychosocial hazards) that emerge in a high PSC context are more comprehensive than those triggered by bullying (reactive procedures), and can therefore be more effective in reducing worker mistreatment. Building PSC and a strong climate for psychological health, and enacting PSC is fundamental to bullying prevention.

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Psychosocial safety climate; bullying; employee psychological health; emotional exhaustion; longitudinal

Workplace bullying is a long-lasting form of workplace aggression, comprised of repeated, abusive, and offensive acts against which the targets have difficulty defending themselves (Einarsen, 2000). It is a source of major distress at work, with prospective evidence showing that bullying predicts psychological health problems (Einarsen & Nielsen, 2015; Nielsen & Einarsen, 2012), depression (Kivimäki et al., 2003; Tuckey, Dollard, Saebel, & Berry, 2010), anxiety (Rodríguez-Muñoz, Moreno-Jiménez, & Sanz-Vergel, 2015), emotional exhaustion (Laschinger & Fida, 2014), and traumatic stress (Bond, Tuckey, & Dollard, 2010), as well as physical health problems, such as poor cardiovascular health (Kivimäki et al., 2003; Tuckey et al., 2010). Bullying has costly effects (McTernan, Dollard, & LaMontagne, 2013) because of increased employee sickness absence (Ortega, Christensen, Høgh, Rugulies, & Borg, 2011), higher turnover rates (Høgh, Hoel, & Carneiro, 2011), and workers' compensation claims (Bailey, Dollard, McLinton, & Richards, 2015). The cost of workplace bullying in the Australian economy alone is estimated to be \$36 billion annually (Productivity Commission, 2010).

Given the gravity of workplace bullying in society, for employers and employees alike, a striking paradox is that there is virtually no empirical evidence regarding the effectiveness of interventions to avert or reduce workplace bullying (see Escartín, 2016; Hodgins, MacCurtain, & Mannix-McNamara, 2014). Consequently, organizations largely focus on reducing

workplace bullying through individual and interpersonal strategies, such as coaching and educational programs, to increase respectful behaviour and reduce conflict (Salin, 2008). However, the literature clearly shows that bullying arises from the organizational system, perpetuated by inadequate organizational responses and an inability or unwillingness of organizations to implement procedures to prevent such behaviour (Hodgins et al., 2014). Although research has identified that anti-bullying procedures (Cooper-Thomas et al., 2013) and organizational climate (Baillien, Bollen, Euwema, & De Witte, 2014) may reduce bullying, studies have been cross-sectional and unable to confirm the direction of the relationships. For example, it is unclear whether anti-bullying procedures reduce bullying or whether bullying in organizations gives rise to anti-bullying procedures in the first place (Neill & Tuckey, 2014). Moreover, no studies have identified the organizational antecedents of, nor specified the kind of climate context that could give rise to, effective anti-bullying procedures. In this study, we attempt to bridge this gap by proposing and assessing relationships among organizational climate, anti-bullying procedures, exposure to workplace bullying, and worker psychological health.

Our study is framed within Psychosocial Safety Climate (PSC) theory. PSC is a facet of organizational climate, a form of safety climate (Zohar, 2010), specific to psychological health and safety (Dollard & Bakker, 2010). Over a 4-year-period we

examine how PSC is enacted through specific organizational procedures that may prevent bullying. We propose that the PSC enactment process occurs via three psychosocial mechanisms: (1) the *mistreatment climate hypothesis* (i.e., PSC enacted via anti-bullying procedures); (2) *work environment hypothesis* (e.g., PSC enacted via work re-organization to reduce stress risk factors); and (3) *conflict escalation hypothesis* (e.g., PSC enacted via procedures to prevent conflict from escalating into bullying). As workplace bullying is a long-lasting process (Einarsen & Nielsen, 2015) we also explore its effects over time on psychological health problems, assessed by levels of psychological distress, emotional exhaustion, and depression; which are all linked to bullying in prior research (Nielsen & Einarsen, 2012), and are the ultimate target of PSC.

Psychosocial safety climate

PSC is a specific aspect of organizational climate, defined as “policies, practices, and procedures for worker psychological health and safety” (Dollard & Bakker, 2010, p. 580). PSC is largely determined by management and leadership within organizations. The PSC construct has four main aspects (Dollard & Bakker, 2010; Hall, Dollard, & Coward, 2010) that connect to best practice principles in the stress prevention, intervention, and safety climate literatures (Cheyne, Cox, Oliver, & Tomás, 1998; Dollard & Kang, 2007; Kompier & Kristensen, 2001). First is senior management support and commitment to psychological health through involvement and commitment (Dollard, Tuckey, & Dormann, 2012). This aspect is evident when senior management take quick and decisive action to address and correct issues that affect psychological health (Idris, Dollard, Coward, & Dormann, 2012). Second is priority the management give to employee psychological health and safety versus productivity goals (Hall et al., 2010). For example, job demands (e.g., work pressure) may be modified to make them more manageable, and management have the discretion to offer a variety of resources, such as work flexibility, autonomy, and social support that may buffer demands and reduce work stress in the interests of worker psychological health and productivity. Third is organizational communication (Hall et al., 2010) that concerns how the organization communicates with employees about psychological health and safety issues that affect them, and brings these to the attention of employees. The final aspect, organizational participation and involvement, concerns participation and consultation regarding stress prevention that involves all levels of the organization, and the integration of stakeholders including employees, unions and health and safety representatives in occupational (psychological) health and safety processes (Idris et al., 2012).

Several studies using multilevel models have found empirical support for the directionality of the hypothesis that PSC reduces bullying. Using a sample of police officers, Bond et al. (2010) found that PSC at the police station level predicted workplace bullying over the next 12 months. In cross-sectional multi-level research Law, Dollard, Tuckey, and Dormann (2011) found that PSC at the organization level was negatively associated with workplace bullying and in turn psychological distress. Such results are important because they indicate that

bullying can be predicted from knowing about shared perceptions of PSC (Bond et al., 2010; Law et al., 2011). Although PSC theory has emphasized shared perceptions of PSC, recent theorization showed merit in exploring psychological PSC, that is, individual perceptions of PSC, above shared perceptions, on consequent perceptions of effort–reward imbalance and their effects on psychological health (Owen, Bailey, & Dollard, 2016). Qualitative individual level research has also shown that bullying escalation and the consequences of bullying, specifically whether a victim has voice and agency to confront and resolve the bullying, depends on their perception of the PSC context (Kwan, Tuckey, & Dollard, 2016). For these reasons, in this study we consider how individual perceptions of PSC and organizational procedures may affect workplace bullying.

How and why PSC relates to bullying

A guiding principle for intervention in occupational health and safety is the hierarchy of controls, which states that determining the root cause, by identification of more distal causes, will yield a more effective and efficient control (or intervention) strategy (Dollard, 2012). PSC is a distal cause, a “cause of the causes” of workplace bullying, exposure to which will eventually cause health problems. The transmission process whereby PSC affects bullying is based on how PSC is enacted. Espoused PSC refers to what managers say they are going to do; enacted PSC, in contrast, refers to what actually gets done. While they reflect PSC, policies related to psychological health and safety are more distal, whereas procedures or mechanisms for implementing policy into daily organizational life (enacted PSC) are more proximal to the site of change and are thus the focus of our research. To date the generative aspects of climates (i.e., the specific actions that arise from climates) have been rarely specified in the literature (with some exceptions in the safety climate literature; Zohar & Luria, 2005). In this way, our study also contributes to the broader literature on organizational climate.

The relationship linking the enactment of PSC to workplace bullying can be understood via three psychosocial mechanisms: (1) *mistreatment climate*, (2) *work design*, and (3) *conflict escalation*. The first mechanism, *mistreatment climate*, relates to a workplace climate specific to mistreatment. Scholars have suggested that the way managers approach the issue of bullying and the willingness of organizations to take future action may be affected by the safety climate itself (Salin, 2008, p. 229). Building on this idea we propose that PSC, as a specific form of safety climate, is generative in nature, giving rise to a specific bullying *mistreatment climate*. In other words, PSC is a broad bandwidth concept related to mistreatment that can give rise to other narrow bandwidth mistreatment climates (Einarsen, Skogstad, Rørvik, Lande, & Nielsen, 2016).

Drawing on expectancy theory (Vroom, 1964), social learning (Bandura, 1986), and role theory (Katz & Kahn, 1978), perceptions of the mistreatment climate address the question “How important is it not to bully around here?” (see also Zohar & Luria, 2005, in relation to safety climate). The prevailing mistreatment climate gives information to employees concerning behaviour–outcome expectancies and desired role behaviour in relation to mistreatment. In this way, employees

understand the probable consequences of (in)congruence between the climate and their role behaviour. In the case of mistreatment climate, employees make judgements about whether bullying would be tolerated, rewarded, or punished.

In their meta-analysis Yang, Caughlin, Gazica, Truxillo, and Spector (2014) investigated how different mistreatment climates influence employee' mistreatment motivation and behaviours. They predicted and found support for the relationship between mistreatment climate and role behaviour, where climate influenced *motivation* (e.g., prevention motivation), and *behaviour* (e.g., compliance with measures and participation) in relation to mistreatment. Likewise, in the safety climate literature there is confirmatory evidence from meta-analytic reviews that safety climate is related to safety motivation and behaviour (Christian, Bradley, Wallace, & Burke, 2009). In relation to bullying specifically, Baillien et al. (2014) found that, over and above organizational change (positively related) and people-oriented culture (negatively related), anti-bullying policies are significantly negatively related to bullying. Likewise, anti-bullying policies are related to lower rates of bullying (Cooper-Thomas et al., 2013). Taking these lines of argument together, we expect that PSC will generate a bullying-specific mistreatment climate, evident through anti-bullying procedures that influence bullying exposure. These anti-bullying procedures are thus a form of enacted PSC.

A second psychosocial mechanism explaining the link between PSC and bullying is work design. PSC is largely influenced by senior managers, and reflects how worker psychological health is valued by senior management; these same values guide how work is designed, and the quality of work available – put simply, PSC predicts job design. The *work design hypothesis* of bullying (Leymann, 1996) implies that work quality or job design factors influence bullying (Skogstad, Torsheim, Einarsen, & Hauge, 2011; Tuckey, Dollard, Hosking, & Winefield, 2009). A recent systematic review, including prospective research, identified role conflict, workload, role ambiguity, job insecurity, and cognitive demands as the most significant work design antecedents to bullying (Van den Brande, Baillien, De Witte, Van der Elst, & Godderis, 2016), with some studies reporting reverse effects (Hauge, Skogstad, & Einarsen, 2011). Interrelated with this, senior management that prioritise productivity over worker health may engender and promote bullying from middle managers and first line supervisors (e.g., via increased work pressure and workload for their subordinates) in order to get the job done (Bailey, Dollard, & Tuckey, 2014; Ceja, Escartín, & Rodríguez-Carballeira, 2012).

Stressful work conditions also erode both job and personal resources which otherwise would be helpful in managing job demands (see Conservation of Resources Theory, Hobfoll, 2001) and withstanding bullying (Tuckey & Neall, 2014). For instance, research shows that job stressors, particularly workload, predict low levels of psychological detachment (Sonnetag & Fritz, 2015), and reduced detachment leads to increased strain when facing bullying (Moreno-Jiménez, Rodríguez-Muñoz, Pastor, Sanz-Vergel, & Garrosa, 2009). Moreover stressful jobs thwart goal achievement and likely give rise to frustration (Karasek, 1979), and this negative effect may in turn predispose aggressive and bullying behaviours within the workplace. For example, Harris, Harvey, Harris, and Cast (2013) showed that job frustration is correlated with

employees' tendency to abuse their co-workers. Hence, poor work design creates fertile soil for bullying (Salin, 2003). Hence, through the enactment of procedures related to work re-design, we expect that PSC will influence bullying exposure.

Finally, PSC could relate to bullying through a third psychosocial mechanism, the *conflict escalation hypothesis* (Zapf & Gross, 2001), which states that social conflict in the workplace, characterised by negative interpersonal relationships, when left unchecked, may escalate into bullying. Unclear roles and contradictory goals may create competition and low trust, and high work pressure likely indicates little time or concern within organizations to resolve conflict (Zapf & Einarsen, 2005). As a broad bandwidth construct related to psychosocial health and safety, PSC should influence how conflict is managed at work. For example, Einarsen et al. (2016) introduced the concept of a *climate for conflict management*, which refers to "employees' assessments of the organization's conflict management procedures" (p. 2), as a sub-facet of PSC. In other words, they implied that PSC gives rise to procedures that lead to fair and predictable interactions between managers and employees. They found a significant negative cross-sectional relationship between the climate for conflict management and bullying, which they surmised was due to the narrow bandwidth of that climate sub-facet. We thus expect that in high PSC organizations conflict resolution procedures (a form of enacted PSC) would be in place to address conflict in a timely manner before escalation leads to bullying (Escartín, Ceja, Navarro, & Zapf, 2013).

In sum, through three psychosocial processes – (a) bullying mistreatment climate, (b) work design, and (c) conflict resolution – high PSC organizations reduce bullying via enacted PSC, evidenced by procedures in place to (i) address bullying at work, (ii) reduce stress through work redesign, and (iii) assist conflict resolution. Ultimately, PSC negatively predicts psychological health problems via enacted PSC and in turn bullying. These propositions are represented in the following hypotheses:

Hypothesis 1. PSC is positively related to enacted PSC in the form of procedures to address workplace bullying, reduce stress through work design, and resolve conflict.

Hypothesis 2. Enacted PSC is negatively related to bullying.

Hypothesis 3. The negative relationship between PSC and workplace bullying is mediated by enacted PSC.

Hypothesis 4. Bullying has lagged positive effects on psychological health problems (i.e., depression, psychological distress, and emotional exhaustion).

Bringing all these hypotheses together we predict:

Hypothesis 5. PSC is indirectly negatively related to poor psychological health through enacted PSC and bullying exposure.

We also consider a second scenario whereby incidents of bullying themselves drive the introduction of organizational procedures that aim to reduce bullying exposure. Bullying at work in Australia is against work health and safety legislation. Accordingly, evidence of bullying should lead organisations to

implement policies and practices to prevent or reduce it. There has been little theorizing on *organizational procedures* that are put into action when stress problems occur. European research suggests that senior occupational health and safety managers implement policies to address psychosocial risks in response to legal requirements, requests from employees or their representatives (such as unions), and high absenteeism rates (Dollard & Nesar, 2013). As organizations are usually thought to make rational decisions (at least in part), one could expect that counter measures would be taken if bullying leads to costly negative consequences such as stress, increased absenteeism, and workers' compensation claims. Said another way, bullying may be reduced over time as a result of the procedures introduced (i.e., enacted PSC) in response to threats to psychological health, productivity, and legal obligations. This gives rise to:

Hypothesis 6. Workplace bullying is positively related to enacted PSC.

Since enacted PSC is significantly negatively related to bullying (H2 above) we propose;

Hypothesis 7. The indirect relationship between workplace bullying and future bullying is negative when mediated by enacted PSC.

In this study, we assume that perceptions of PSC are related to the objective manifestation of PSC, but that individuals have different experiences of PSC because of varying leader member exchanges (as explained in leader-member exchange theory of leadership; Graen & Uhl-Bien, 1995). Moreover, individual perceptions of climate emerge from the evaluation of specific features of the environment in terms of their significance to personal values and well-being (Griffin & Neal, 2000; Neal & Griffin, 2006). Awareness of procedures may reflect objective differences in enacted PSC, but also perceptual differences between individuals. The processes which link the procedures (enacted PSC) to a reduction in bullying are explained by the psychosocial mechanisms outlined above leading theoretically to a substantive effect in reducing risk factors for bullying. Awareness of procedures overall may also create knowledge about the psychological dangers of bullying

and its precursors, and we expect this knowledge of the procedures in total to influence behaviour to reduce risks, including bullying itself.

Method

Participants and design

The study used two waves of interview data from the Australian Workplace Barometer project (Dollard et al., 2012, 2009) collected by a commissioned private data collection agency in 2010–2011 and 2014–2015, from working Australians in four states and two territories. Potential participants were randomly selected from the electronic White Pages (the publicly accessible online Australian telephone directory) and were sent an information letter containing details of the project, and informing them that they would be contacted via telephone. Using a computer-aided telephone system interviews were conducted with individuals who had the most recent birthday within the household (for randomization), were over 18 years of age, were in paid employment (588 cases deleted), and who consented to the interview. Only participants who were employed in the same organization at both time points were included in the sample (173 cases deleted).

The final matched sample consisted of 1062 participants. Participants were men ($n = 483$, 45.5%) and women ($n = 579$, 54.5%), aged from 18 to 74 years ($M = 47$, $SD = 11.06$), with education levels, bachelor degrees or higher (29.5%), certificate or diploma (23%), trade or apprenticeship (6.5%), school education (21%), and at school (20%). Most were married or living with a partner ($n = 790$, 75%), worked in large enterprises ($n = 734$, 69%), and worked a median of 150 h in the past 4 weeks. The sample was representative of the Australian working population for a range of factors, including gender, age, and working hours in a direct comparison with Australian Bureau of Statistics (ABS) census data (ABS, 2014, 2015).

Measures

To answer the research questions, specific measures were selected from the Australian Workplace Barometer questionnaire (AWBQ2009) (Dollard, Bailey, et al., 2012) (Table 1).

Table 1. Means, standard deviations and range of study variables ($N = 1062$).

| | | Min. | Max. | Mean | SD |
|-------------------------------|--------------------------|------|------|------|------|
| | Time 1 | | | | |
| PSC | 1. PSC | 1.00 | 5.00 | 3.37 | 0.82 |
| Bullying | 2. Bullying | .00 | 1.00 | 0.07 | 0.26 |
| Psychological health problems | 3. Depression | .00 | 2.67 | 0.37 | 0.39 |
| | 4. Distress | 1.00 | 4.40 | 1.44 | 0.47 |
| | 5. Emotional exhaustion | 1.00 | 7.00 | 3.13 | 1.53 |
| | Time 2 | | | | |
| PSC | 6. PSC | 1.00 | 5.00 | 3.36 | 0.84 |
| Bullying | 7. Bullying | .00 | 1.00 | .08 | .28 |
| Psychological health problems | 8. Depression | .00 | 2.20 | .36 | .40 |
| | 9. Distress | 1.00 | 4.20 | 1.45 | .46 |
| | 10. Emotional exhaustion | 1.00 | 7.00 | 3.13 | 1.52 |
| Enacted PSC | 11. Mistreatment climate | .00 | 1.00 | .93 | .25 |
| | 12. Work reorganization | .00 | 1.00 | .42 | .45 |
| | 13. Work area redesign | .00 | 1.00 | .42 | .47 |
| | 14. Conflict resolution | .00 | 1.00 | .61 | .45 |

PSC: psychosocial safety climate.

Demographics

We assessed age (in years), gender (1 = male, 2 = female), and income on a scale from 1 (up to \$12,000) to 9 (more than \$100,000) as a proxy for socio-economic status. Although gender does not necessarily relate to bullying experiences (Einarsen & Nielsen, 2015), gender (being female) relates to the mental health outcomes and bullying is a significant predictor of mental health problems (anxiety and depression) in men over a 5-year-period (Einarsen & Nielsen, 2015). Age is also significantly positively related to depression over a 5-year-period (Einarsen & Nielsen, 2015), and socio-economic conditions are related to mental health (Molarius et al., 2009). For these reasons we used these demographic measures as controls in hypothesis testing.

Psychosocial safety climate (PSC)

PSC was measured using the 12-item scale (PSC-12) (Hall et al., 2010) comprising four subscales, each with three items: (1) management commitment (e.g., "Senior management considers employee psychological health to be as important as productivity"); (2) management priority (e.g., "Senior management clearly considers the psychological health of employees to be of great importance"); (3) organizational communication (e.g., "There is good communication here about psychological safety issues that affect me"); and (4) organizational participation (e.g., "Employees are encouraged to become involved in psychological safety and health matters"). Responses are on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The aggregate measure of PSC was significantly related to emotional exhaustion, psychological distress, depression, and engagement. Internal consistency from prior research was acceptable (Cronbach's $\alpha \geq 0.81$) for each subscale (Hall et al., 2010), and a four-factor model fit the data better than a one-factor model. Nevertheless Hall et al. noted large correlations between subscales (ranging from $r = 0.74$ to $r = 0.89$) indicating that the subscales are ideal indicators of an underlying climate construct – a latent PSC variable. For these reasons in this study we used a one-factor solution in the study model with the PSC subscales as indicators of the latent construct PSC. In this study, for PSC, $\alpha_{T1} = .94$, $\alpha_{T2} = .93$.

Enacted PSC

Four items were drawn from the European Survey on New and Emerging Risks – Psychosocial Risks (ESENER) (2009) to measure bullying risk reduction procedures to exemplify enacted PSC. Responses were 1 (*yes*), 0 (*no, don't know*), or missing (*refused*).

Mistreatment climate. One item was used: "In your establishment, is there a procedure in place to deal with bullying or harassment?"

Work design. Two items were used: "In the last 3 years, has your establishment used any of the following measures to deal with psychosocial (stress) risks?" (1) "Changes to the way work is organised?"; and (2) "A redesign of the work area?"

Conflict resolution. One item was used: "In the last 3 years, has your establishment used any of the following measures to deal with psychosocial (stress) risks? "Set-up of a conflict resolution procedure?"

A one factor solution of these indicators in the analysis was used as a global indicator of PSC enacted, which gives a measure of awareness of the PSC procedures overall; $\alpha_{T2} = .63$ was low but not unexpected across a range of different organizational procedures.

Workplace bullying

Bullying was assessed using the definition from the QPSNordic General Nordic Questionnaire (Elo et al., 2000). Participants were asked whether, according to the definition, they had experienced bullying in the last 6 months, with responses coded as 0 (*no*), or 1 (*yes*): "Bullying is a problem at some work-places and for some workers. To label something as bullying, the offensive behaviour has to occur repeatedly over a period of time, and the person confronted has to experience difficulties defending him or herself. The behaviour is not bullying if two parties of approximate equal 'strength' are in conflict or the incident is an isolated event" (Elo et al., 2000, p. 52). We tested the validity of the bullying measure against another used by the Australian government, at Time 2. The latter definition gives further specifics about bullying; "Workplace bullying is defined as repeated and unreasonable behaviour directed towards a worker or a group of workers that creates a risk to health and safety. Repeated behaviour refers to the persistent nature of the behaviour and can involve a range of behaviours over time. Unreasonable behaviour means behaviour that a reasonable person, having considered the circumstances, would see as unreasonable, including behaviour that is victimising, humiliating, intimidating, or threatening. Behaviour whether intentional or unintentional, may be considered to be workplace bullying if it is repeated, unreasonable, and creates a risk to health and safety. Examples include but are not limited to abusive, insulting, or offensive language, deliberately excluding someone from workplace activities or unreasonable workload. Bullying does not include reasonable management action taken in a reasonable way." The correlation between definitions was 0.70, helping to confirm the validity of our measure.

Psychological health problems

The measure of psychological health problems was comprised of three factors: depression, psychological distress, and emotional exhaustion.

Depression. This was measured using the nine item Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, & Williams, 1999), based on diagnostic criteria for a depressive disorder. An example item is "During the last month, how often were you bothered by feeling bad about yourself or that you are a failure or have let yourself or your family down?" Each response was on a 4-point scale: 0 (*not at all*), to 3 (*nearly every day*) ($\alpha_{T1} = 0.81$, $\alpha_{T2} = 0.82$).

Psychological distress. We used the 10-item Kessler 10 (K10; Kessler & Mroczek, 1994) to assess psychological distress (taps anxiety and depressive symptoms); e.g. "In the past 4 weeks, about how often did you feel nervous?" with responses on a 5-point Likert scale, from 1 (*none of the time*) to 5 (*all of the time*) ($\alpha_{T1} = 0.91$, $\alpha_{T2} = 0.83$).

Emotional exhaustion. This was measured using the five-item scale from the Maslach Burnout Inventory (MBI; Schaufeli, Leiter, Maslach, & Jackson, 1996). Responses were on a 7-point Likert scale from 1 (*never*) to 7 (*always*). An example item is "I feel emotionally drained from my work" ($\alpha_{T1} = 0.88$, $\alpha_{T2} = 0.87$).

Since we were interested in a general psychological health problem factor, we used a one factor solution of these indicators in the analysis.

Statistical analysis

Model testing

We tested the study model in one structural equation model (Figure 1) using *Mplus* Version 7.4 (Muthén & Muthén, 1998–2010). As several of the variables were highly positively skewed, as recommended in a review by Finney and DiStefano's (2008), we used a maximum likelihood parameter estimator that corrects for non-normality and produces a Satorra-Bentler (S-C) chi-square (χ^2) (Satorra & Bentler, 2010). We used the MLM estimator to determine parameter estimates, standard errors and a mean-adjusted chi-square test statistic that are robust to non-normality; the MLM chi-square test statistic is also referred to as the Satorra-Bentler chi-square (Muthén & Muthén, 2010, p. 533). Since the MLM chi-square can not be used in a regular way for chi-square difference testing we followed the recommended steps on the *Mplus* website (www.statmodel.com/chidiff.shtml) for model comparisons.

Maximum likelihood estimation methods were used to evaluate model fit including: the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) and the standardized root mean square residual (SRMR). We also used relative indices (Bentler, 1990), the comparative fit index (CFI), the Tucker Lewis index (TLI), and the Akaike information criterion (AIC). Values of CFI and TLI higher than 0.95, and RMSEA values smaller than or equal to 0.06, and SRMR less than 0.08, are indicative of an acceptable fit (Hu & Bentler, 1999); for AIC, lower values indicate better fit (Hoyle, 1995).

The proposed model comprised five latent factors; PSC Time 1 and Time 2, enacted PSC Time 2 only, and psychological health problems Time 1 and Time 2. Bullying was an observed

measure assessed at Time 1 and Time 2. All Time 1 factors were allowed to correlate, all residuals among the Time 2 factors were allowed to correlate, residual terms of the respective indicators were allowed to autocorrelate over time, and the stabilities from respective latent terms were modelled as paths across time, as required in longitudinal data analysis (Zapf, Dormann, & Frese, 1996). Moreover demographics age, sex, and income were included as covariates at Time 1 with causal paths to all latent terms and bullying at Time 2.

We tested four models. Model 1 was the stability model, including temporal stabilities and synchronous correlations. We compared this stability model to competing models adding direct and indirect effects to determine the best fitting model. Model 2 was identical to Model 1 but tested mediation and included paths from PSC Time 1 to enacted PSC Time 2, from PSC enacted Time 2 to bullying Time 2, from bullying Time 1 to enacted PSC Time 2, and from bullying Time 1 to psychological health problems Time 2 (Figure 1, the *mediation* model). Model 3 (Figure 2) added to Model 2 the direct effects of PSC Time 1 to bullying Time 2 and psychological health problems Time 2, and the direct effects of enacted PSC Time 2 to psychological health problems Time 2; this represents the *partial mediation* model (note for analytical reasons noted below Model 3 as proposed was not possible and resulted in modifications (Model 3a and 3b). Finally, for each enacted PSC procedure we ran a separate Model 2 to verify its importance.

Hypothesis testing

To test the mediation process, for example Hypothesis 3, that PSC negatively relates to reduced bullying via enacted PSC: for *path a* (first part of the mediation, from independent measure to mediator) we regressed enacted PSC at Time 2 on PSC Time 1 (Hypothesis 1); for *path b* (second part of the mediation, from mediator to dependent measure) we regressed bullying Time 2 on enacted PSC Time 2 (controlling for baseline bullying) (Hypothesis 2). We examined the indirect (mediation) effects formally (*path a* \times *path b*). The remaining hypotheses were tested similarly.

Ideally in testing mediation three waves of data should be used, one for each variable in the mediation process, such that *path a* and *path b* are longitudinal and in time sequence (Cole & Maxwell, 2003). Our analysis faced restrictions since enacted

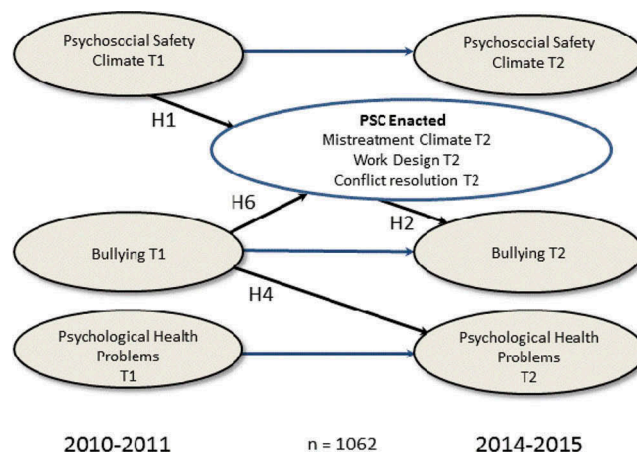


Figure 1. The study model (mediated).

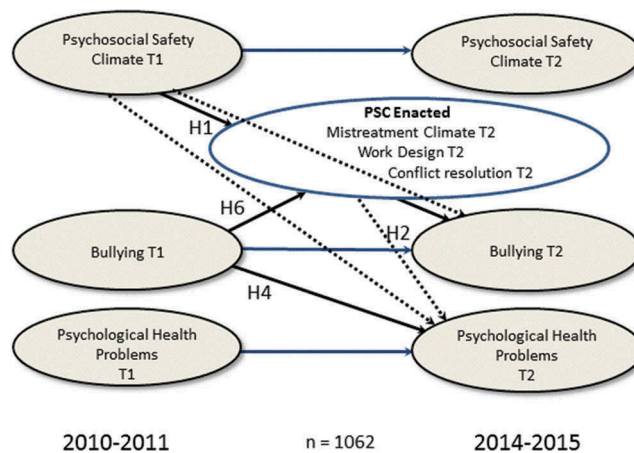


Figure 2. Alternative Model 3.

PSC was assessed only at Time 2. For instance for Hypothesis 3 and 7 *path a* was longitudinal (Time 1 to Time 2) and *path b* cross-sectional (Time 2). We assumed across all hypotheses that the cross-sectional effects would be evident longitudinally.

We also assumed that the time lag of 4 years was appropriate for detecting effects of interest between: PSC and the manifestation of procedures (enacted PSC); workplace bullying and the enacted PSC; and bullying and psychological health problems. We expected that the implementation of organisational procedures (PSC enactment) would take time to develop and deliver, triggered by PSC or bullying, and the 4 year lag seemed reasonable to capture this. For the causal effect of bullying on psychological health effects we expected small effects. Bailey, Dollard, McLinton, and Richards (2015) did not find a lagged relationship between bullying and harassment on emotional exhaustion over 1 year but Einarsen and Nielsen (2015) found unadjusted significant effects on psychological distress over 5 years; as bullying is a long-lasting process (Einarsen, 2000) again 4 years seemed a reasonable lag for the bullying to psychological health effects relationship. As our hypotheses were directional and the effects across time were likely to be small after accounting for baseline effects and covariates, we allowed one-tailed tests for the impact of bullying on psychological health over 4 years, and the related mediation (Hypothesis 5).

Hypothesis 5, was premised on half-longitudinal mediation. As we did not have sequential time points, in order to assume a time linear process, we made a stationarity assumption that the causal effects for *path b*, estimated between the two measurement occasions Time 1 and Time 2 (bullying Time 1 to psychological health problems Time 2), are the same as between future time points, in this case Time 3 and Time 4 (Little, 2013).

Results

Model testing

Correlations between study variables are shown in Table 2. Variables related in expected ways. For instance PSC is related to future procedures, bullying and psychological health problems; bullying is related to future psychological health problems. However it is best to explore relationships

simultaneously and longitudinally in a nomological network so we move to the structural equation model results.

We compared Model 2, the study model, against Model 1 the stability model. Using scaling correction factors (see Table 3) and the formula provided by *Mplus*, the chi square difference ($df = 4$) was 71.02, $p < 0.001$, indicating that study Model 2 was a significantly better fit than Model 1. Moreover adding additional direct paths (Model 3) did not improve the fit of the Model 2; first we found that adding the three direct effects simultaneously resulted in no convergence. Next we added the PSC enacted to psychological health problems path separately; the effect was not significant and did not improve the model (Model 3a). We added a direct path from PSC Time 1 to psychological health problems Time 2, and again the effect was not significant and did not improve upon Model 2 fit (Model 3b). Finally adding the PSC Time 1 to bullying Time 2 direct path, resulted in non-identification. We accepted Model 2, the more parsimonious, mediated model, as our final study model, and the fit was acceptable as shown in Table 3. Note AIC high largely due to control measures used in the model (AIC increased from 29511.87).

In the study Model 2, for the latent PSC factor, the subscales of PSC management support, management priority, organizational participation, and organizational communication at Time 1 loaded 0.85, 0.89, 0.86, and 0.77, and at Time 2, loaded 0.83, 0.91, 0.86, and 0.79, respectively. For enacted PSC, the items relating to mistreatment climate, work design-way work is organised, work design-redesign of work area, and set up a conflict resolution procedure loaded 0.31, 0.75, 0.61, and 0.52. The depression, distress, and exhaustion factors loaded on the latent factor psychological health problems, 0.86, 0.87, and 0.65 at Time 1, and 0.84, 0.88, and 0.66 at Time 2, respectively. The stabilities between the PSC measures was 0.55, the bullying measures 0.21, and the psychological health problems measures was 0.68 (Figure 3). All factor loadings were significant.

Hypothesis testing

Hypothesis 1 proposed that PSC is positively related to enacted PSC. As found in Model 2, PSC was significantly positively related to enacted PSC, $\beta = 0.31$, $B = 0.12$, $SE = 0.02$, $z = 7.96$, $p < 0.001$.

Table 2. Correlations between study variables (*N* = 1062).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|--------------------------|--------|--------|--------|--------|--------|--------|-------|-------|-------|--------|-------|-------|-------|
| Time 1 | | | | | | | | | | | | | |
| 1. PSC | | | | | | | | | | | | | |
| 2. Bullied | -.24** | | | | | | | | | | | | |
| 3. Depression | -.28** | .18** | | | | | | | | | | | |
| 4. Distress | -.30** | .26** | .76** | | | | | | | | | | |
| 5. Emotional exhaustion | -.38** | .21** | .56** | .56** | | | | | | | | | |
| Time 2 | | | | | | | | | | | | | |
| 6. PSC | .52** | -.11** | -.19** | -.22** | -.22** | | | | | | | | |
| 7. Bullied | -.16** | .20** | .11** | .15** | .12** | -.28** | | | | | | | |
| 8. Depression | -.21** | .19** | .57** | .51** | .43** | -.27** | .14** | | | | | | |
| 9. Distress | -.20** | .20** | .52** | .57** | .42** | -.27** | .24** | .74** | | | | | |
| 10. Emotional exhaustion | -.26** | .18** | .43** | .42** | .61** | -.32** | .16** | .56** | .60** | | | | |
| 11. Mistreatment climate | .13** | .03 | -.04 | -.04 | -.03 | .19** | .00 | -.05 | -.06* | -.08* | | | |
| 12. Work reorganization | .19** | .00 | -.05 | -.06 | -.03 | .35** | -.06 | -.06* | -.05 | -.09** | .21** | | |
| 13. Work area redesign | .17** | .00 | -.08* | -.07* | -.08** | .26** | -.06 | -.07* | -.05 | -.10** | .12** | .49* | |
| 14. Conflict resolution | .17** | .02 | -.04 | -.04 | -.04 | .25** | -.03 | -.06* | -.07* | -.10** | .30** | .37** | .30** |

*, *p* < .05; **, *p* < .01 (2-tailed); PSC: psychosocial safety climate.

Table 3. Comparison of alternative models.

| | χ^2 | <i>df</i> | CFI | TLI | RMSEA | SRMR | AIC | CR |
|---|----------|-----------|-----|-----|-------|------|----------|------|
| Model 1 Stability model | 621.19 | 192 | .96 | .95 | .046 | .060 | 43455.60 | 1.09 |
| Model 2 Mediated model | 550.17 | 188 | .96 | .95 | .043 | .036 | 43384.49 | 1.09 |
| Model 3a M2 + enacted PSC → psychological health problems T2. | 550.18 | 187 | .96 | .95 | .043 | .036 | 43386.49 | 1.06 |
| Model 3b M2 + PSC T1 → psychological health problems T2. | 550.18 | 187 | .96 | .95 | .043 | .036 | 43386.49 | 1.09 |

Satorra-Bentler chi-square χ^2 ; note this can not be used for chi-square difference testing in the regular way; CFI: Comparative Fit Index; TLI: Tucker Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual; AIC: Akaike Information Criterion; CR: scaling correction factor for MLM. All model χ^2 values significant at ***.

Therefore Hypothesis 1 was supported. Hypothesis 2 proposed that enacted PSC is negatively related to bullying, and this was also supported, $\beta = -0.40$, $B = -0.33$, $SE = 0.10$, $z = -3.43$, $p < 0.001$. Hypothesis 3 proposed that enacted PSC mediates the negative relationship between PSC and bullying and harassment. First, we noted in a preliminary analysis as a single causal factor that PSC Time 1 was directly and significantly negatively related to bullying Time 2, $\beta = -0.11$, $B = -0.04$, $SE = 0.01$, $z = -3.45$, $p < 0.001$, implying a relationship existed to explain. Turning to Model 2, the mediated effect of PSC Time 1 on bullying Time 2 via enacted PSC

Time 2 was significant, $B = -0.04$, $SE = 0.01$, $z = -3.68$, $p < 0.001$, confirming Hypothesis 3.

Hypothesis 4 proposed that bullying is positively related to psychological health problems (i.e., depression, distress, and emotional exhaustion) controlling for psychological health problems at T1, and this was supported, $\beta = 0.06$, $B = 0.10$, $SE = 0.05$, $z = 1.99$, $p < 0.05$.

Hypothesis 5 proposed that PSC is indirectly negatively related to poor psychological health through enacted PSC and bullying exposure, and required examining the mediated effect derived

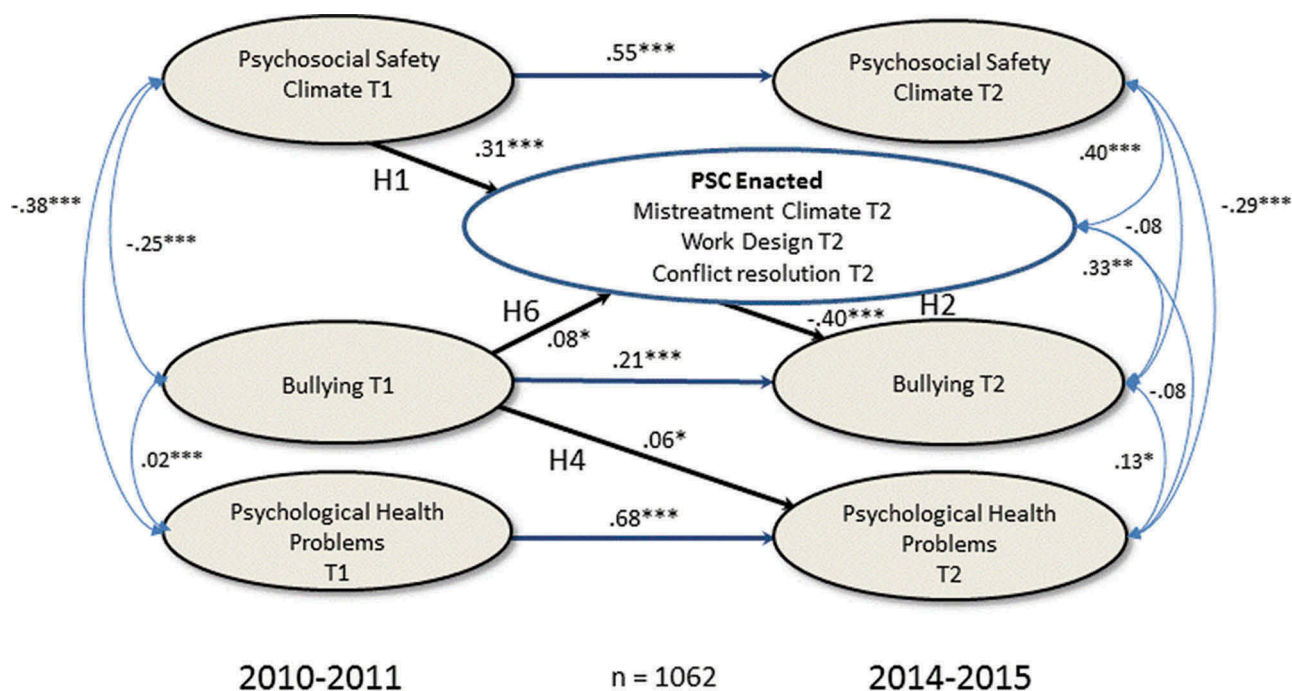


Figure 3. Final model.

from Hypothesis 3 (PSC → enacted PSC → bullying) as *path a* with Hypothesis 4 (bullying → psychological problems), as *path b*; the indirect effect, PSC → enacted PSC → bullying → psychological health problems (a x b) was supported, $B = -0.004$, $SE = 0.002$, $z = -1.72$, $p < 0.05$ (one tailed). Note that since initial analysis showed PSC was not directly related to psychological health problems, Hypothesis 5 is an indirect rather than mediated effect.

Hypothesis 6 proposed that bullying is positively related to enacted PSC $\beta = 0.08$, $B = 0.10$, $SE = 0.04$, $z = 2.55$, $p < 0.05$, and this was supported. Hypothesis 7 proposed that workplace bullying negatively predicts future bullying via enacted PSC; *path a* (H6) and *path b* (H2) of the mediation effect were both significant. From Model 2, we found a significant negative mediation effect of bullying Time 1 on bullying Time 2 via enacted PSC, $B = -0.03$, $SE = 0.02$, $z = -2.17$, $p < 0.05$.

Finally, to verify the importance of each PSC procedure we ran Model 2 for each PSC procedure independently, particularly because mistreatment procedure loaded poorest on the factor (Table 4). Hypothesis 5, encompassing Hypothesis 1, 2, and 3, was supported; PSC was linked to psychological health problems via each procedure and bullying. However, bullying only gave rise to two procedures: Hypothesis 6 was supported for mistreatment climate, and conflict resolution, and Hypothesis 7 was supported only in relation to these procedures.

Discussion

From the beginning, PSC theory proposed that low PSC was a “cause of the causes” of other psychosocial risks at work (Dollard & Bakker, 2010). In this study, we explored the mechanisms via which PSC can be enacted to reduce psychosocial risks, such as bullying, a psychosocial health hazard of considerable concern in workplaces worldwide. We proposed that high levels of PSC are effective in reducing psychosocial risks because of the actions it gives rise to. Moreover we proposed that PSC contextualizes the enacted climate because it is more distal to risks. We looked at the PSC context as linked to naturally occurring actions in three areas: bullying mistreatment climate, work design, and conflict resolution. Specifically, we operationalized these psychosocial mechanisms in terms of whether or not organizations had implemented procedures in each of these areas (enacted PSC), and examined their effects on bullying exposure and in turn on psychological health problems, characterized by depression, distress, and emotional exhaustion.

As expected, we found that PSC predicted bullying over 4 years, mediated by enacted PSC. These finding suggests that an increase in PSC in an organization decreases the likelihood of bullying through its influence on procedures implemented in three areas: those directly addressing bullying, reducing stressors, and resolving conflict. Moreover, PSC was indirectly linked to reduced likelihood of psychological health problems indirectly through its influence on enacted PSC and subsequent bullying.

We also found evidence in support of the hypothesis that bullying would negatively indirectly relate to future bullying, because of the specific organizational procedures it triggers. In other words, the procedures (enacted PSC) introduced following the experience of bullying inhibited future workplace bullying. Prior research relating to the effectiveness of anti-bullying

Table 4. Enacted PSC; mediation models for each PSC procedure.

| Procedure | Model | χ^2 | H1 | | | H2 | | | H3 | | | H5 | | | H6 | | | H7 | | | |
|-------------------------|--------|----------|------------------|-----|---------|--------------------|---------|-----|-----------------------------|--------|-------|---|-----|-------|--------------------|------|-----|----------------------------|-----|-------|-----|
| | | | PSC T1 → Proc T2 | B | SE | Proc T2 → Bully T2 | B | SE | PSC T1 → Proc T2 → Bully T2 | B | SE | PSC T1 → Proc T2 → Bully T2/T1 → Psych T2 | B | SE | Bully T1 → Proc T2 | B | SE | Bully T1 → Proc → Bully T2 | B | SE | |
| 1. Mistreatment climate | 436.63 | .05*** | .01 | .01 | -.85*** | .30 | -.04*** | .01 | .01 | -.004+ | 0.002 | -.06* | .03 | -.05* | .02 | -.03 | .02 | -.03 | .02 | -.04+ | .02 |
| 2. Work reorganization | 427.67 | .11*** | .02 | .02 | -.37** | .11 | -.04*** | .01 | .01 | -.004+ | 0.002 | .08 | .05 | -.03 | .02 | .08 | .06 | -.03 | .02 | .05 | .02 |
| 3. Work area redesign | 423.89 | .10*** | .02 | .02 | -.40*** | .13 | -.04*** | .01 | .01 | -.004+ | 0.002 | .08 | .06 | -.03 | .02 | .08 | .06 | -.03 | .02 | .05 | .02 |
| 4. Conflict resolution | 415.28 | .11*** | .02 | .02 | -.38*** | .12 | -.04*** | .01 | .01 | -.004+ | 0.002 | .11* | .05 | -.04+ | .02 | .11* | .05 | -.04+ | .02 | .05 | .02 |

df = 129; +, $p < 0.05$ (1-tailed), *, $p < 0.05$; **, $p < 0.01$; ***, $p < .001$; T: Time; PSC: psychosocial safety climate; Proc: Procedures.

procedures (Cooper-Thomas et al., 2013) and climate (Baillien et al., 2014) in reducing bullying, have been cross-sectional and unable to confirm the direction of the relationships. We can conclude that over and above the effects of PSC, longitudinally, bullying gives rise to anti-bullying procedures, specifically mistreatment climate and conflict resolution, and these procedures are in turn related to reduced bullying (Neall & Tuckey, 2014). Although this latter link, between procedures and bullying, is cross-sectional an advance of our study over others is that we accounted for baseline levels of bullying, i.e. the positive relationship between bullying across time.

Drilling down we found that PSC is likely to lead to the full range of procedures including preventative procedures, such as work redesign (Skogstad et al., 2011), whereas bullying itself is likely to lead to limited reactionary procedures to address bullying and harassment or resolve conflict.

Theoretical implications

Much of the theorization regarding bullying, well supported by empirical findings, has proposed work and organizational factors as precursors to bullying. Our contextual climate model of bullying confirmed this conceptualization and found support for PSC as a distal organizational source of bullying. While there was sufficient empirical evidence previously to warrant claiming low PSC as the “cause of the causes” of bullying, the theoretical mechanism proposed and tested here was via enacted PSC, operationalized in terms of three different psychosocial processes.

First, our results supported the conceptualization of a specific bullying mistreatment climate as one pathway linking PSC to bullying. Theoretically, without a bullying policy, especially one that is enacted through procedures to effectively address negative workplace behaviour, mistreatment may prevail. Under such conditions, workers may perceive that bullying behaviour is essentially condoned. The lack of will to address the bullying issue likely arises from a low PSC context.

Second, due to work reorganization and work redesign strategies that reduce work stressors (and by inference work stress) mediate the relationship between PSC and reduced bullying, we found support for a proposed second pathway from PSC to reduced bullying via improved work design. In high PSC contexts, work stressors are prevented and managed that should reduce the otherwise fertile ground for frustration and in turn bullying. Moreover, bullying that is motivated to protect personal power and resources, or which spills across organizational layers in an effort to achieve production goals, would be reduced as work quality increases (Skogstad et al., 2011; Tuckey et al., 2009).

Finally, we found support for a third pathway wherein instituted conflict resolution procedures that arise from PSC are associated with reduced bullying. If conflicts can be resolved early and effectively through the implementation of effective procedures, escalation into ongoing bullying situations can be prevented. Taken together, these empirical observations imply that the link between PSC and workplace bullying can be theoretically explicated in three processes, the first addresses the bullying and harassment behaviour, the second the stressful work context, and the third, the conflict context. When PSC is implemented as procedures (enacted PSC) congruent with these paths, we expect reduced bullying.

Moreover, although logical that organizations would introduce procedures against bullying when it occurs, the results

support a resistance phenomenon in workplace bullying theory, because exposure to bullying was related to future procedures implemented against it. These were procedures of a reactionary nature, mistreatment climate, and conflict resolution. By contrast PSC gave rise to a broad brush of procedures including those that were clearly bullying preventative (work redesign). Theoretically these results give rise to a dynamic interpretation of bullying in the workplace, where PSC can prevent bullying, and remedial actions implemented following bullying, can add, to further reduce bullying, in a cycle of repair.

Practical implications

Evidence that could inform future practice regarding what measures or interventions to implement to reduce bullying potentially derives from evaluated intervention studies – however there is a dearth of such studies (Escartín, 2016; Hodgins et al., 2014; Vartia & Leka, 2011). Against this knowledge gap, our study provides important insights to understand what a bullying free organization would look like. Our findings regarding naturally occurring procedures suggest the need for a multi-component approach, which includes bullying and harassment procedures, work stressor reduction through work redesign, and conflict resolution, to reduce or prevent bullying. This eclectic approach concurs with a conclusion of Hodgins et al. (2014) that multi-component, organizational level approaches should be considered as a basis for developing interventions to address workplace bullying.

We found, however, that these procedures are more likely to occur in a high PSC context. Indeed, there are parallels between the principles of PSC and those underpinning effective interventions for preventing incivility at work. Specifically, the Civility Respect and Engagement in the workplace (CREW) intervention, rated as effective in reducing mistreatment as evidenced in two rare quality studies (see Hodgins et al., 2014), used an organizational development approach, designed to create a social context dedicated to improving social relations (Osatuke, Moore, Ward, Dyrenforth, & Belton, 2009) and foster change in attitudes, values, and beliefs, and the organizational climate. Consistent with PSC, the CREW approach involved employee participation from all levels of the organization along with demonstrated commitment from management.

A crucial difference is that PSC is also expected to affect work design and leadership aspects that could affect bullying. This difference is important given that, consistent with much of the literature, particularly from the UK, US, and Europe but less so in Scandinavian countries (Török et al., 2016), we found that most cases of bullying, nearly 70%, were perpetrated by a supervisor. This finding implies that the vanguard of organizational PSC climate, the leaders themselves, need professional training and development in job design, ethical leadership – how to carry out managerial functions whilst ensuring fair treatment – and training in the development of conflict resolution processes, to provide an optimal work climate.

Our results support a preventative approach to bullying. Something can be done to reduce bullying; this is important to know, particularly in Australia which has very high bullying rates by international standards (Potter, Dollard, & Tuckey,

2015). Building PSC is likely to yield the strongest effects on future bullying because of the broad and effective procedures it can trigger to reduce bullying; waiting for bullying to occur is likely to result in only reactive procedures, although these too may reduce future bullying.

Limitations and future research

We used a population-based approach to establish a representative sample of workers across a range of industries and occupations. Other approaches, such as recruiting from organizations, may render biased samples because of gate keeping by organizations not wishing to raise awareness of sensitive issues among workers. A limitation of our sampling method was that the operationalization of PSC was at the individual level. The multilevel operationalization of climate as a shared construct was not possible since most workers did not come from common workplaces. Modelling climate at a group level is a common methodological challenge, as Yang et al. (2014) found in their review that only 11% of mistreatment climates were estimated at the group level. The issue of non-independence in the data should nevertheless be addressed. In the current study we did not have organizational identifiers for 70% of the sample; only 9% ($n = 96$) of the total sample were from common organizations (four or more members), and using ANOVA we found no differences in means between organizations on any of the measures. Further, reanalysis of the study model excluding these 96 participants yielded virtually the same results, helping us to draw the conclusion that non-independence of some data is not a threat to the results of the study.

Moreover, because the data are at the individual level we cannot rule out that individual biases give rise to common method problems and relationships between variables that are assessed simultaneously. However our panel design did enable us to control for baseline effects in bullying and psychological health problems, and stability in PSC, along with gender, age and income, helping to rule out individual idiosyncrasies underlying the relationships. Another issue with the sampling was that enacted PSC was only measured once at Time 2 where employees were asked to recall policies and procedures during the intervening period. This meant that at least one path in each mediation test was assessed cross-sectionally; this may have the effect of overestimating the true relationships between variables, for example due to common method effects. Moreover we could not control for baseline levels of enacted PSC, limiting our capacity to draw causal conclusions in all paths involving enacted PSC as a mediator or dependent measure. Future research should measure enacted PSC over time, as repeated measures, to assess how policy and procedural changes affect workplace behaviours and health outcomes. In multilevel research aggregating procedures to the organizational level, or integrating reports of procedures by occupational health and safety leaders may also prove fruitful. Also considering which procedures work best simultaneously would be good to test, but we could not find convergence with such a model with our data. Moreover since we used a half-longitudinal design, our findings warrant replication in data where hypothesized processes can be modelled in time sequence.

Conversely effects may have been underestimated across our time lag of 4 years in the longitudinal analyses. For

instance it may have been too long to assess the maximal effect of bullying on psychological health (cf. Dormann & Griffin, 2015). The negative effects of bullying on psychological health may have resolved due to enacted PSC measures, with a corresponding improvement in health, or the peak effect on health may have occurred at an earlier stage. Additionally, as per Einarsen and Nielsen (2015), measuring bullying via behavioural exposure rather than victimization (as we did) may yield stronger effects on future psychological health problems.

As observed by others (Einarsen et al., 2016) PSC is a broader climate construct that subsumes the more specific mistreatment climate. Future research at the group level may pursue the concept of nested climates. Since PSC aims to prevent psychological damage at work, and since bullying is a known risk factor for psychological health problems, PSC could give rise to other climates such as mistreatment climate and conflict management climate — that in turn reduce the incidence of bullying and promote psychological health. PSC at the corporate level may also give rise to PSC at lower levels such as within teams. Future research could also explore emergent processes, such as why exposure to bullying gives rise to future procedures against it, whether it is in response to legal requirements, productivity concerns, or in reaction to a collective resistance response (employee concerns).

Conclusion

PSC reduced bullying over 4 years and consequently psychological health problems, through enacted PSC. We found that PSC could be enacted in ways to reduce bullying, via psychosocial processes involving mistreatment climate, work design, and conflict resolution. Our findings suggest the need for a multi-component approach, which includes anti-bullying policies and procedures, work design, and conflict resolution, to reduce or prevent bullying. Procedures that emerge in a high PSC context to handle psychosocial hazards can be effective in reducing worker mistreatment. Waiting for bullying to occur leads to limited reactionary responses. Ultimately, building a strong climate for psychological health is fundamental to bullying prevention.

Disclosure statement

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