Leveraging psychosocial safety climate to prevent ill-being: The mediating role of psychological need thwarting

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A B S T R A C T

This study aimed to identify a new lever to prevent workers' burnout, work-family conflict, and turnover intentions by investigating psychosocial safety climate's relation to these undesirable outcomes. More specifically, drawing on self-determination theory, we explored the mediating role of psychological need thwarting in these relationships. Study 1 used a cross-sectional design to demonstrate that psychosocial safety climate was negatively related to employees' work-family conflict and turnover intentions, through the mediation of psychological need thwarting. Study 2 built upon these results by using a cross-lagged design to show that psychosocial safety climate, through its relation with psychological need thwarting, related to a decrease in burnout three months later. Burnout itself explained an increase in work-family conflict and turnover intentions. Altogether, this paper contributes to self-determination theory in organizations and sheds light on the longitudinal beneficial effect of psychosocial safety climate to prevent undesirable consequences for employees and organizations both. Theoretical contributions and perspectives, as well as implications for practice are discussed.

1. Introduction

Psychological health in the workplace has become a major issue in a context where western organizations have been facing many challenges (e.g., drastic changes, austerity measures) (Demerouti, Xanthopoulou, Petrou, & Karagkounis, 2017). In this complex environment, workers' psychological health is jeopardized as they have to devote lots of their personal resources to cope with such challenging realities. This may, for instance, expose them to burnout (Demerouti et al., 2017). Moreover, the more exhausted workers are, the more likely they are to struggle balancing their private and work lives (Raja, Javed, & Abbas, 2017) and may thus feel that their work life interferes with their private life (i.e., work-family conflict; WFC). Defined as a "form of interrole conflict in which the general demands of, time devoted to, and strain created by the job interfere with performing family related responsibilities" (Netemeyer, Boles, & McMurrian, 1996, p. 401), WFC has drawn attention as it can impede individual and organizational functioning. For instance, it can lead to reduced citizenship behaviors (Netemeyer, Maxham, & Pullig, 2005) and higher sickness absence (Nilsen, Skipstein, Østby, & Mykletun, 2017). Indeed, because they consume their resources in their professional life at the cost of their private life, employees may disengage from work to prevent an additional loss of their limited resources (Edwards & Rothbard, 2000).

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Exhausted employees may start pursuing different job alternatives in an attempt to protect their remaining resources, thus increasing their turnover intentions (Steffens, Yang, Jetten, Haslam, & Lipponen, 2017). Turnover intentions are a major issue for organizations as they strive to retain those employees whom they invest in by recruiting, training, and mentoring them along their career (Jones, 2008). Moreover, the quitting of some employees may have an unsettling effect on those who stay within the organization in terms of morale and productivity (Batt & Colvin, 2011). Altogether, turnover jeopardizes organizational performance (Heavey, Holwerda, & Hausknecht, 2013).

2. The present research

In line with these issues, we conducted a set of studies that aimed to identify important determinants of workers' burnout, WFC, and turnover intentions, but also to explore the mechanisms underlying these relations. Specifically, this research aimed to contribute to theory and practice in several ways. First, we explored a critical organizational lever to reduce employee ill-being, namely psychosocial safety climate (PSC). PSC refers to the extent of organizational concern for workers' psychological health and to the practices implemented to support such concern (Dollard & Bakker, 2010). Not only is PSC conceptually distinct from other similar constructs such as security climate or perceived organizational support, but it is also more strongly correlated with psychological health outcomes (e.g., burnout) than other organizational measures. It is thus considered as a lead indicator of psychosocial risks and harms (Idris, Dollard, Coward, & Dormann, 2012). Our research aimed to gain a better understanding of how to prevent burnout, WFC and turnover intentions, and focused on PSC as a lever to do so, in order to further consider this dimension in the prevention of psychosocial harm in the workplace.

Additionally, PSC remains only scarcely investigated outside of the Asia Pacific area (Yulita, Idris, & Dollard, 2016). The current paper aimed to broaden the knowledge associated with PSC by examining its relation with French workers' burnout as well as to extend the nomological network associated with PSC. Indeed, there is no report of PSC's association with workers' attitudes such as WFC and turnover intentions. Yet, it would contribute to both theory and practice to show that PSC not only relates to health-related outcomes but can also relate to workers' attitudes. It would confirm the critical lever that PSC constitutes to improve workers functioning in terms of their well-being but also in terms of how they relate to their work-life balance. It would also show PSC's relevance to promote organizational functioning as turnover intentions are a reliable indicator of effective turnover (Richer, Blanchard, & Vallerand, 2002), which can impede organizational performance.

Second, most of the research on PSC used cross-sectional or prospective designs to explore the effects of PSC (e.g., Dollard et al., 2012), and thus did not allow to examine over-time changes in the studied dimensions. Therefore, we aimed to offer a simultaneous examination of the longitudinal links between PSC and different outcomes, while controlling for the stability of each construct over time, through a cross-lagged design.

Third and finally, although previous studies have well explored how PSC relates to ill-being through job demands (e.g., Idris et al., 2012), less is known about the psychological mechanisms explaining such relationships. Similarly, most of the research on the processes that explain the link between the work environment and individual outcomes has focused on work-related mechanisms, and less is known about the psychological mechanisms involved, even less so over time (e.g., Michel, Mitchelson, Pichler, & Cullen, 2010). Our research intended to fill the gap regarding the psychological mechanisms involved in such relationships, and to explore these mediating processes over time.

We based our work within the Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) framework. While exploring the conditions that could lead to high quality motivation and optimal functioning, SDT scholars have repeatedly and consistently found that the impact of environmental factors (e.g., job design, managerial styles) on workers' motivations and experiences is explained by three basic psychological needs (i.e., autonomy, competence, and relatedness). Indeed, SDT researchers have demonstrated that workplaces that allow for the satisfaction of these basic psychological needs facilitate individuals' adaptive functioning by providing them with the psychological resources that promote their personal development and their optimal functioning (Deci & Ryan, 2000). Conversely, SDT has more recently demonstrated that the work environment could lead to maladaptive functioning by thwarting employees' psychological needs (e.g., Trépanier, Fernet, & Austin, 2016). Indeed, it is argued that a sustained situation of need frustration contributes to a detrimental spiral of vulnerabilities for non-optimal functioning (Vansteenkiste & Ryan, 2013). Therefore, we aimed to examine the mediating role of psychological need thwarting in the relationship between PSC and maladaptive employee functioning (i.e., burnout, WFC, and turnover intentions) and to offer a first examination of how need thwarting may underlie these specific relations over time.

In order to achieve the above-mentioned aims (see Fig. 1), two studies were conducted. In Study 1, we looked into the mediating role of psychological need thwarting in the relationships between PSC on one hand, and turnover intentions and WFC on the other hand. In Study 2, we aimed to extend this investigation by examining the dynamic of these links over time and by observing another dimension (i.e., burnout). Precisely, we analyzed the links between PSC and respectively need thwarting, burnout, WFC and turnover intentions, over time.

3. Study 1

3.1. PSC, WFC and turnover intentions

Because of their aforementioned deleterious effects, scholars have tried to identify the factors that may reduce workers' WFC and turnover intentions. Despite the variety of observed determinants of these variables, research has repeatedly demonstrated the
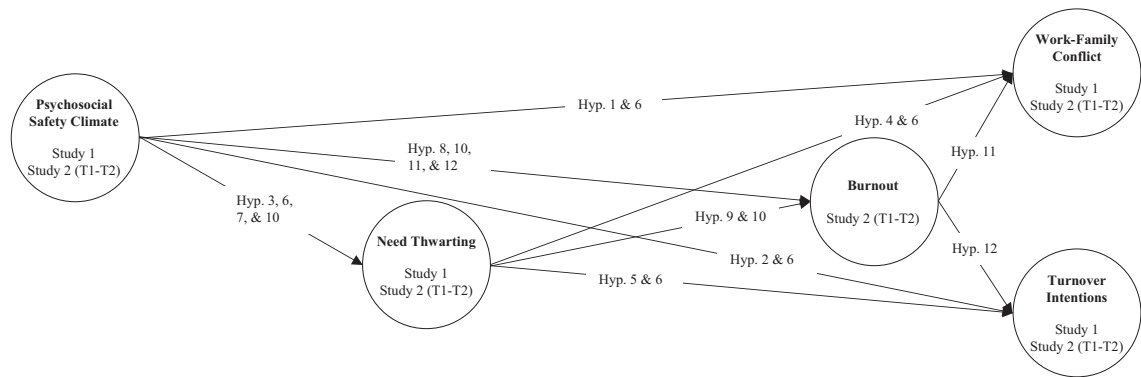
Fig. 1. Conceptual Model.
Note. Hyp. = Hypothesis; T1 = Time 1; T2 = Time 2.

significant impact of organizational factors (e.g., organizational support, leadership) on WFC (e.g., Leineweber, Chungkham, Westerlund, Tishelman, & Lindqvist, 2014) and turnover intentions (e.g., Allen & Shanock, 2013; Aarons, Sommerfeld, & Willging, 2011). Indeed, organizational characteristics oriented towards employee well-being have a significant effect on individual consequences as they refer to formal practices and policies that directly influence individuals' work experience. Specifically, scholars argue that preventive interventions that are designed for and implemented across an entire organization are more expected to observe successful outcomes (Maslach, 2017).

In the present paper, we focused on one potential organizational determinant of WFC and turnover intentions, namely PSC (Dollard & Bakker, 2010). "PSC is defined as policies, practices, and procedures for the protection of worker psychological health and safety" (Dollard & Bakker, 2010, p. 180), and is characterized by four dimensions. First, management commitment questions whether senior management commits and engages in preventing workers' ill-being at work. Second, management priority refers to the priority set by senior management on psychological health issues, over productivity or efficiency concerns. Third, organizational communication underscores the relevance of welcoming employees' concerns and suggestions when it comes to psychological safety and health, as well as the importance of communicating about these aspects. Finally, organizational participation pertains to the necessity of actively consulting employees, unions, and occupational health and safety representatives during discussions on psychological health, safety policies, and preventive measures (Dollard & Bakker, 2010).

A number of empirical studies showed PSC to negatively relate to undesirable outcomes such as depression and psychological distress (e.g., Bailey, Dollard, & Richards, 2015; Idris et al., 2012). In other words, when workers' psychological health does not represent an organizational priority through dedicated policies, organizations may observe deleterious effects in terms of employee ill-being. Even though the association between PSC and WFC has been largely ignored, there is evidence suggesting that these variables could be related. Camerino et al. (2010) showed that effective communication on occupational hazards and health between employees and safety experts, as well as employee participation in preventive measures were negatively related to WFC. In line with these findings, it could be argued that senior management encouraging policies and procedures allowing for employees to be heard when they experience work-home balance issues, and managers implementing concordant practices (i.e., high PSC) would result in lower WFC. Indeed, by hearing employees' concerns in terms of WFC and by associating them to the identification of solutions towards a better conciliation of their work and family roles, organizations support employees' autonomy and their optimal functioning (Deci & Ryan, 2000), and provide themselves with the means to improve work-home balance. On the contrary, when organizations do not prioritize well-being in the workplace and do not allow workers to express their WFC related concerns (i.e., low PSC), employees may have to tap into their own resources to juggle the many demands of their different life roles (Edwards & Rothbard, 2000), therefore leading to higher levels of WFC.

Hypothesis 1. PSC negatively relates to WFC.

Similarly, research suggested that organizational interventions to improve well-being in the workplace were efficient strategies to lower workers' turnover (Heavey et al., 2013). Indeed, employers who do not invest in workplace safety and health are less likely to attract new professionals and to retain their experimented employees (Baumann et al., 2001). On the opposite, promoting healthy and supportive work environments constitutes a key strategy to gain staff loyalty (Lavoie-Tremblay, O'Brien-Pallas, Gélinas, Desforges, & Marchionni, 2008). One could thus argue that when senior management prioritizes employee well-being through effective policies and procedures (i.e., high PSC), favorable conditions are created for employee retention. Indeed, when workers feel valued and sense that their well-being is cared for, they are less likely to quit their employer (e.g., Allen & Shanock, 2013) as they feel encouraged to return this positive treatment by reciprocally having attitudes and behaviors that are beneficial to the organization (Rhoades & Eisenberger, 2002). Moreover, when they allow employees to participate in decision making (Aarons et al., 2011), organizations create the conditions that allow to reduce staff turnover intentions. Conversely, when there is a lack of organizational consideration for workers' psychological health and safety (i.e., low PSC), management may ignore or get an inaccurate assessment of the work demands that put workers' well-being at risk. Employees may feel that their true potential and their self-realization are

jeopardized (Deci & Ryan, 2008) and are thus more inclined to protect their remaining resources (Hobfoll, 2001) through an extreme withdrawal from work (i.e., turnover).

Hypothesis 2. PSC negatively relates to turnover intentions.

3.2. The role of psychological need thwarting

Assuming that PSC holds negative relations with WFC and turnover intentions, one can wonder about the processes that may underlie these links. In other words, through which mechanisms could these links be explained? Most of the literature on PSC has focused on the mediating role of job characteristics (e.g., Law, Dollard, Tuckey, & Dormann, 2011) as conceptualized within the Job Demands-Resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). According to this framework, low PSC translates into managerial practices that lead to job demands (e.g., emotional demands, role conflict) which in turn generate ill-being (e.g., depression). Conversely, high PSC conveys managerial practices that prompt job resources (e.g., supervisor support, coworkers support, learning opportunities) which in turn lead to well-being (Idris, Dollard, & Tuckey, 2015).

The JD-R model offers valuable insight on the relationships between organizational dimensions, job characteristics, and psychological health. Yet, it does not focus as much on workers' psychological experience in these processes. Therefore, we drew on another theoretical framework to gain a better understanding of the psychological conditions that may explain the relations between PSC and individual consequences. Focusing on the individual experience people have within different environments, SDT (Deci & Ryan, 2000) points to the psychological needs for autonomy, competence, and relatedness as essential nutrients for individuals' optimal functioning. First, the need for autonomy refers to individuals' need to feel volitional and responsible for their actions. Second, the need for competence underscores one's need to feel efficient when interacting with their social environment and to have opportunities to express one's abilities. Finally, the need for relatedness emphasizes individuals' need to feel secure in their relationships and to be able to rely on others.

SDT showed that it is through its satisfying of these needs that the social environment relates to workers' psychological adjustment in various settings such as the sports (e.g., Teixeira, Carraça, Markland, Silva, & Ryan, 2012) or the educational (e.g., Hein, Koka, & Hagger, 2015) domains. Additionally, scholars have recently emphasized need thwarting (i.e., feeling oppressed, incompetent, or despised) as a more adverse psychological experience than low need satisfaction (i.e., having a sense of not being fully autonomous, efficient, or appreciated) (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). These researchers have indicated that psychological need satisfaction and thwarting are not the opposite ends of a continuum, but instead they are two distinct psychological experiences with distinct consequences (e.g., Huyghebaert et al., 2017). More specifically, the sole consideration of low need satisfaction does not suffice to explain adverse consequences. Instead, it is necessary to consider the thwarting of these needs when investigating non-optimal functioning (Bartholomew et al., 2011). It should also be noted that when negative consequences are the sole object of investigation, scholars have advocated to exclusively consider need thwarting in their analyses (e.g., Bartholomew, Ntoumanis, Cuevas, & Lonsdale, 2014).

Recent research conducted in the work context supported this reasoning by showing psychological need thwarting to mediate the negative relationship between organizational justice and ill-being (Gillet, Fouquereau, Huyghebaert, & Colombat, 2015). Moreover, need thwarting was found to explain the association between organizational dimensions and workers' turnover intentions (Gillet, Forest, Benabou, & Bentein, 2015). In line with this conceptual framework, we argue that psychological need thwarting is a variable of interest in order to explain the potential relation between PSC and the negative outcomes included in the present research. Although the role of psychological need satisfaction has been widely explored in the work setting, psychological need thwarting has been less documented (e.g., Trépanier et al., 2016). Our goal was thus to contribute to broaden the nomological network associated with this specific psychological mechanism. It should be noted that, even though each need refers to a crucial psychological component, research has often considered these needs as a whole (e.g., Gillet, Forest, et al., 2015) as they are equally important "psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being" (Deci & Ryan, 2000, p. 229). Therefore, in the present research, we will explore the experience of psychological need thwarting as a whole.

3.3. PSC and need thwarting

In a recent study, Gillet, Fouquereau, et al. (2015) showed that organizational resources were negatively related to psychological need thwarting. In line with these findings, and because PSC can be referred to as an organizational resource (Dollard & Bakker, 2010), it is likely that PSC could similarly relate to need thwarting. Indeed, when perceiving that their well-being is not a priority issue that is worthy of preventive measures (i.e., low PSC), employees may feel undervalued or unappreciated, which may thwart their need for relatedness. Similarly, if all levels of the organization are not involved in the prevention of ill-being at work, employees may feel that they are perceived as unfit to participate in resolving issues that they are firsthand concerned with. They may thus feel worthless and experience a thwarting of their need for competence. Finally, if employees are not informed about well-being issues and if senior management fails at having an open-door policy about psychological health concerns, workers' need for autonomy may be thwarted as they do not have control over the effects of their work environment on their own psychological health.

Hypothesis 3. PSC negatively relates to psychological need thwarting.

3.4. Need thwarting, WFC and turnover intentions

To the best of our knowledge, the relationship between need thwarting and WFC was never investigated, while few studies addressed the ones between need thwarting and turnover intentions (Gillet, Forest, et al., 2015). It would thus be an interesting contribution to the literature to explore or confirm the association between need thwarting and these outcomes as it would help to get a better understanding of the psychological processes involved in the outbreak of these individual maladaptive responses. Workers' feeling of being out of control, unqualified, or marginalized, may put a damper on their sense of self and obstruct the expression of their true individual potential (Deci & Ryan, 2008). Therefore, they are more inclined to ruminate on these negative aspects even when they are no longer at work and thus have a hard time fully committing to their personal life (Demsky, Ellis, & Fritz, 2014) and being entirely satisfied with life in general (Trépanier et al., 2016). Employees may also try to compensate this situation by spending more time at work to show their worth, therefore creating the impression that their work life puts a damper on their private life.

Hypothesis 4. Need thwarting positively relates to WFC.

Second, when perceiving that their needs for autonomy, competence, and relatedness are actively obstructed, workers may look for alternate job opportunities with organizations that would allow them to feel like actual stakeholders in their professional activity (Liu, Zhang, Wang, & Lee, 2011), value more their input (Aarons et al., 2011), and offer more social support (Lavoie-Tremblay et al., 2008). In sum, need thwarting reflects an experience in which employees' integrity is threatened and may lead to self-protective and often defensive psychological readjustments (Deci & Ryan, 2000) that may take the form of a radical withdrawal from the organization (i.e., turnover).

Hypothesis 5. Need thwarting positively relates to turnover intentions.

In sum, in Study 1, we suggested that PSC would have direct links to WFC and turnover intentions, and would indirectly associate with these outcomes through need thwarting.

Hypothesis 6. PSC negatively relates to WFC and turnover intentions, through the mediation of need thwarting.

3.5. Method

3.5.1. Procedure and participants

Data was collected through a questionnaire survey. Questionnaires were sent by mail to 18 French healthcare centers that had previously agreed to take part in the study. Each center's participation to the study was based on both the director's and the health and safety committee's written approval, after they had been thoroughly explained the general purpose of the study. Each questionnaire came along with a letter explaining that participation was voluntary and assuring participants that their responses were to be kept anonymous. Questionnaires were returned either through sealed boxes or through pre-stamped envelopes addressed to the researchers in charge of this study.

A total of 910 nurses received the questionnaire, among which 269 participants consented to return their completed survey (response rate = 29.56%). Their average age was 40.28 (SD = 10.95), 239 of them were women (88.85%), 26 were men (9.67%), and 4 did not specify their gender. Our sample therefore appeared relatively representative of the national population of French nurses whose average age was 43.4 in 2016, and that counted 87.47% of women and 12.53% of men (French Department of Health and Solidarity, 2016). Participants' average tenure in the nursing profession was 13.35 years (SD = 9.87), and their average tenure in their current organization was 9.00 years (SD = 8.21). Among all respondents, 73.98% (n = 199) worked full time, 18.22% (n = 49) worked part time, and 7.81% (n = 21) did not specify.

3.5.2. Material

All measures were administered in French. More specifically, all scales were either developed or already validated in French, except for the PSC and turnover intentions scales which were translated in French using the standard back-translation technique as recommended by Vallerand (1989).

PSC was assessed with the short version of the Psychosocial Safety Climate scale (PSC-12; Hall, Dollard, & Coward, 2010). Responses were indicated on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Confirmatory factor analyses (CFA) were conducted to identify the best measurement model for this measure. Three models were tested. The first had all items loading on a *PSC* latent variable, the second had the three *management commitment* items, the three *management priority* items, the three *organizational communication* and the three *organizational participation* items loading respectively on their corresponding dimension as a latent variable. Finally, in the third model each item loaded on its corresponding dimension as a latent variable, and all four dimensions loaded on a *PSC* second order variable. This last model showed the best fit indices: χ^2 = 114.17, df = 47, TLI = 0.96, CFI = 0.97, RMSEA = 0.073 [0.056–0.090]. Additionally, most of the research on PSC explored the impact of this construct as a whole (see Yulita et al., 2016) and refers to low versus high PSC environments, without exploring the specific effect of each of this construct's dimensions. Indeed, the pioneering work on the measurement of PSC by Hall, Dollard, and Coward (2010, p. 376) conclude that "researchers could elect to compute a single score PSC indicator" and that the four-factor structure would be the most appropriate for structural equation modeling, "with each factor as an indicator of a latent PSC variable, thereby accounting for measurement error". Therefore, in line with these recommendations and like in previous research (e.g., Idris et al., 2015), we used a *PSC* (α = 0.94) latent variable with the four PSC dimension as indicators in further analyses.

Table 1

Means, standard deviations, and correlations between variables (Study 1).

Variable	M	SD	1	2	3	4
1. PSC	3.06	0.84	–			
2. Need thwarting	3.18	1.31	−0.34	–		
3. WFC	3.52	1.47	−0.31	0.41	–	
4. Turnover intentions	3.32	1.56	−0.38	0.28	0.26	–

Note. N = 269; All associations are significant at $p < 0.001$. PSC = Psychosocial Safety Climate; WFC = Work-Family Conflict. All variables were measured on a 7-point scale with the exception of PSC which was assessed using a 5-point scale.

Psychological need thwarting was assessed with the 9-item Psychological Need Thwarting at Work Scale (Gillet, Fouquereau, Lequeurre, Bigot, & Mokounkolo, 2012). Participants rated their responses on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Once again, three CFA were conducted to identify the best measurement model. The first had all items loading on a *need thwarting* latent variable, the second had the three *autonomy*, the three *competence*, and the three *relatedness* items loading respectively on their corresponding dimension as a latent variable. Finally, in the third model, each item loaded on its corresponding dimension as a latent variable, and all three dimensions loaded on a *need thwarting* second order variable. This last model showed the best fit indices: $\chi^2 = 74.43$, $df = 22$, TLI = 0.93, CFI = 0.95, RMSEA = 0.094 [0.071–0.118]. Additionally, SDT demonstrated the possibility of considering these needs as a whole (e.g., Gillet, Forest, et al., 2015). Therefore, like in previous research (e.g., Trépanier et al., 2016), we used a *need thwarting* ($\alpha = 0.88$) latent variable with the three needs as indicators in further analyses.

WFC was measured with a subscale from the French version of the Survey Work Home Interaction Nijmegen (SWING-F; Lourel, Gana, & Wawrzyniak, 2005), where responses were indicated on a 7-point scale ranging from 1 (*never*) to 7 (*always*). More specifically, respondents were presented with 8 items ($\alpha = 0.88$). A CFA was conducted with all items loading on a *WFC* latent variable. Results indicated satisfactory fit to the data: $\chi^2 = 31.21$, $df = 14$, TLI = 0.97, CFI = 0.99, RMSEA = 0.068 [0.036–0.100].

Turnover intentions were assessed with 5 items ($\alpha = 0.85$) developed by Crossley, Grauer, Lin, and Stanton (2002). Responses were indicated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A CFA with all items loading on a *turnover intentions* latent variable showed satisfactory fit to the data: $\chi^2 = 6.01$, $df = 5$, TLI = 0.98, CFI = 0.99, RMSEA = 0.027 [0.000–0.093].

3.6. Results

3.6.1. Preliminary analyses

Correlation analyses (see Table 1) showed significant negative associations between PSC and respectively need thwarting ($r = -0.34$; $p < 0.001$), WFC ($r = -0.31$; $p < 0.001$), and turnover intentions ($r = -0.38$; $p < 0.001$). Results also showed significant positive correlations between need thwarting and respectively WFC ($r = 0.41$; $p < 0.001$) and turnover intentions ($r = 0.28$; $p < 0.001$). These results provided preliminary support for our hypotheses.

3.6.2. Structural equation modeling

Our proposed model was tested through structural equation modeling using Mplus 7.4 (Muthén & Muthén, 2015). The model included four latent variables and 20 indicators. Each latent variable had between three and eight indicators. Given the large number of parameters to estimate, parcels were used as indicators for the *PSC* and *need thwarting* latent variables. More specifically, four parcels (i.e., management commitment, management priority, organizational communication, and organizational participation) were created as indicators of the latent construct of PSC, and three parcels were used for each need (i.e., autonomy, competence, relatedness) as indicators for the *need thwarting* latent variable. The use of parcels improves the model by lowering the number of parameters to estimate, but it still allows for the control of measurement errors between indicators (Little, Cunningham, Shahar, & Widaman, 2002). Partial disaggregation models use the mean of a dimension's items as indicators of a latent variable, and these indicators are referred to as parcels (Coffman & MacCallum, 2005). This method is preferred when the purpose is to examine relationships between latent variables –rather than between items or dimensions– and it proves to be particularly advantageous to get a more favorable indicators/sample size ratio (Williams & O'Boyle, 2008).

In line with our hypotheses, we tested the proposed model by including unidirectional paths between PSC and respectively need thwarting, WFC, and turnover intentions. We also specified links between need thwarting and both WFC and turnover intentions (see Fig. 2). This model with mediated and direct links between PSC and outcomes showed satisfactory fit to the data: $\chi^2 = 222.90$, $df = 154$, TLI = 0.97, CFI = 0.98, RMSEA = 0.041 [0.028–0.052], AIC = 334.90. All indicators were significantly related ($p < 0.001$) to their corresponding latent variables (loadings ranged between 0.44 and 0.98). Additionally, results confirmed Hypotheses 1, 2, and 3, respectively by indicating that PSC was negatively related to WFC ($\beta = -0.22$; $p < 0.001$), to turnover intentions ($\beta = -0.29$; $p < 0.001$), and to need thwarting ($\beta = -0.34$; $p < 0.001$). Hypotheses 4 and 5 were also confirmed as need thwarting was positively associated with WFC ($\beta = 0.35$; $p < 0.001$) and turnover intentions ($\beta = 0,22$; $p < 0.001$). Additionally, we tested a mediation model without direct links between PSC and outcomes. Links were specified between PSC and need thwarting as well as between need thwarting and both WFC and turnover intentions. This mediation model did not provide better fit
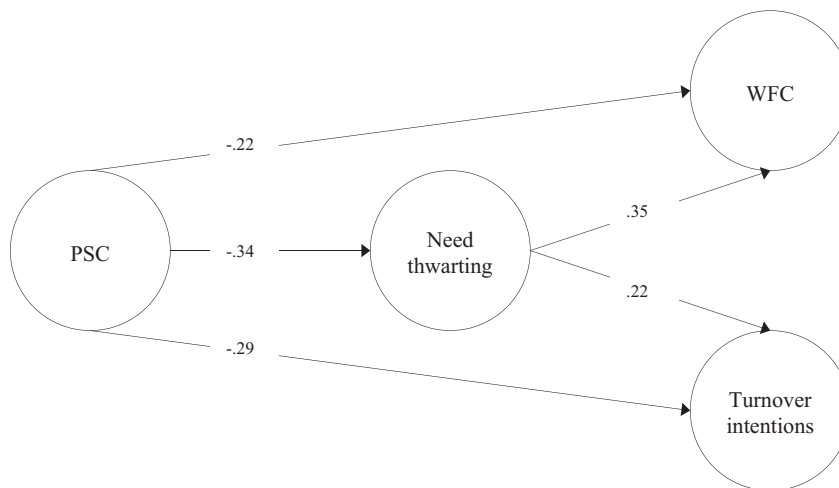
Fig. 2. Results from structural equation modeling in Study 1. Note. PSC = Psychosocial Safety Climate; WFC = Work-Family Conflict. For clarity purposes, covariances and indicators of the latent variables are not presented. All relationships are significant at $p < 0.05$.

indices (χ^2 = 248.36, df = 156, TLI = 0.97, CFI = 0.97, RMSEA = 0.047 [0.036–0.058], AIC = 356.36[1]) than the previously reported model including both mediated and direct links. Indeed, in order to compare both of these models, we considered the Akaike Information Criterion (AIC). The model providing the best fit is represented by the lowest value on this indice (Bozdogan & Ramirez, 1987). We also compared potential differences between our tested models with regard to their fit by computing a Chi-square (χ^2) difference test, which allows to decide whether a model fits significantly better or worse than a competing one (Schermelleh-Engel, Moosbrugger, & Müller, 2003). In sum, as indicated by its higher AIC value and by the significance of the χ^2 difference test ($\Delta \chi^2$ = 25.46, Δdf = 2, $p. < 0.001$), the proposed model including direct and indirect links provided a better fit than the mediation model without direct links.

Bootstrapping analyses (see Preacher & Hayes, 2008) were thus conducted to confirm the mediating role of need thwarting in the relationship between PSC and WFC and turnover intentions, respectively. The indirect effects were tested with 90% confidence intervals computed from 1000 bootstrap samples. Results confirmed the indirect relationships between PSC and WFC ($\beta = -0.117$; CI = $[-0.198-0.062]$; $p < 0.001$) and between PSC and turnover intentions ($\beta = -0.076$; CI = $[-0.142-0.036]$; $p < 0.01$), through need thwarting, therefore confirming Hypothesis 6.

3.7. Discussion

The purpose of Study 1 was to verify whether PSC's effects applied to individual consequences that are not health-related, namely WFC and turnover intentions. Study 1 also aimed to explore how need thwarting could explain the associations between PSC and these outcomes. Our findings confirmed these hypothesized relationships and processes. They are therefore in line with our theoretical rationale (Deci & Ryan, 2000) and with prior research (e.g., Gillet, Fouquereau, et al., 2015), as they prove psychological need thwarting to be a reliable mechanism to explain the relations between the work environment and maladaptive individual functioning. However, this study presents some limitations, including the fact that it was conducted with a relatively small sample. It therefore appeared necessary to replicate such findings with a larger number of professionals to confirm them. Moreover, because of its cross-sectional nature, this study does not allow to explain changes in the studied variables. Finally, although need thwarting explained the associations between PSC and WFC and turnover intentions, one might wonder whether other mechanisms could be involved in these relationships.

4. Study 2

This second study aims to get an understanding of the temporal relationships between the dimensions included in Study 1. Indeed, Study 1 indicates that PSC negatively relates to need thwarting. Moreover, previous studies showed that PSC could predict psychological adjustment over time (e.g., Idris, Dollard, & Yulita, 2014) and that need thwarting could vary over time, under the influence of organizational variables (Huyghebaert et al., 2017). We therefore propose that PSC has a negative relation with need thwarting over time. By demonstrating such temporal links, our research could fill a theoretical gap by revealing that not only can

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[1] In line with a main stream of research on PSC that studied it through multilevel examinations, we conducted preliminary multilevel analyses of this model. Precisely, we tested the model at both the individual and organizational levels through path analyses. This multilevel model indicated satisfactory fit to the data but results showed all relationships to be non-significant at the organizational level. These results thus emphasized that there was no added value to the multilevel investigation of this model. In line with these results and previous research on PSC that focused on the individual level on its own (e.g., Bailey, Dollard, McLinton, & Richards, 2015), we therefore pursued all subsequent analyses accordingly.

need thwarting explain maladaptive functioning cross-sectionally but that this psychological mechanism may also have longitudinal effects in the work context, which research has just begun to demonstrate (e.g., Trépanier et al., 2016).

Hypothesis 7. PSC negatively relates to psychological need thwarting over time.

Additionally, this second study seeks to get a more accurate view of the mechanisms involved in the relationship between PSC and individual consequences. Precisely, based on the mediation found in Study 1, we propose that need thwarting is not the sole mechanism to explain the associations between PSC and WFC and turnover intentions. We offer that burnout contributes to explain these relations. First, most of the research on PSC demonstrated it to negatively relate to burnout (e.g., Idris et al., 2012). Indeed, when employees are not listened to when it comes to the impact of work conditions on their psychological health (i.e., low PSC), the job demands (e.g., work pressure, emotional demands) that lead to their ill-being risk not being heard and may thus persist or even worsen. This enduring exposure to chronic demands is likely to necessitate a continuous effort to cope with such demands. This aversive psychological experience may make employees more vulnerable by drawing on and eventually draining their psychological resources (Vansteenkiste & Ryan, 2013), and may lead them to a state of exhaustion (Dollard & Bakker, 2010).

Hypothesis 8. PSC negatively relates to burnout over time.

Second, prior research found need thwarting to be positively associated with burnout (Bartholomew et al., 2014; Gillet, Fouquereau, et al., 2015). Indeed, when feeling coerced, worthless, and isolated, workers may draw from their resources to cope with this aversive experience, up until these resources are drained (i.e., burnout; Cuevas, Sánchez-Oliva, Bartholomew, Ntoumanis, & García-Calvo, 2015). When their integrity is threatened, individuals are more prone to initiate defensive and self-protective processes (Deci & Ryan, 2000). Yet, they have to mobilize considerable efforts to do so, which may keep their psycho-biological system continuously activated (Bartholomew et al., 2014) and thus lead to a state of exhaustion (Gillet, Fouquereau, et al., 2015). Although few studies demonstrated the cross-sectional positive relationship between need thwarting and burnout, researchers called for a longitudinal investigation of this relationship (Bartholomew et al., 2014; Gillet, Fouquereau, et al., 2015). Therefore, we offer to analyze the positive association between need thwarting and burnout over time.

Hypothesis 9. Need thwarting positively relates to burnout over time.

More generally, prior research showed need thwarting to play a mediating role in the relationship between organizational variables and burnout (Bartholomew et al., 2014; Gillet, Fouquereau, et al., 2015). Based on the aforementioned rationale, we propose that a similar mediation could occur over time and that PSC would negatively relate to burnout, through its association with need thwarting.

Hypothesis 10. PSC positively relates to burnout over time, through need thwarting.

We further argue that this sustained situation of need frustration induced by low PSC may contribute to a detrimental spiral of vulnerabilities for non-optimal functioning (e.g., WFC) (Vansteenkiste & Ryan, 2013), through burnout. It should be noted that positive associations were found between burnout and WFC (e.g., Westman, Etzion, & Gortler, 2004), and that previous research showed burnout to explain the association between organizational variables and WFC (Carlson, Ferguson, Hunter, & Whitten, 2012). Indeed, exposure to chronic organizational demands is likely to generate an energy loss that may translate into burnout (Dollard & Bakker, 2010). This state of exhaustion may leave workers with less resources to deal with the demands of their personal lives (Edwards & Rothbard, 2000) thus increasing their WFC. We therefore offer to examine whether burnout similarly mediates the relation between PSC and WFC over time.

Hypothesis 11. PSC indirectly relates to WFC over time, through burnout.

Additionally, research demonstrated that burnout explained the effect of organizational characteristics on turnover intentions (e.g., Tayfur, Bayhan Karapinar, & Metin Camgoz, 2013). Indeed, when exposure to organizational demands drains their resources, employees are more likely to develop a cynical attitude towards work and to withdraw from their professional activity, in an effort to prevent further resource loss (Hobfoll, 2001). In other words, when they sense that the organizational setting jeopardizes their self-realization, workers may consider quitting their employer as a way to protect their integrity (Deci & Ryan, 2000) from this threatening context. Therefore, we propose to explore how burnout may explain the effects of PSC on turnover intentions over time.

Hypothesis 12. PSC indirectly relates to turnover intentions over time, through burnout.

In sum, we expect that PSC would indirectly relate to WFC and turnover intentions through the mediation of burnout. Indeed, prior studies showed PSC to have a strong association with burnout (Idris et al., 2014). Similarly, previous research showed burnout to have strong relations with WFC (e.g., Demerouti, Bakker, & Bulters, 2004) and to be the main predictor of turnover intentions over time (e.g., Rudman, Gustavsson, & Hultell, 2014). Additionally, although PSC holds relationships with WFC and turnover intentions (see Study 1, Hypotheses 1 and 2), these links showed to be of low to moderate intensity (see Study 1, Table 1). For this reason, and because of the above-mentioned important links between PSC and burnout on one hand, and burnout and outcomes on the other hand, we consequently expect that the links between PSC and outcomes would not be significant when including burnout in the model. In other words, in this model, we hypothesize that the associations between PSC and WFC and turnover intentions would be solely explained by the mediation of burnout. Altogether, we offer to examine psychological need thwarting and burnout as a double mechanism to explain the relation between PSC and adverse outcomes over time.

4.1. Method

4.1.1. Procedure and participants

Data was collected through a questionnaire survey at two time points over a three-month period. Questionnaires were sent by mail to 47 French healthcare centers that had previously agreed to take part in the study. Like in Study 1 participation to the study was based on written approvals, after a thorough explanation of the general purpose of the study. Each questionnaire came along with a letter explaining that participation was voluntary and assuring participants that their responses were to be kept anonymous, and that they were only required to indicate an identification code to allow researchers to match their responses at both data collections. Questionnaires were returned either through sealed boxes or through pre-stamped envelopes addressed to the researchers in charge of this study.

At Time 1 (T1), a total of 1143 nurses took part in the survey (response rate = 33.44%). Among these participants, 393 consented to complete the questionnaire again at Time 2 (T2; retention rate = 34.38%) and represented the final sample. Their average age was 42.04 (SD = 10.72), 358 of them were women (91.09%), 32 were men (8.14%), and 3 did not specify their gender. As in Study 1, this study sample appeared relatively representative of the national population of French nurses (French Department of Health and Solidarity, 2016). Participants' average tenure in the nursing profession was 14.70 years (SD = 11.30), and their average tenure in their current organization was 10.53 years (SD = 9.84). With regards to their specialty area, 26.97% (n = 106) of respondents worked in general hospitals, 23.66% (n = 93) were employed in nursing homes, 18.32% (n = 17) worked in centers providing care to patients with special needs, 17.05% (n = 67) were employed in psychiatric hospitals, and 13.99% (n = 55) were home care nurses. Among all respondents, 69.72% (n = 274) worked full time, 22.65% (n = 89) worked part time, and 7.63% (n = 30) did not specify.

Descriptive analyses were conducted to compare participants who took part solely in the first data collection (i.e., T1) to those who completed the questionnaire at both time points (i.e., T1-T2). Respondents who only took part in the T1 survey did not show significantly different scores from those who participated at both time points as far as need thwarting (M_{T1} = 2.78; M_{T1-T2} = 2.83; p = 0.50), WFC (M_{T1} = 3.24, M_{T1-T2} = 3.09, p = 0.12), burnout (M_{T1} = 2.76, M_{T1-T2} = 2.82, p = 0.40), age (M_{T1} = 41.04, M_{T1-T2} = 42.04, p = 0.45), tenure in the profession (M_{T1} = 13.53, M_{T1-T2} = 14.70, p = 0.10), tenure in the organization (M_{T1} = 10.34, M_{T1-T2} = 10.53, p = 0.40) were concerned. However, results indicated significant differences regarding PSC (M_{T1} = 2.95, M_{T1-T2} = 3.09, p < 0.01), turnover intentions (M_{T1} = 1.79, M_{T1-T2} = 1.61, p < 0.01), gender (χ^2 = 4.75; p < 0.05), specialty area (χ^2 = 226.28; p < 0.001), and time worked (χ^2 = 35.41; p < 0.001).

4.1.2. Material

All measures were administered in French. The scales measuring need thwarting and burnout were already validated in French, and the other scales were translated to French using the standard back-translation technique as recommended by Vallerand (1989).

PSC was assessed with the same measure and response scale as the ones used in Study 1 (PSC-12; Hall et al., 2010). As in Study 1, we used a *PSC* (T1 α = 0.94; T2 α = 0.96) latent variable in further analyses.

Psychological need thwarting was assessed with the same measure and response scale as the ones used in Study 1 (Gillet et al., 2012). As in Study 1, we used a *need thwarting* (T1 α = 0.85; T2 α = 0.88) latent variable in further analyses.

Burnout was measured with the 14-item French version of the Shirom-Melamed Burnout Measure (Sassi & Neveu, 2010). Responses were indicated on a 7-point scale ranging from 1 (*never*) to 7 (*always*). As in previous research (Sassi & Neveu, 2010), we used a *burnout* (T1 α = 95; T2 α = 0.95) latent variable in further analyses.[2]

WFC was measured with three items (T1 α = 0.82; T2 α = 0.87) (Demerouti et al., 2004). Responses were indicated on a 7-point scale ranging from 1 (*never*) to 7 (*always*).

Turnover intentions were assessed with three items (T1 α = 0.85; T2 α = 0.82) adapted from Bentein, Vandenberghe, Vandenberg, and Stinglhamber's (2005) and Van Bogaert, Kowalski, Weeks, Van Heusden, and Clarke's (2013) work. Responses were indicated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

4.2. Results and discussion

4.2.1. Preliminary analyses

Correlation analyses were first conducted (see Table 2) and showed significant associations between T1 PSC and respectively T2 need thwarting (r = −0.34; p < 0.001), T2 burnout (r = −0.30; p < 0.001), T2 WFC (r = −0.22; p < 0.001), and T2 turnover intentions (r = −0.11; p < 0.05). Moreover, results showed significant correlations between T1 need thwarting and respectively T2 burnout (r = 0.42; p < 0.001), T2 WFC (r = 0.28; p < 0.001), and T2 turnover intentions (r = 0.19; p < 0.001), as well as between T1 burnout and respectively T2 WFC (r = 0.45; p < 0.001), and T2 turnover intentions (r = 0.18; p < 0.001).

A series of models were then tested through structural equation modeling using Mplus 7.4 (Muthén & Muthén, 2015). In all models, each latent variable had between three and four indicators. Given the large number of parameters to estimate, parcels were used as indicators for the *PSC*, *need thwarting*, and *burnout* latent variables. More specifically, four parcels (i.e., management

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[2] As in Study 1, three CFA were conducted to identify the best measurement model for this measure. The first had all items loading on a burnout latent variable, the second had the six physical fatigue, the three emotional exhaustion, and the five cognitive weariness items loading respectively on their corresponding dimension as a latent variable. Finally, in the third model, each item loaded on its corresponding dimension as a latent variable, and all three dimensions loaded on a burnout second order variable. This last model showed the best fit indices: χ^2 = 1198.08, df = 337, TLI = 0.90, CFI = 0.91, RMSEA = 0.081 [0.076–0.086].

Table 2
Means, standard deviations, and correlations between variables (Study 2).

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. PSC (T1)	3.09	0.80	—									
2. Need thwarting (T1)	2.83	1.05	−0.31***	—								
3. Burnout (T1)	2.82	0.97	−0.30***	0.49***	—							
4. WFC (T1)	3.09	1.46	−0.22***	0.36***	0.49***	—						
5. Turnover intentions (T1)	1.61	0.89	−0.24***	0.24***	0.27***	0.20***	—					
6. PSC (T2)	3.09	0.85	0.72***	−0.29***	−0.29***	−0.18***	−0.25***	—				
7. Need thwarting (T2)	3.21	0.98	−0.34***	0.64***	0.41***	0.28***	0.23***	−0.40***	—			
8. Burnout (T2)	2.87	0.96	−0.30***	0.42***	0.68***	0.35***	0.19***	−0.41***	0.50***	—		
9. WFC (T2)	3.15	1.52	−0.22***	0.28***	0.45***	0.55***	0.16***	−0.29***	0.35***	0.48***	—	
10. Turnover intentions (T2)	2.23	0.64	−0.11*	0.19***	0.19***	0.18***	0.58***	−0.15**	0.27***	0.21***	0.12**	—

Note. N = 393; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. PSC = Psychosocial Safety Climate; WFC = Work-Family Conflict. All variables were measured on a 7-point scale with the exception of PSC and turnover intentions which were assessed using a 5-point scale.

commitment, management priority, organizational communication, organizational participation) were created as indicators of the latent construct of PSC, three parcels were used for each need (i.e., autonomy, competence, relatedness) as indicators for the *need thwarting* latent variable, and three parcels (i.e., physical fatigue, emotional exhaustion, and cognitive weariness) were created as indicators of the latent construct of burnout. Finally, *WFC* was a latent variable with its three items as indicators, and *turnover intentions* was a latent variable with its three items as indicators.

First, four measurement models were tested (M1a-M1d). The first model (M1a) consisted of all latent variables and indicators at T1, while the second model (M1b) included all latent variables and indicators at T2. In each of these models, covariances were allowed among all latent variables. Both models presented satisfactory fit indices (see Table 3) and all indicators were significantly related to their corresponding latent variable (βs ranging from 0.65 to 0.92, $p < 0.001$ at T1, and from 0.59 to 0.93, $p < 0.001$ at T2). A third measurement model was tested (M1c) by combining all latent variables and indicators at both measurement times, and consisted of ten latent variables (i.e., PSC, need thwarting, burnout, WFC, and turnover intentions, at T1 and T2) and 32 indicators. Following previous recommendations (Little, Preacher, Selig, & Card, 2007), in this model, each indicator (i.e., item or parcel) at T1 was also allowed to covary with its corresponding indicator at T2. Results indicated that this model presented a satisfactory fit to the data (see Table 3).

In order to verify whether the socio-demographic variables that showed significant differences between T1 and T2 (i.e., gender, specialty area, and time worked) were related to the dimensions in our study, we tested a fourth measurement model (M1d). In this model, each latent variable was allowed to covary with these socio-demographic variables (e.g., Trépanier et al., 2016). This model indicated satisfactory fit to the data (see Table 3) and the results showed significant relationships between time worked and respectively T1 PSC (β = 0.15; $p < 0.01$), T2 PSC (β = 0.21; $p < 0.001$), and T2 burnout (β = −0.12; $p < 0.05$), as well as between specialty area and respectively T1 PSC (β = 0.23; $p < 0.001$), T2 PSC (β = 0.21; $p < 0.001$), and T1 need thwarting (β = −0.17; $p < 0.01$). Therefore, we controlled for these links in all subsequent analyses. More specifically, specialty area and time worked were allowed to covary with each other and were related to the aforementioned latent variables they held significant relationships with through direct paths.

4.2.2. Main analyses

To examine our hypotheses, we tested the proposed model (M2, see Fig. 3) and compared it to four other models (M3-M6) (i.e., stability model, reversed causation model, reciprocal model, and alternative model). All models (M2-M6) were tested using an auto-

Table 3
Fit indices for the tested models in Study 2.

Model description	χ^2	df	TLI	CFI	RMSEA and 90% CI	AIC	Model comparison	Δ χ^2	Δ df
Measurement models									
M1a (T1 indicators)	301.75	93	0.92	0.94	0.076 (0.066−0.085)	—	—	—	—
M1b (T2 indicators)	315.50	93	0.93	0.94	0.078 (0.069−0.088)	—	—	—	—
M1c (T1 and T2 indicators)	793.17	401	0.95	0.96	0.050 (0.055−0.065)	—	—	—	—
M1d (T1 and T2 indicators + controlled variables)	905.27	489	0.94	0.95	0.047 (0.042−0.051)	—	—	—	—
SEM models									
M2 (proposed model)	873.51	473	0.95	0.96	0.046 (0.042−0.051)	1117.51	—	—	—
M3 (stability model)	906.19	478	0.94	0.95	0.048 (0.043−0.053)	1140.19	M3 vs. M2	32.68**	5
M4 (reversed causation model)	902.71	473	0.94	0.95	0.048 (0.043−0.053)	1146.71	M4 vs. M5	37.77*	25
M5 (reciprocal model)	864.94	498	0.95	0.96	0.047 (0.042−0.051)	1118.94	M2 vs. M5	8.57 n.s.	25
M6 (alternative model)	1029.99	474	0.93	0.94	0.055 (0.050−0.059)	1271.99	M6 vs. M2	156.48**	1

Note. χ2 = Chi-square; df = degree of freedom; TLI = Tucker-Lewis Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; AIC = Akaike Information Criteria; Δ χ^2 = Chi-square difference; Δ df = degree of freedom difference. ** p < 0.01; * p < 0.05; n.s. = non significant.
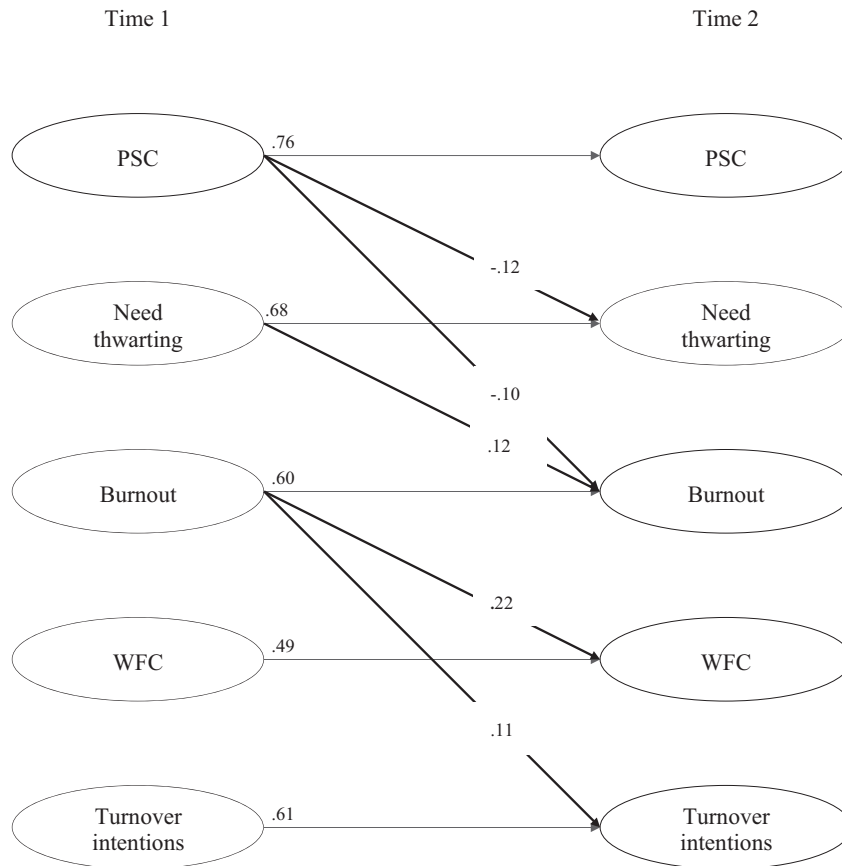
Fig. 3. Results from structural equation modeling in Study 2. Note. PSC = Psychosocial Safety Climate; WFC = Work-Family Conflict. For clarity purposes, covariances, indicators of the latent variables, and links with controlled variables are not presented. All relationships are significant at $p < 0.05$.

regressive cross-lagged design (Bollen & Curran, 2004). In these models (M2-M6), each latent variable at T1 was related with a unidirectional link to its corresponding variable at T2 (i.e., auto-regressive links). Moreover, each indicator (i.e., item or parcel) at T1 was allowed to covary with its corresponding indicator at T2, and all latent variables at T1 were connected together with covariances, as were all latent variables at T2.

We tested our proposed model (M2) by including unidirectional paths between PSC at T1 and respectively need thwarting at T2 and burnout at T2. Unidirectional paths were also specified between need thwarting at T1 and burnout at T2, as well as between burnout at T1 and respectively WFC at T2 and turnover intentions at T2. As indicated in Table 3, this model (M2) presented satisfactory fit to the data and showed better indices than the stability model (M3) which only included unidirectional paths between each latent variable at T1 and its corresponding variable at T2 (i.e., no cross-lagged links were specified). A reversed causation model (M4) was also tested and included unidirectional links between T1 need thwarting and T2 PSC, as well as between T1 burnout and respectively T2 PSC and T2 need thwarting. This model also included unidirectional paths between T1 WFC and T2 burnout, as well as between T1 turnover intentions and T2 burnout. Results from this reversed causation model (M4) indicated that all associations were non-significant ($p > 0.05$). In addition, as indicated by the AIC, this model did not provide a better fit than the proposed model (see Table 3). The reciprocal model (M5) included bidirectional links between PSC and need thwarting, between PSC and burnout, between need thwarting and burnout, between burnout and WFC, and between burnout and turnover intentions. Just as in M4, all reversed links remained non-significant, and this reciprocal model (M5) did not present better fit indices than the proposed model (M2) (see Table 3). Finally, in line with previous studies showing that WFC predicted burnout (e.g., Lizano & Mor Barak, 2012), an alternative model (M6) was tested. In this model, unidirectional links were specified between T1 need thwarting and respectively T2 burnout and T2 WFC, as well as between T1 WFC and T2 burnout. In this alternative model (M6), WFC did not predict burnout over time and, once again, this alternative model did not provide a better fit than the proposed model (see Table 3).

Altogether, results indicated that the tested models (M3-M6) did not show better fit indices than the proposed model (M2). In this model (M2), each latent variable at T1 was significantly and positively related to its corresponding variable at T2 (βs ranging from 0.50 to 0.73, $p < 0.001$), which suggested that the measured constructs were relatively stable over time. Even though the variance in latent variables at T2 was largely explained by the influence of their corresponding variables at T1, a significant part of variance was still explained by other constructs. Hypotheses 7 and 8 were respectively confirmed as PSC at T1 negatively predicted T2 need

thwarting ($\beta = -0.11$, $p < 0.05$) and T2 burnout ($\beta = -0.09$, $p < 0.05$). Need thwarting at T1 significantly and positively predicted T2 burnout ($\beta = 0.12$, $p < 0.05$), thus providing support for Hypothesis 9. Similarly, T1 burnout significantly and positively predicted T2 WFC ($\beta = 0.22$, $p \leq 0.001$) and T2 turnover intentions ($\beta = 0.11$, $p < 0.05$) (see Fig. 3).

Bootstrapping analyses (see Preacher & Hayes, 2008) were then conducted. The indirect effects were tested with 90% confidence intervals computed from 1000 bootstrap samples. We verified the mediating role of T2 need thwarting in the relationship between T1 PSC and T2 burnout. Results indicated significant indirect associations between T1 PSC and T2 burnout ($\beta = -0.033$; CI = $[-0.071{-}0.007]$; $p < 0.05$), thus confirming Hypothesis 10. They also provided support for Hypotheses 11 and 12 by confirming the mediating role of T2 burnout in the relationship between T1 PSC and both T2 WFC ($\beta = -0.040$; CI = $[-0.080{-}0.012]$; $p < 0.05$) and T2 turnover intentions ($\beta = -0.023$; CI = $[-0.053{-}0.008]$; $p < 0.05$). These results are in line with those of Study 1. They also confirm and extend previous research (e.g., Idris et al., 2014) by offering a broader knowledge of the links associated with PSC as well as the psychological mechanisms involved in these relationships, over time.

5. General discussion

As many individuals and organizations struggle with burnout, WFC, and turnover intentions (e.g., Heavey et al., 2013; Maslach, 2017; Nilsen et al., 2017), this research aimed to identify important determinants to prevent these undesirable outcomes, but also to explore the psychological mechanisms underlying these relations. In Study 1, we used a cross-sectional design to demonstrate the direct and indirect links (i.e., through need thwarting) between PSC (Dollard & Bakker, 2010) and WFC and turnover intentions, respectively. In Study 2, we extended these findings by demonstrating need thwarting and burnout to form a double mechanism to explain the relation between PSC and adverse outcomes over time. Specifically, PSC had a negative association with burnout three months later, through its negative relation with need thwarting. In addition, PSC negatively related to burnout, which in turn had a positive effect on WFC and turnover intentions over time. These findings indicate that PSC is a valuable lever to limit employees' need thwarting and burnout over time, and thus reduce their WFC and turnover intentions.

5.1. Theoretical implications

First, our research contributes to the literature by identifying a new determinant (PSC) and mechanisms (i.e., need thwarting and burnout) to understand the outbreak of WFC and turnover intentions over time. Moreover, it should be noted that PSC was never empirically considered in the French setting. Yet, France's ranking among the European countries with the lowest PSC levels (Dollard & Neser, 2013) seems to indicate that there is room for improvement.

Second, our results broaden the nomological network associated with PSC by showing it to significantly and negatively relate to need thwarting, WFC, and turnover intentions. These links were, to the best of our knowledge, never studied before. We also corroborate previous studies by indicating PSC to associate with burnout (e.g., Idris et al., 2014). These findings thus confirm PSC to be an important predictor not only of health-related outcomes but also of attitudes.

Third, we offered an exploration of the psychological mechanisms involved in the relationship between organizational resources and burnout, WFC, and turnover intentions. More specifically, our studies identified need thwarting as a relevant mechanism underlying the effects of PSC. We demonstrated that PSC's influence can be explained in light of different frameworks than the JD-R model (Demerouti et al., 2001). In other words, when organizations do not show support for employees' psychological health, they thwart the latter's psychological needs and force them to tap into their own resources to face this aversive experience, which leads to negative consequences (i.e., burnout, WFC, and turnover intentions). These results provide further support for SDT in organizations (Deci, Olafsen, & Ryan, 2017) by showing need thwarting to be a valuable mechanism to explain the associations between organizational factors and negative individual consequences. More generally, our findings add up to the scarce research on need thwarting in the work context (Bartholomew et al., 2014; Gillet, Fouquereau, et al., 2015), and they are among the first to show that, like need satisfaction (Trépanier, Fernet, & Austin, 2015), it has longitudinal effects in the organizational setting.

Fourth, Study 2 went beyond most of the research that used cross-sectional designs to analyze the links between organizational factors on one hand, and burnout, WFC, and turnover intentions on the other hand (e.g., Leineweber et al., 2014). By using a cross-lagged design (Bollen & Curran, 2004), we were able to examine over-time changes in the studied dimensions. Specifically, this method allows for a precise examination of the associations between variables over time by observing the temporal link between a construct (e.g., T1 PSC) and a different dimension (e.g., T2 need thwarting), while controlling for the effect of previous levels of this variable (i.e., T1 need thwarting). Cross-lagged models therefore allow to minimize bias in assessing the cross-lagged relations between different dimensions (Cole & Maxwell, 2003).

Finally, our results corroborate previous findings showing the significant associations between burnout and WFC (Raja et al., 2017) and turnover intentions (Steffens et al., 2017). Our research thus offers additional insight into the longitudinal relationships between these dimensions.

5.2. Limitations and future directions

Although it contributes to a better understanding of the beneficial effects of PSC on adverse outcomes and highlights the psychological mechanisms involved in these relationships, the present research still has some limitations. First, this research only examined a negative set of PSC's consequences, and did not include positive outcomes (e.g., work-family enrichment, organizational commitment, quality of care). By including such indicators, future research could provide a more complete comprehension of

workers' psychological health, attitudes, and behaviors.

Second, it would be interesting to examine the role of need satisfaction in the relationship between PSC and positive outcomes. Indeed, previous research in the work context showed that need satisfaction and thwarting are two separate psychological experiences that can share common antecedents (e.g., PSC) but have different consequences over-time (e.g., Huyghebaert et al., 2017).

Third, recent research has demonstrated that bifactor measurement models provide a more accurate representation of the complex multidimensionality associated with the measurement of psychological need satisfaction when compared to more traditional confirmatory factor analytic models (Sánchez-Oliva et al., 2017). It could therefore be fruitful to explore how bifactor measurement models apply to need thwarting in the work context.

Fourth, future research could also extend the knowledge associated with need thwarting by relying on person-centered analyses to assess the nature of employees' need thwarting profiles, in consonance with a similar line of research conducted on motivational profiles. For instance, a recent study identified four distinct motivational profiles in soldiers and explored their respective associations with work variables and employee functioning (Gillet, Becker, Lafrenière, Huart, & Fouquereau, 2017). However, no research has yet investigated need thwarting profiles in the work domain, which seems like an interesting avenue to get more insight into how the various components of need thwarting combine among different types of employees and relate to their functioning.

Fifth, one should also note that the cross-lagged analyses we conducted reflected two measurement times. Resorting to three or four measurement times would allow for a better appreciation of the temporal relationships between the studied dimensions, as well as a more thorough evaluation of the observed mediations (Cole & Maxwell, 2003). In addition, it could be interesting to analyze more precisely the independent contribution of each psychological need (i.e., autonomy, competence, relatedness) in the prediction of work outcomes, as proposed by previous studies (e.g., Trépanier et al., 2016). Similarly, even though burnout as we conceptualized it here is conceived as a general energy loss (Shirom & Melamed, 2006), future research could explore the respective associations between cognitive weariness, emotional exhaustion, and physical fatigue on one hand, and WFC and turnover intentions on the other hand. Although we had to limit the number of parameters in our tested model with regards to our relatively small sample size, such analyses would allow to identify, for instance, which dimension of burnout has the most significant relation with the consequences of interest, and thus help for even more accurate practical recommendations.

Finally, it would be interesting to analyze how PSC may also affect employees' behaviors through peer-ratings or through the assessment of objective indicators. For instance, future research could investigate whether low PSC, by impeding workers' resources through the thwarting of their psychological needs, could in turn affect their behaviors as assessed through financial returns (e.g., Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Such investigations would allow for a broader understanding of the effects of PSC and psychological needs on indicators of performance.

5.3. Implications for practice

Although they offer perspectives for new research, our results still indicate some valuable implications for organizations and practitioners to prevent burnout, WFC, and turnover intentions. Indeed, they emphasize the importance of promoting a work environment where employees' psychological well-being and safety are a priority and where all levels of the organization contribute to defining the practices and procedures for the protection of employees' psychological health (Dollard & Bakker, 2010). By implementing such policies, organizations would provide themselves with the means to reduce undesirable consequences (i.e., burnout, WFC, turnover intentions) within a relatively short amount of time (i.e., three months). In a context where most organizations have well integrated the importance of protecting employees' physical health and safety, PSC offers extra leverage to protect their psychological health and safety. Practices for the promotion of PSC include adopting a culture of prevention and implementing decisive actions in a timely manner when issues regarding workers' psychological health are raised. Senior management would also benefit from making psychological health a priority, and implementing actual policies, practices and procedures that reflect this priority. Promoting PSC would also imply a two-way communication regarding psychosocial issues in the workplace, as well as consulting all levels of the organization to contribute to the development of practices and procedures for the protection of employee psychological health (Dollard & Bakker, 2010). Such improvements should contribute to prevent negative individual outcomes (Bailey, Dollard, & Richards, 2015).

More generally, our research encourages organizations and practitioners to act on those organizational characteristics that thwart employees' psychological needs, in order to prevent adverse consequences. Awareness of best practices to avoid need thwarting could be raised among senior managers so that they shape organizational policies and procedures that do not subject employees to experiences of coercion, worthlessness, and disregard. By thus preventing threats to employee's fundamental psychological needs, such as controlling behaviors from supervisors (Stebbings, Taylor, Spray, & Ntoumanis, 2012), organizations have the potential to reduce consequences that are deleterious to both workers and organizations over time.

Acknowledgments

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