

RESEARCH ARTICLE

Investigating the temporal relationship between proactive burnout prevention and burnout: A four-wave longitudinal study

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Abstract

Given the detrimental effects of burnout for individuals and organizations, it is of crucial importance to better understand the self-initiated actions employees take to prevent burnout. While such proactive burnout prevention is likely to reduce burnout complaints, these activities may also be frustrated by high burnout levels. This means that proactive burnout prevention and burnout can negatively affect each other over time. The present study used a four-wave longitudinal panel design to investigate temporal relationships between proactive burnout prevention and burnout over 3, 6 and 9 weeks. Participants were 165 employees in the financial services industry who provided data on all four measurement occasions. The outcomes of structural equation modelling provided support for the hypothesized combined effects model compared to the lagged and reversed effects models. The findings suggest that proactive burnout prevention can help to prevent burnout, while engagement in these behaviours may be hindered by high initial levels of burnout. Employees should therefore intervene before their resource pool becomes too depleted and they lack the energy or mental strength to invest resources, in order to proactively retain or regain resources.

KEYWORDS

burnout, prevention, proactive behaviours, temporal relationship

1 | INTRODUCTION

Burnout has deleterious consequences for individuals' health and wellbeing and organizational outcomes (e.g., Maslach et al., 2001; Salvagioni et al., 2017), indicating the need for burnout prevention. Burnout refers to a work-related state of exhaustion that is characterized by of extreme tiredness, cognitive and emotional impairment, and mental distancing (De Beer et al., 2020; Schaufeli et al., 2019). Whereas burnout prevention interventions initiated by the employer

have previously been studied (Awa et al., 2010; Maricuțoiu et al., 2016), less is known about the self-initiated actions employees can take to prevent burnout (Demerouti, 2015). This is remarkable, since the consequences of burnout for individuals physical health and psychological wellbeing can be detrimental (e.g., Type 2 diabetes, depression; Salvagioni et al., 2017). Therefore, it is important to improve our understanding of employees' proactive actions to prevent burnout. Meta-analytical reviews have shown that employer-initiated burnout prevention programs have a lasting, yet small effect

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(Awa et al., 2010; Maricuțoiu et al., 2016), indicating the need for new types of interventions. Moreover, non-work factors, which may be beyond the reach of the employer, play a role in the development of burnout (e.g., Bakker et al., 2005), suggesting that employer-initiated interventions in the workplace may be insufficient to prevent burnout. Employees' self-initiated actions to prevent burnout may be essential to increase the effectiveness of burnout prevention (Demerouti, 2015).

Proactive behaviours are described as self-initiated, future-focused actions of employees aimed at changing and improving themselves or their environment (Parker et al., 2006). These self-starting behaviours have been positively associated with organizational outcomes, such as work performance and organizational effectiveness (e.g., Parker et al., 2019; Tornau & Frese, 2013). Findings of an exploratory qualitative interview study into the self-initiated actions of employees take to prevent burnout have indicated that employees can take specific proactive actions, to change themselves or their situation in order to prevent burnout (i.e., proactive burnout prevention; Otto et al., 2019). According to the conservation of resources (CORs) theory (Hobfoll, 1989), people strive to build and protect valued resources and when experiencing a threat to resources or an actual resource loss, invest resources to regain resources in order to avoid resource depletion. As such, proactive burnout prevention could be regarded as the investment in resources aimed at the prevention of (further) resource loss and burnout. However, as proactive behaviours consume resources (Strauss et al., 2017), employees who are already suffering from burnout complaints (i.e., a situation of resource loss) may experience a lack of resources and may thus not be able to invest resources by engaging in proactive burnout prevention. Since knowledge on how proactive behaviours and burnout impact each other over time is limited (Hakanen et al., 2018), research on the temporal interrelationship between proactive burnout prevention and burnout is required to determine whether proactive burnout prevention can reduce burnout and, conversely, whether these behaviours may be impeded by high initial levels of burnout.

The aim of the current four-wave panel study was to examine the direction and effects of the relationship between proactive burnout prevention and burnout. Based on the findings of previous research into proactive burnout prevention (Otto et al., 2020) and the COR theory (Hobfoll, 1989; Hobfoll & Freedy, 2017), more engagement in proactive burnout prevention was expected to result in lower levels of burnout, while, at the same time, higher burnout levels were assumed to be associated with less engagement in proactive burnout prevention.

The present study contributes to the literature in several ways. First, this study used an integrative approach to employees' proactive behaviours to prevent burnout, in that proactive burnout prevention not only focuses on the work environment, but also includes factors beyond the work situation. Second, four waves of data enabled a comprehensive investigation of lagged, reversed, and combined relationships between proactive burnout prevention and burnout. Third, a 'shortitudinal' research design was applied using multiple short time lags (time lags of 3, 6 and 9 weeks). As optimal time lags for causality are suggested to be short (Dormann & Griffin, 2015), this will enhance

knowledge of the short-term effects of proactive behaviours on burnout and vice versa.

2 | PROACTIVE BURNOUT PREVENTION

According to COR theory (Hobfoll, 1989), burnout develops gradually as a result of a resource depletion process caused by a continued exposure to stressors. Psychological stress occurs when resources are threatened or lost, or when resources are insufficient to meet demands, which ultimately may result in burnout when resources are not restored in a timely manner (Wright & Hobfoll, 2004). Based on COR theory (Hobfoll, 1989), Cangiano and Parker (2016) propose that proactive behaviours can positively affect wellbeing through a resource-generation pathway. Proactive behaviours may enhance feelings of self-efficacy and increase resources, which in turn result in improved wellbeing outcomes (Cangiano & Parker, 2016). To prevent burnout, employees could therefore take initiative to avoid resource depletion, by proactively trying to conserve resources.

Proactive burnout prevention refers to employees' self-initiated actions aimed at changing themselves or their situation in order to prevent burnout (Otto et al., 2019). Findings of an exploratory interview study identified 12 specific proactive actions employees can take to prevent burnout (Otto et al., 2019). Participants in this study reported that high demands in and outside the work environment triggered them to take proactive actions aimed at maintaining/increasing resources and/or reducing demands in the work, home, and personal domain (see Table 1).

For instance, in the work domain, making sure one is able to control when and how to perform one's job was considered to be an important proactive action to prevent burnout. This is in line with extensive research on the job demand-control model (Karasek, 1979; Park et al., 2014), showing that job control is an important resource in the prevention of stress and burnout. In the home domain, participants reported to make sure not to have too many obligations after work and maintain some flexibility to spend their free time. Previous studies found a negative association between home autonomy and burnout (Bakker et al., 2005), indicating that this proactive action may be effective to prevent burnout. In the personal domain, participants reported to engage in mindfulness activities in an attempt to proactively improve and/or maintain their psychological wellbeing. Research has shown that psychological wellbeing and burnout are negatively related (Salvagioni et al., 2017; Wright & Hobfoll, 2004), suggesting that proactively engaging in activities to retain or restore psychological resources, may reduce or prevent burnout.

Proactive burnout prevention differs in aim and scope from related concepts such as job crafting and recovery strategies. Proactive burnout prevention appears to show some similarity to the proactive concept of job crafting as described by Tims and Bakker (2010). Both concepts involve work-related behaviour aimed at increasing resources, increasing challenging demands, and reducing hindering demands, and both regard employees' wellbeing as consequence of proactive actions. However, the differences in goal

TABLE 1 Proactive burnout prevention: domains and proactive actions

Domain	Proactive action	Sample items
Work		
	Increasing/maintaining job control	I make sure that I am in control of when I carry out my work
	Increasing/maintaining supervisor social support	I ask my supervisor for support, if necessary
	Increasing/maintaining coworker social support	I ask my co-workers to take over work from me, if necessary
	Seeking feedback	I seek feedback from my supervisor about my work performance
	Seeking/performing tasks that energize	I actively take on tasks that enable me to develop myself further
	Reducing hindering job demands	I make sure that I do not have to carry out tasks that cost too much energy
Home		
	Increasing/maintaining home autonomy	I make sure that I am in control of how I spend my free time
	Increasing/maintaining home social support	I ask my family/friends for help, if necessary
	Reducing work-home conflict	I make sure that I distance myself from work after hours
Personal		
	Improving/maintaining physical health	I make sure that I get enough exercise
	Improving/maintaining psychological wellbeing	I try to put stressful situations into perspective
	Engaging in relaxing activities	I make sure that I take time for relaxing activities after work

and reach seem considerable. Proactive burnout prevention is based on the findings of qualitative research in which employees were specifically asked about their experiences with taking proactive actions to prevent burnout. Job crafting as described by Tims and Bakker (2010) was based on a literature study with the purpose to fit job crafting into job design theory. As such, the primary goal of job crafting is to achieve a better fit between the job and the employees' personal competencies and interests, and not to prevent burnout (Tims & Bakker, 2010). In addition, unlike proactive burnout prevention behaviours, job crafting only focuses on work-related factors (Otto et al., 2019; Tims & Bakker, 2010).

Like recovery strategies, proactive burnout prevention is related to stress reduction. However, whereas recovery strategies that are based on diversionary strategies refer to a reactive attempt to reverse the negative effects of stress whereby functional systems return to their pre-stressor level (Sonnetag & Fritz, 2007), proactive burnout prevention takes an anticipatory approach to avoid stress and burnout.

To establish whether proactive burnout prevention can be effective in preventing burnout, the temporal relationship between proactive burnout prevention and burnout needs to be investigated.

3 | TEMPORAL RELATIONSHIP BETWEEN PROACTIVE BURNOUT PREVENTION AND BURNOUT

Empirical evidence on how proactive behaviours and burnout impact each other over time is scarce (Hakanen et al., 2018). Meta-analytical studies therefore call for more longitudinal studies to tease out causal processes (Rudolph et al., 2017; Zhang & Parker, 2019).

Longitudinal studies on the temporal relationship between proactive behaviours and burnout have mainly focused on the relationship between job crafting and (elements of) burnout using two-waves (e.g., Hakanen et al., 2018; Petrou et al., 2015; Tims et al., 2013). The findings of these studies showed varying effects of dimensions of job crafting on burnout over time and vice versa (Hakanen et al., 2018; Petrou et al., 2015; Tims et al., 2013), indicating that not all proactive behaviours may be effective in preventing burnout.

This study investigated the temporal relationship between proactive burnout prevention and burnout. As this was the first study to explore the effectiveness of proactive burnout prevention, it focused on the extent to which employees engage in such behaviours, irrespective of the domain in which the intervention took place. This enabled us to gain clear and forthright insight into the proactive burnout prevention–burnout relationship, while excluding intertwining cross domain inferences.

This study used a four-wave 'shortitudinal' research design. Dormann and Griffin (2015) observed that optimal time lags for causality appear to be short, since effects decline as time lags become longer, and argued for the use of more 'shortitudinal' research designs in panel studies. With 'shortitudinal' the authors refer to time intervals of longer than a day and much shorter than a year (Dormann & Griffin, 2015). Additionally, because of the lack of theoretical or empirical evidence for optimal intervals, it is recommended to use multiple time lags to compare effects (e.g., De Lange et al., 2004; Taris & Kompier, 2014). Following, this study opted to examine effects over multiple relative short time periods (3, 6 and 9 weeks). The reasons we choose a 3-week interval is because on the one hand, we wanted to allow enough time for proactive burnout prevention to affect burnout, yet on the other hand, not too much time for distorting factors (such as

changing circumstances in the work or home environment) to affect the proactive burnout prevention–burnout relationship.

3.1 | Lagged association

According to COR theory (Hobfoll, 1989), people are motivated to protect and retain current resources and obtain new resources, and when threatened or confronted with a resource loss, react by investing resources to protect against, or recover from losses. This suggests that employees who possess resources engage in proactive behaviours to conserve resources in order to prevent burnout. If this investment in resources indeed results in (re)gaining resources, this may offset further gain, and result in gain cycles (Westman et al., 2005). Conceptual research (Frese & Fay, 2001) and empirical studies (e.g., Fritz & Sonnentag, 2009; Ohly et al., 2006) have indeed indicated that (job) stressors can prompt proactive behaviours, which may help to alleviate the discrepancy between an actual and desired situation in order to improve wellbeing (Parker et al., 2010).

A few studies have investigated the lagged effects of job crafting on burnout (Nielsen & Abildgaard, 2012; Petrou et al., 2015; Tims et al., 2013). Time lags used varied from 2 months (Tims et al., 2013) to 1 year. Research findings showed mixed results. Proactive behaviours aimed at increasing job resources and challenging job demands have consistently been found to be negatively related to burnout over time (Petrou et al., 2015; Tims et al., 2013). However, there is inconsistent evidence of the effects of proactive behaviours aimed at reducing hindering job demands on burnout over time. On the one hand, Rastogi and Chaudhary (2018) found that crafting demands can positively influence employees' wellbeing. Yet, on the other hand, Petrou et al. (2015) found that proactively reducing job demands resulted in increased exhaustion 1 year later and other studies found no effects of crafting demands on wellbeing outcomes (Nielsen & Abildgaard, 2012; Tims et al., 2013). Petrou et al. (2015) argue that reducing hindering job demands may be an effective strategy in the short term to deal with work pressure, but in the long term organizational changes may be needed to address employees' high job demands.

In the present study the relationship between proactive burnout prevention and burnout was studied over three short time intervals (3, 6 and 9 weeks). Based on COR theory and previous study findings indicating that proactive burnout prevention may lead to reduced levels of burnout (Otto et al., 2020), the following hypothesis was developed.

Hypothesis 1 *Proactive burnout prevention has a negative effect on burnout three, six, and nine weeks later.*

3.2 | Reversed association

Research on the reversed relationship between proactive behaviours and burnout over time is scarce, although a model with a reversed

pathway may be valid. As posited by COR theory (Hobfoll, 1989; Hobfoll & Freedy, 2017), burnout is related to a chronic lack of resources. COR theory predicts that individuals who lack resources are more vulnerable to resource loss and that initial loss of resources begets further loss, which may ultimately lead to cycles of loss and burnout (Westman et al., 2005). Burned-out employees may therefore not have the resources to invest in protecting existing resources and/or gaining new resources. Especially, proactive behaviours require investing energy (Cangiano & Parker, 2016) and burnout indicates a lack of energy. Hence, burnout may frustrate the engagement in proactive burnout prevention. Empirical studies have provided evidence for the loss cycle of burnout (e.g., Llorens-Gumbau & Salanova-Soria, 2014; Ten Brummelhuis et al., 2011). For instance, Ten Brummelhuis, Ter Hoeve, Bakker, and Peper (2011) found that employees who experienced higher initial levels of burnout, accumulated burnout complaints over the course of 2 years through an increase in job demands and a decrease in job resources. Ten Brummelhuis et al. (2011) assume that employees with poor resources and low levels of energy are less likely to engage in proactive behaviours and are more susceptible to resource depletion and burnout.

Research has shown a negative relationship between burnout and job crafting oriented at job resources over 4 years (Hakanen et al., 2018) and a positive relationship between burnout and job crafting oriented at decreasing (hindering) job demands over one and 4 years (Hakanen et al., 2018; Petrou et al., 2015). These results indicate that employees in an energetically depleted state will probably not be able to recognize and focus on opportunities (e.g., resources and challenges), and thus will not engage in job crafting behaviours oriented at increasing job resources and increasing challenging demands (Hakanen et al., 2018; Petrou et al., 2015). Moreover, these results suggest that when threatened or confronted with resource loss, burned-out employees may attempt to protect their resources and relieve stress by increasing behaviours aimed at decreasing (hindering) job demands (Hakanen et al., 2018; Petrou et al., 2015). Since these proactive actions require resources, employees can only engage in these kind of behaviours while they still have enough resources left to invest.

In the present study, the effects of burnout on proactive burnout prevention was investigated using shorter time intervals (3, 6 and 9 weeks) than previous research (Hakanen et al., 2018; Petrou et al., 2015) that used intervals of 4 years and 1 year respectively. Within these shorter time intervals it is likely that burned-out employees, who have already been confronted with cycles of resource loss (e.g., decrease in job resources, health problems) are less able to invest resources in taking proactive actions aimed at conserving resources (Bakker & Costa, 2014; Hobfoll, 1989). The following hypothesis was therefore formulated:

Hypothesis 2 *Burnout has a negative effect on proactive burnout prevention three, six, and nine weeks later.*

Taken together, combined effects were expected (i.e., simultaneous lagged and reversed effects), in that proactive burnout prevention and burnout influence each other negatively over time.

4 | METHOD

4.1 | Study design and participants

This study used a four-wave longitudinal panel design. Employees of a Dutch branch of an organization in the financial services industry ($N = 761$) were invited to participate voluntarily in this study. Participants had to meet the following inclusion criteria: employees who are 18 years or older. Employees were excluded in case they were on long-term (6 weeks or more) sick leave at the time of the study. The employees were informed of the study by a presentation of the first author at their Monday morning gatherings. In addition, they received an email from their employer containing a link to the online survey. After clicking on the link, participants first received information on the research goals and procedure, a notification that participation is voluntary and can be terminated at any time during the research, and details on the handling and storage of data. Prior to data collection, their formal consent for participation was obtained. In both the invitation mail and the introduction of the questionnaire it was explained to the participants that the study concerns proactive actions employees can take to prevent burnout. Participants were asked to fill out the same online survey four times, with intervals of 3 weeks. As an incentive, participants were offered to receive a personal burnout risk profile from the researchers, once they had completed all measurements. Approval for this study was obtained from an internal academic ethical committee (registration number: U2019/02040/HVM, implying that research participants were treated in accordance with the ethical guidelines set out by the American Psychological Association (2017).

Data collection took place from September 2019 until December 2019. At T1 the online survey was fully completed by 252 participants (response rate of 33%). Only the respondents who filled out the (previous) survey were invited by email to participate in the next wave. The number of participants at T4 was 165 (dropout rate 35%). This group was included in our analyses; 57% were male, the average age was 44.1 years ($SD = 10.1$), and the educational level of the participants was relatively high, as 61% had a university degree. Non-response analysis, comparing T1 with T4, revealed that the average age of the dropouts ($M = 39.5$, $SD = 9.0$) was significantly lower than that of the participants ($t[250] = -3.54$, $p < 0.001$). No other significant differences between the two groups were found.

4.2 | Measures

Proactive burnout prevention. Proactive burnout prevention was measured at T1, T2, T3, and T4 using a 40 item inventory developed and validated by Otto et al. (2020). Sample items are presented in

Table 1. Series of items were preceded by the following sentence: 'The following statements are related to your behaviour the last 3 weeks. Would you please indicate how often each statement applied to you?'. Response categories ranged from 1 (*never*) to 5 (*always*).

Burnout. Burnout was measured at all four measurement occasions using the 23 item Burnout Assessment Tool (Schaufeli et al., 2019). An example item is: 'At work, I feel mentally exhausted'. Response categories ranged from 1 (*never*) to 5 (*always*).

4.3 | Analysis

The measurement model and the research model were investigated with Structural Equation Modelling (SEM) using the statistical program AMOS 25. First, measurement models of proactive burnout prevention and burnout were examined using confirmatory factor analyses (CFA's). Three nested models were investigated for proactive burnout prevention. Model 1 specified that all items loaded on 12 first order factors, which in turn loaded on three second order factors representing the work, home, and personal domain, which in turn loaded on the latent variable proactive burnout prevention. In Model 2, all items loaded on 12 first order factors, which in turn loaded on the latent variable proactive burnout prevention. Finally, in Model 3 all items loaded on one latent variable proactive burnout prevention. For burnout, the model specified that the individual items should load on four first order factors, which in turn should load on the second order latent variable burnout.

Second, to verify the stability of the measures over time, configural and metric invariance for the latent variables at all four measurement occasions was examined using SEM with robust standard error maximum likelihood estimation. Multi-group CFA were conducted which made it possible to test the same measurement model at four time occasions (Kline, 2016). Third, cross-lagged SEM models using robust standard error maximum likelihood estimation were used to test the hypotheses. Since simultaneous inclusion of all observed variables (i.e., items) would result in unreliable parameter estimates (due to the large number of items used to operationalize the variables in the model), proactive burnout prevention and burnout were included in the structural equation model as latent variables (De Jonge et al., 2001). The error terms of the latent factors at T1, T2, T3 and T4 were allowed to covary (Russell et al., 1998). Firstly, a baseline model (M1) was specified without cross-lagged structural paths which served as reference model. Next, the baseline model was compared with three competing nested models. Model 2 (M2) included cross-lagged structural paths from T1 proactive burnout prevention to T2, T3, and T4 burnout, representing regular causation; Model 3 (M3) included cross-lagged structural paths from T1 burnout to T2, T3, and T3 proactive burnout prevention, representing reversed causation; Model 4 (M4) included both aforementioned cross-lagged structural patterns (regular and reversed causation), representing combined effects. Burnout was controlled for age, gender and education level in all models for the four measurement occasions, as these factors have been found to influence

the development of burnout (Ahola et al., 2006; Lim et al., 2010). The research model is shown in Figure 1.

Model fit was assessed using a combination of information from different sources (Byrne, 2010; Kline, 2016), including the model chi-square goodness-of-fit with degrees of freedom, incremental fit index [IFI], Tucker Lewis index [TLI], comparative fit index [CFI], root mean square of approximation (RMSEA), and the standardized root mean square residual (SRMR). Since the chi-square goodness-of-fit is influenced by sample size (Marsh et al., 1988), χ^2/df can alternatively be used as an indicator of fit. A value of 2 and lower indicates good fit; a value between 2 and 3 indicates acceptable fit (Marsh et al., 1988; Schermelleh-Engel et al., 2003). Values of IFI, TLI, and CFI higher than 0.90 are considered acceptable fit, values of IFI, TLI, and CFI > 0.95 indicate good fit (Byrne, 2010; Kline, 2016). RMSEA values below 0.08 suggest good fit, values ranging from 0.08 to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit (Byrne, 2010). SRMR indicates acceptable fit when it produces a value smaller than 0.10, it can be interpreted as the indicator of good fit when it produces a value lower than 0.08 (Schermelleh-Engel et al., 2003). Chi-square difference testing was used to compare the models (Satorra & Bentler, 2010). A significant improvement in the χ^2 value indicates a better fit of the model.

5 | RESULTS

5.1 | Descriptive statistics

Means, standard deviations, Cronbach's alpha's and intercorrelations were calculated for the study variables (see Table 2). Correlations

between proactive burnout prevention and burnout were higher than 0.30 and in the expected direction at all measurement occasions (T1–T4).

5.2 | Measurement models

Results of three alternative measurement models for proactive burnout prevention are presented in Table 3. The fit-indices for all three tested models show adequate fit to the data. Since Model 1 showed slightly better fit to the data than Models 2 and 3, Model 1 will be used in further analyses.

Results of the four CFA's (one for each measurement occasion) of both proactive burnout prevention and burnout showed that the data fit the specified models well. Fit for all four measurement occasions was adequate for both measures; all IFI's, TLI's, and CFI's were greater than 0.90 (with the exception of TLI for proactive burnout prevention at T3, which was 0.89), RMSEA's were below 0.06 and SRMR's were below 0.10.

5.3 | Longitudinal invariance

Based on the above specified measurement models, longitudinal invariance was tested to examine whether the same factors were examined over the four measurement occasions. Results showed acceptable fit for proactive burnout prevention and burnout (IFI's, TLI's and CFI's were greater than 0.90, RMSEA's were below 0.06 and SRMR's were below 0.10) and constraining the factor loadings did not significantly change fit (see Table 4).

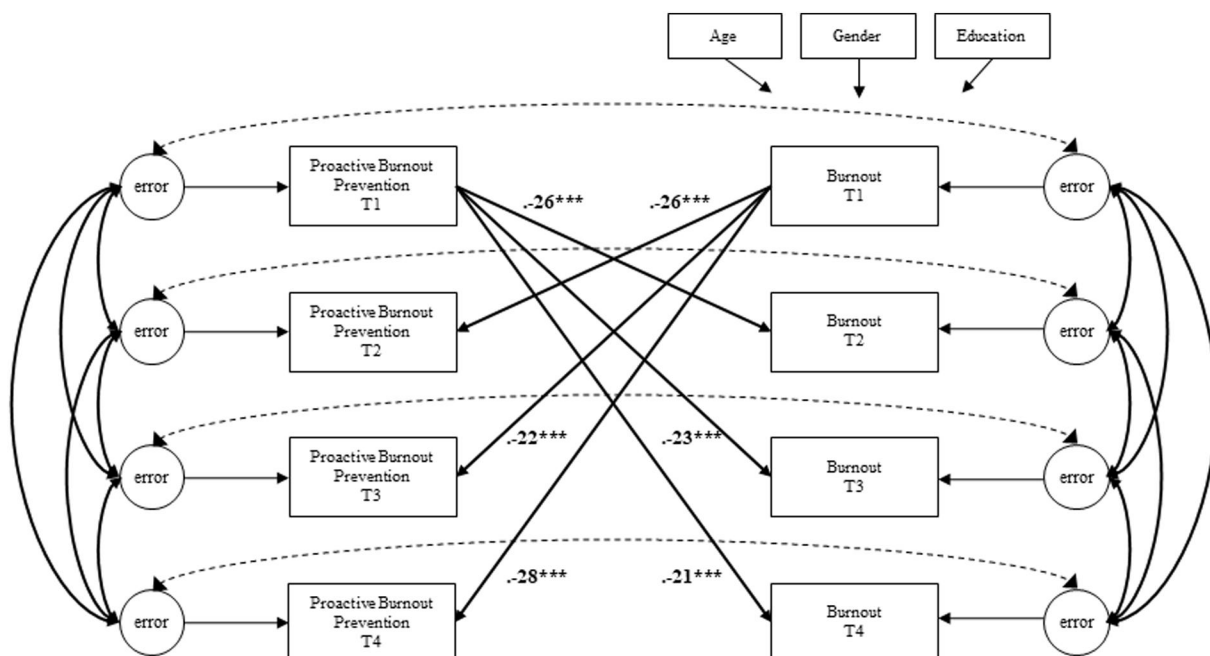


FIGURE 1 The research model. Note. *** $p < 0.001$

TABLE 2 Means, standard deviations, Cronbach's alpha's, and correlations between study variables

Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10	11
1 Age	44.08	10.06		-										
2 Gender	1.44	0.52		-0.13	-									
3 Education	9.95	1.26		-0.14	0.09	-								
4 PBP (T1)	3.39	0.39	0.76	-0.08	0.04	-0.01	-							
5 PBP (T2)	3.37	0.39	0.80	-0.04	-0.06	0.01	0.83**	-						
6 PBP (T3)	3.38	0.41	0.81	0.00	-0.09	-0.00	0.79**	0.86**	-					
7 PBP (T4)	3.36	0.41	0.79	-0.04	-0.06	0.01	0.77**	0.86**	0.84**	-				
8 Burnout (T1)	2.01	0.59	0.95	-0.13	0.12	0.06	-0.43**	-0.40**	-0.37**	-0.41**	-			
9 Burnout (T2)	2.02	0.60	0.95	-0.16*	0.15	0.01	-0.40**	-0.42**	-0.40**	-0.43**	0.87**	-		
10 Burnout (T3)	2.07	0.63	0.96	-0.19*	0.17*	0.01	-0.35**	-0.37**	-0.46**	-0.38**	0.80**	0.84**	-	
11 Burnout (T4)	2.05	0.64	0.96	-0.21**	0.18*	0.05	-0.35**	-0.40**	-0.43**	-0.45**	0.82**	0.86**	0.90**	-

Note: $N = 165$. Gender = 1 'male', 2 'female', 3 'neutral'. Education = 1 'no schooling completed' to 11 'master, PhD, post-doc'.

Abbreviations: PBP, proactive burnout prevention.

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

	χ^2	df	χ^2/df	IFI	TLI	CFI	RMSEA	SRMR
Model 1: 40 =>12 =>3 =>1	1013.74***	713	1.42	0.91	0.90	0.91	0.05	0.09
Model 2: 40 =>12 =>1	1032.86***	716	1.44	0.91	0.90	0.90	0.05	0.09
Model 3: 40 => 1	1023.54***	685	1.50	0.90	0.88	0.90	0.06	0.09

Note: $N = 165$.

Abbreviations: CFI, comparative fit index; IFI, incremental fit index; RMSEA, root mean square of approximation; SRMR, standardized root mean square residual; TLI, Tucker Lewis index.

*** $p < 0.001$.

TABLE 3 Goodness of fit indices alternative measurement models for proactive burnout prevention

	χ^2	df	χ^2/df	IFI	TLI	CFI	RMSEA	SRMR
PBP								
Unconstrained	4711.06***	3207	1.47	0.90	0.90	0.90	0.03	0.08
FL constrained	4734.27***	3240	1.46	0.90	0.90	0.90	0.03	0.09
Burnout								
Unconstrained	1570.88***	904	1.74	0.94	0.93	0.94	0.03	0.06
FL constrained	1628.00***	961	1.69	0.94	0.93	0.94	0.03	0.06

Note: $N = 165$.

Abbreviations: CFI, comparative fit index; IFI, incremental fit index; PBP, proactive burnout prevention; RMSEA, root mean square of approximation; SRMR, standardized root mean square residual; TLI, Tucker Lewis index.

*** $p < 0.001$.

TABLE 4 Longitudinal invariance proactive burnout prevention and burnout

5.4 | Model and hypothesis testing

Model comparison (depicted in Table 5) indicated that only the combined model (M4) exhibited an adequate level of fit to the data ($\chi^2 (df = 21) = 47.48, p = 0.001; \chi^2/df = 2.26; IFI = 0.98; TLI = 0.95; CFI = 0.98; RMSEA = 0.088; SRMR = 0.070$). [Correction added on March 12, 2021 after first online publication: In the preceding sentence, "Table 4" was revised to "Table 5".] Moreover, Model 4 was

found to be significantly more consistent with the data compared to the baseline model (M1) ($\Delta\chi^2 (\Delta df = 6) = 27.05, p < 0.001$), lagged model (M2) ($\Delta\chi^2 (\Delta df = 3) = 17.58, p = 0.001$), and reversed model (M3) ($\Delta\chi^2 (\Delta df = 3) = 16.68, p = 0.001$). Since Model 4 fitted the data better than the lagged and reversed models, this model was used to interpret the lagged and reversed effects (Table 5).

Hypothesis 1 predicted a negative effect of proactive burnout prevention at T1 on burnout 3, 6 and 9 weeks later. Results showed

TABLE 5 Goodness-of fit indices and chi-square difference tests of nested structural models

Model	χ^2	df	χ^2/df	IFI	TLI	CFI	RMSEA	SRMR	Comparison	$\Delta \chi^2$	Δdf
M1: Baseline	74.54**	27	2.76	0.97	0.94	0.97	0.10	0.20			
M2: Lagged	65.06**	24	2.71	0.97	0.94	0.97	0.10	0.16	M1 versus M2	9.47*	3
M3: Reversed	64.16**	24	2.67	0.97	0.94	0.97	0.10	0.15	M1 versus M3	10.37*	3
M4: Combined	47.48**	21	2.26	0.98	0.95	0.98	0.09	0.07	M1 versus M4	27.05**	6
									M2 versus M4	17.58**	3
									M3 versus M4	16.68**	3

Note: $N = 165$.

Abbreviations: CFI, comparative fit index; IFI, incremental fit index; RMSEA, root mean square of approximation; SRMR, standardized root mean square residual; TLI, Tucker Lewis index.

** $p \leq 0.001$, * $p < 0.05$.

that proactive burnout prevention at T1 resulted in lower levels of burnout at T2 ($\beta = -0.24$), T3 ($\beta = -0.21$), and T4 ($\beta = -0.19$), all p -values < 0.001 . Hypothesis 1 was thus supported by the data.

Hypothesis 2 predicted a negative effect of burnout at T1 on proactive burnout prevention 3, 6 and 9 weeks later. The data confirmed the hypothesis as results showed that burnout at T1 resulted in less proactive burnout prevention behaviour at T2 ($\beta = -0.24$), T3 ($\beta = -0.21$), and T4 ($\beta = -0.26$), all p -values < 0.001 .

6 | DISCUSSION

The goal of the present four-wave panel study was to investigate longitudinally the direction and effects of the relationship between proactive burnout prevention and burnout. Results of structural equation modelling indicated that the specified combined model (representing both lagged and reversed effects) showed a better fit to the data than the lagged and reversed models. Findings of this study supported our hypotheses; proactive burnout prevention had a negative effect on burnout 3, 6 and 9 weeks later, and burnout had a negative effect on proactive burnout prevention 3, 6 and 9 weeks later. The findings suggest that whereas employees who engage in proactive burnout prevention are more likely to prevent burnout, this behaviour is impeded by initial higher levels of burnout complaints.

These outcomes provide important empirical evidence for COR's theory's (Hobfoll, 1989) predictions that investing resources by taking proactive actions aimed at building or protecting resources can result in lower levels of burnout. Also, results support that employees who already experience burnout complaints (i.e., a situation of resource loss), may not possess the resources needed to invest in proactive actions aimed at the prevention of burnout. Bottom-up self-initiated actions of employees to prevent burnout can thus be effective, provided employees initiate these actions before their resource pool becomes too depleted for them to be able to engage in such proactive burnout prevention.

However, contradictory to COR theory, no clear indications were found for gain or loss cycles. COR theory predicts that individuals who possess ample resources are able to gain resources, and initial

gain may instigate further gain, resulting in gain cycles (Westman et al., 2005). Proactive behaviours require resources consumption, so employees who engage in proactive burnout prevention possess resources. Moreover, since outcomes of this study showed that proactive burnout prevention results in a decrease in levels of burnout, which suggests an increase in resources, it would be expected that such gain in resources would set off further resource gain over time. Yet the results of this study showed that the effect sizes of the negative effect of proactive burnout prevention on burnout showed a decreasing trend from 3 to 6 and 9 weeks (see Figure 1). An explanation for this may be the already low average level of burnout at T2. The mean score on burnout at T2 was 2.02, which refers to the response category 'seldom'. This may have made it difficult or unnecessary to reduce burnout further over time.

With regard to loss cycles, COR theory predicts that individuals with few resources, are not only more susceptible to resources loss, but initial loss may lead to further loss, resulting in loss cycles (Westman et al., 2005). Since burnout is characterized by a situation of resource loss, it would thus be expected that the effect sizes of the negative effect of burnout on proactive burnout prevention would increase over time. However, no clear trend in effect sizes over time were found as the effect size decreased from three to 6 weeks and then increased again over 9 weeks (see Figure 1). As such, the results of this study showed no clear indication for a loss cycle which may be because burnout develops gradually as prolonged exposure to stressors. It may therefore take more than a few weeks before an increased negative effect of burnout on proactive burnout prevention becomes evident.

Although no clear indications for loss and gain cycles were found in this study, conclusions should be drawn with care as the role of resources on the temporal relationship between proactive burnout prevention and burnout was not investigated in this study. Future research should enhance understanding of the mechanisms underlying the temporal relationship between proactive burnout prevention and burnout by examining the mediating role of resources on this relationship.

This study contributes to the research areas of proactive behaviours and burnout prevention by using four waves of data. The

importance of longitudinal studies has been emphasized in recent years (e.g., Cangiano & Parker, 2016; Zhang & Parker, 2019), yet most research only includes two waves of data (Biggs et al., 2014). The four measurement occasions used in this study provided important insights into the temporal relationship between proactive burnout prevention and burnout over more than one interval. As such, this study makes a valuable contribution to the limited knowledge on the reversed and reciprocal effects of proactive behaviours and burnout (Hakanen et al., 2018), by not only investigating the lagged effects of proactive burnout prevention on burnout, but also examining the reversed effects of burnout on proactive burnout prevention, as well as the combined effects, involving both lagged and reversed effects.

Moreover, this study contributed to literature by using a 'shortitudinal' research design with multiple time lags. Previous research has indicated a need for studying effects over various shorter time intervals to enhance understanding of optimal time lags for establishing causality (De Lange et al., 2004; Dormann & Griffin, 2015; Taris & Kompier, 2014). The three time lags that were included in this study (3, 6 and 9 weeks) made it possible to examine the effects of proactive burnout prevention on burnout, and vice versa, over three different time periods. The findings showed that during these relatively short time intervals, combined effects occurred. These results indicate that proactive burnout prevention can sort effect over a short period of time. Moreover, the findings showed that the effects of proactive burnout prevention lasted over multiple time lags, as effects were shown over 3, 6 and 9 weeks.

However, findings also showed that the negative effect of burnout on proactive burnout prevention lasted over multiple short time lags (3, 6 and 9 weeks). Based on COR theory (Hobfoll, 1989), this suggests that a threat to resource loss should be timely recognized and activate employees to engage in proactive burnout prevention, before a lack of resources impedes them to do so. This is in line with Grant and Ashford's (2008) notion that proactivity should be considered as a goal-driven process, in which enactment (goal-striving) is preceded by envisioning and planning (goal-generation) the proactive action.

6.1 | Limitations and directions for future research

This study is not without limitations. First, our results were based on self-reports, which is subject to common method bias (Podsakoff et al., 2003). Including third party ratings (e.g., supervisor or co-worker ratings) of employees' proactive burnout prevention behaviours might contribute to reduce bias. Second, our study sample only consisted of employees who worked at an organization in the financial services industry, which limits the generalizability to other industries. Future studies should involve organizations operating in various industries to confirm whether findings can be generalized to other working populations. Third, the age of the dropouts was significantly lower than that of the participants who completed the survey on all four occasions. This may have influenced study results.

However, burnout was controlled for age in conducting our structural equation modelling and therefore the dropout effect on the study outcomes is probably limited.

We suggest several directions for future research that can build on our findings and may further advance the field. The present study investigated direct relationships between proactive burnout prevention and burnout over time. It could be that this relationship is mediated by demands and resources. Tims et al. (2013) for instance, found that the relationship between crafting job resources and burnout was mediated by structural and social job resources. Future research could provide insight into the mediating role of demands and resources in the relationship between proactive burnout prevention and burnout.

This study investigated the temporal relationship between proactive burnout prevention and burnout using a within-subjects study design. It could also be of interest to use a between-subjects study design to examine this relationship. For example, by comparing the engagement in proactive burnout prevention of groups of employees with different (initial) levels of burnout, it may be possible to tease out at what level of burnout employees no longer seem to have the strength or energy to engage in proactive burnout prevention. This could indicate the dividing point between (proactive) preventive and (reactive) curative actions. Findings of this study indicated that employees are only able to engage in proactive burnout prevention if they possess enough resources to do so. As long as this is the case, preventive interventions seem possible. However, if employees who are threatened by resource loss do not take proactive actions to (re)gain resources, at some point their resource pool may become too depleted to be able to invest resources in order to (re)gain resources, making them vulnerable to resource loss and ultimately burnout. In this instance, proactive preventive interventions are no longer an option, and curative actions are needed to help the employee replenish resources. Future research may provide insight into the level of burnout complaints up until which it is still possible to engage in proactive burnout prevention and the level of burnout complaints that warrants curative intervention.

Individual and contextual factors have been found to influence proactive behaviours and burnout (e.g., Alarcon et al., 2009; Parker et al., 2010). For instance, differences in knowledge, skills, and abilities may impact employees' capability to engage in proactive burnout prevention and organizations' social climate may affect whether they are inclined to take proactive action (Parker et al., 2010). Future research could include the investigation of antecedents and boundary conditions of proactive burnout prevention to establish which factors enhance or inhibit the effectiveness of proactive burnout prevention to prevent burnout.

A last suggestion for future research is to examine similarities and differences between proactive burnout prevention and related constructs. Although we have argued that proactive burnout prevention differs considerably in aim and scope from related constructs such as job crafting and recovery strategies, resemblances and distinctions have not yet been studied.

6.2 | Practical implications

This study indicates that employees themselves can effectively intervene to prevent burnout. Proactive burnout prevention, involving employees' proactive actions in the work, home, and personal domain, can lead to reduced levels of burnout. These findings can be a starting point to develop an intervention to be used by organizations to promote employees' proactive burnout prevention behaviours. As findings of this study showed that initial levels of burnout can hinder or frustrate engagement in proactive burnout prevention, it is important that employees act timely before resource loss impedes an investment in resources to maintain or protect the resource pool. To this end, organizations could regularly screen employees' proactive burnout prevention behaviours and burnout complaints to raise awareness and stimulate employees to contemplate manners in which they could engage in proactive actions to prevent burnout. However, this does not imply that the employee is solely responsible for burnout prevention. Burnout develops in an interchange between the employee and the work environment, indicating that both the employee and the employer can intervene. Moreover, there is evidence that positive leadership and supportive and favourable team and organizational climates are necessary to facilitate employees' proactive behaviours (Cai et al., 2019). Employee-initiated actions and employer-initiated actions may complement each other in order to increase overall effectiveness of burnout prevention.

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Not applicable.

CONFLICT OF INTEREST STATEMENT

None of the authors have any interests or activities that might be considered as influencing the research.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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