Today's challenge may be tomorrow's hindrance (and vice versa): Longitudinal changes in employee's appraisals of job demands and their outcomes

Peikai Li[1,2]* [iD], Toon W. Taris[1] [iD] and Maria C. W. Peeters[1,3] [iD]

[1]Social, Health and Organizational Psychology, Utrecht University, The Netherlands
[2]Department of Marketing, Innovation and Organization, Ghent University, Belgium
[3]Human Performance Management Group, Eindhoven University of Technology, The Netherlands

Researchers have long been interested in understanding how appraisals influence stressor–outcome relationships. Most studies in this area employ a variable-centred approach, which ignores the possibility that there may be subpopulations of employees who differ in the *combined* use of challenge and hindrance appraisals. Building on transactional stress theory, we investigated (a) the potential existence of distinct latent appraisals profiles of job demands (i.e. time urgency, role conflict and emotional demands), (b) the outcomes associated with particular appraisal profiles and (c) the stability of these profiles over time. In a two-wave study with a one-year time interval (T1, $N = 535$, T2, $N = 152$) among Chinese workers, we identified three distinct appraisals profiles in both study waves (i.e. 'positivists', 'negativists' and 'indifferent workers'). The positivists reported the highest levels of engagement, job satisfaction and the lowest levels of burnout. Interestingly, most participants appeared to change their appraisal profile over time (i.e. very often from 'negativist' and 'positivist' to 'indifferent worker', while they were less likely to change their appraisal profile to 'positivist'). Furthermore, job demands influenced employees' appraisal profiles. Taken together, our results shed light on the nature of the appraisal of demands in the work context and how different employees use distinct combinations of appraisal to address their work demands.

Practitioner points

- Managers should be aware that there are subgroups of employees that appraise their job demands differently: positivists, negativists and indifferent workers. Positivists tend to have higher well-being than negativists and indifferent workers.

*Correspondence should be addressed to Peikai Li, Department of Social, Health and Organizational Psychology, Utrecht University, P.O. Box 80.140, NL-3508 TC Utrecht, The Netherlands (e-mail: pk.li@hotmail.com).

- Employees appear to change their appraisals of job demands over time. In particular, positivists tend to become indifferent workers. It is important that organizations provide sufficient resources and support to their employees to promote high challenge appraisals.

> Leaving out appraisal also would render the biological description of the phenomena of emotion vulnerable to the caricature that emotions without an appraisal phase are meaningless events. Antonio Damasio (2003)

This quote from Damasio illustrates the importance of the appraisal of emotions. Appraisal, here defined as the subjective interpretation of job demands, has a potential for personal gain, growth (i.e. challenges) or constraint (i.e. hindrances) (LePine, Zhang, Crawford, & Rich, 2016). It has received growing research attention in work psychology over recent years. Researchers have suggested that appraisal is ubiquitous and has implications for the study of work demands (Baethge, Deci, Dettmers, & Rigotti, 2019; Searle & Auton, 2015). Empirical studies have shown that appraisal can mediate (e.g. Webster, Beehr, & Love, 2011) or moderate the demands–employee well-being relationship (e.g. Hewett, Liefooghe, Visockaite, & Roongrerngsuke, 2018; Li, Peeters, Taris, & Zhang, 2021; Li, Taris, & Peeters, 2020).

Despite the burgeoning research on the appraisal of job demands (i.e. the physical and psychological aspects of the job that require sustained effort; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), many unresolved issues remain. For instance empirical work on this topic has thus far been exclusively variable-centred, that is, has focused on how different demand appraisals (i.e. as a challenge or a hindrance) independently relate to particular work outcomes (e.g. Searle & Auton, 2015). Results of this type of research represent an averaged estimate of the relationships between variables, without systematically considering the possibility that the pattern of these relationships might differ meaningfully among subgroups of participants (Morin, Morizot, Boudrias, & Madore, 2011). Most importantly, this *variable-centred* approach ignores the possibility that there are subpopulations of employees who differ in the *combined* use of challenge and hindrance appraisals. This is an important gap, as the transactional model of stress and coping states that different types of appraisals are not mutually exclusive (Lazarus & Folkman, 1984), meaning that it is theoretically possible for individuals to appraise a particular demand both as a challenge and as a hindrance. Recent empirical studies in appraisals have shown that challenge and hindrance appraisals of demands can be deployed simultaneously to varying degrees (Li et al., 2020). For instance Parnes, Boals, Brown, and Eubank (2020) recently showed that there is great heterogeneity in the appraisal of traumatic life events, and that distinct profiles of appraisal styles exist among populations (i.e. optimistic, 'chump to champ' and pessimistic profiles). It is possible that some people perceive certain demands as high-challenge and low-hindrance, while others perceive the same demands as high-hindrance and low-challenge (Staufenbiel & König, 2010; Van Laethem, Beckers, de Bloom, Sianoja, & Kinnunen, 2018). Therefore, our first goal is to investigate the presence of distinct subpopulations of employees who appraise the challenging and hindering aspects of demands in a similar way.

In addition, although previous research has shown that appraisals can change over time (e.g. Ohly & Fritz, 2010; Skinner & Brewer, 2002), it remains unclear what the exact patterns of change are, and what the predictors of possible differences in these patterns are. The prevalence of specific appraisal patterns in the population may change over time because individuals may actively seek to transition between them. For instance the transactional model of stress and coping states that appraisals emerge from the interaction

between individual and contextual factors (Lazarus & Folkman, 1984). As employees' working conditions can change over time (Bujacz, Bernhard-Oettel, Rigotti, Hanson, & Lindfors, 2018), the appraisals of these conditions (e.g. job demands) may change accordingly. Therefore, our second goal is to explore the development of appraisal profiles over time.

Our study contributes to the literature on the appraisal of job demands in several ways. First, we investigate the appraisal of job demands using a *person-centred* approach (Wang & Hanges, 2011). This will shed light on the challenge-hindrance demands model (e.g. Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Crawford, LePine, & Rich, 2010) by taking into account how subgroups apply these two types of appraisal in conjunction in managing multiple demands at work, instead of considering challenge and hindrance appraisals separately. In addition, the current study extends the appraisal literature by investigating the trait versus state-like nature of appraisals (Skinner & Brewer, 2002). Specifically, by employing a two-wave design with a 1-year interval we are able to investigate whether and how employees change their appraisals of job demands across time. We used a 1-year time lag because this controls for potential seasonal effects that may affect job demands or well-being (e.g. returning to work from a vacation, see Ford et al., 2014, for a review). Moreover, although previous studies reported meaningful within-person variation in the appraisal of time pressure (Ohly & Fritz, 2010) or performance pressure across days (Mitchell, Greenbaum, Vogel, Mawritz, & Keating, 2019), the issue of appraisal variability needs further investigation using longer time frames. Researchers have suggested that long-term benefits of challenge appraisal are hard to achieve across time, because these cost energy, resources and adequate coping skills (Mazzola & Disselhorst, 2019). Our study addresses this issue as it allows for assessing longitudinal variations in employees' appraisal profiles. Our final contribution is that we identify how different appraisal patterns relate to employee well-being. In particular, in addition to providing empirical evidence on the distinction among appraisal patterns, our study validates these patterns by investigating the relationships of different patterns with employee well-being (i.e. job satisfaction, engagement and burnout). We selected these three well-being outcomes because job demands have been linked theoretically to these outcomes (e.g. in the Job Demands-Resources (JD-R) framework, Demerouti et al., 2001). Moreover, the associations between job demands and these outcomes have been well-established in meta-analytic studies (e.g. Alarcon, 2011; Christian, Garza, & Slaughter, 2011; Judge, Bono, & Locke, 2000; Lesener, Gusy, & Wolter, 2019).

Appraisals of job demands

According to the transactional model of stress and coping, stressful experiences involve the interplay of the person (via appraisals) and the environment (via stressors; Ellis et al., 2015; Lazarus & Folkman, 1984). Lazarus and Folkman (1984) identified two stages of appraisal. In the primary appraisal stage, a person evaluates whether a stressor is a threat or a challenge to their goals or well-being, which in turn influences their cognitions and emotions (Lazarus & Folkman, 1984). In the secondary appraisal stage, one assesses whether she/he can cope with the situation (Folkman, 1984; Lazarus & Folkman, 1984).

A growing number of studies focus on the issue of appraisal using a variable-centred approach to explore how different appraisals independently relate to work outcomes (e.g. Liu & Li, 2018; Sessions, Nahrgang, Newton, & Chamberlin, 2020). In particular, building on the Challenge–Hindrance Model (CHM, Cavanaugh et al., 2000; LePine, Podsakoff, & LePine, 2005), researchers suggested that there are two types of appraisals of

job demands: challenge appraisal and hindrance appraisal (Webster et al., 2011). *Challenge appraisal* is defined as an individual's subjective interpretation that one's job demands have the potential for personal gain, growth, development. *Hindrance appraisal* refers to one's interpretation that demands constraint or thwart one's goal. Prior studies have related these two types of appraisals independently to employee outcomes. For instance challenge appraisal has been found to positively relate to job satisfaction (Webster et al., 2011) and engagement (Li et al., 2020), whereas hindrance appraisal related negatively to task performance (LePine et al., 2016) and prosocial behaviour (Parker, Bell, Gagné, Carey, & Hilpert, 2019).

Identifying profiles of appraisal of job demands

In this study, we employed latent profile analysis to identify different profiles of appraisals. To reflect typical aspects of the work environment, we included three commonly used job demands: time urgency, role conflict and emotional demands. These demands were included for three reasons. First, meta-analytic reviews have shown that these demands are well-established antecedents of employee well-being (Alarcon, 2011; Crawford et al., 2010). Second, time urgency, role conflict and emotional demands reflect different aspects of one's job. Time urgency is defined as a situation that requires employees to engage in several time-oriented behaviours, including overall attention time, performing many tasks simultaneously, controlling deadlines and scheduling tasks (Conte, Landy, & Mathieu, 1995). Role conflict refers to a situation that involves the simultaneous occurrence of two or more sets of pressures on the focal individuals, such that compliance with one makes compliance with the other(s) more difficult (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Emotional demands refer to emotionally charged interactions at work that are considered to be an important source of job strain (Xanthopoulou, Bakker, & Fischbach, 2013). Thus, together these demands capture the time, role and emotional aspects of one's job. Third, previous studies usually categorized time urgency as a challenge demand (e.g. Ohly & Fritz, 2010), and role conflict as a hindrance demand (e.g. Webster et al., 2011). However, the categorization of emotional demands has been inconsistent (as a hindrance demand: Albrecht, 2015; or as a challenge demand: Bakker & Sanz-Vergel, 2013). Including different 'types' of job demands can, to some extent, increase the generalizability of our study.

Building on the transactional model of stress and coping as well as on empirical studies, we argue that it is possible for individuals to appraise a demand simultaneously as challenging and hindering. For instance studies have already demonstrated that emotional demands (Li et al., 2020) and time pressure (Kronenwett & Rigotti, 2020) can be appraised both as challenges and hindrances. In addition, the transactional model of stress and coping indicates that appraisals may be influenced by individual and social processes (Lazarus & Folkman, 1984). Thus, both contextual factors and individual factors will contribute to appraisals. Indicators of appraisals can be combined in various ways, that is, more as a hindrance, more as a challenge, or both, in different quantities. For instance a recent study showed that there is considerable heterogeneity in self-appraisals following exposure to potentially traumatic life events, and that three distinct profiles of appraisal styles could be distinguished: An optimistic profile, a pessimistic profile, and a so-called 'from chump to champ' profile, where participants improved self-appraisals over time (Parnes et al., 2020).

We would expect both stability and changes in appraisals over time. Skinner and Brewer (2002) argued that there are trait cognitive appraisal styles (referring to one's

'disposition to appraise ongoing relationships with the environment consistently in one way or another'; Lazarus, 1991, p. 138) and state appraisals (e.g. event-specific appraisals). So, even if there may be change in appraisals across time, there will be also some stability. There is no firm evidence indicating that the changes in job demands experienced by the participants in our study will be sufficiently strong to produce temporal instability in the profile structure of the entire sample. Previous studies also suggested that although employees may move from one profile to another across time, the profile structure remains stable for the same sample of employees (e.g. Kam, Morin, Meyer, & Topolnytsky, 2016). Therefore, we expect that at both time points employees with an optimistic profile will mainly use challenge appraisal, whereas employees in the pessimistic profile will mainly use hindrance appraisals, and that the profile structure remains stable across time. Taken together, we propose:

Hypothesis 1. Our study will be heterogeneous with regard to the appraisal profiles of job demands. It will include at least a dominant-challenge appraisal profile (i.e. positivist), a dominant-hindrance appraisal profile (i.e. negativist) and mixed profiles (e.g. profiles that combine challenge and hindrance appraisals to some degree).

Hypothesis 2. The same profiles will be present at both time points.

Outcomes of different profiles

Researchers have emphasized that latent profile analysis needs to provide a rigorous test of construct validity (e.g. Bauer & Curran, 2003; Morin et al., 2011). A promising way is to link profiles to outcomes, as this can provide a further illustration of the unobserved heterogeneity in the sample (Wang & Hanges, 2011). Therefore, we validate these profiles by investigating the relationships of different appraisal patterns with employee well-being. This is because well-known job demand theories (e.g. JD-R theory, Bakker & Demerouti, 2017) and other findings consistently show that job demands and appraisals are related to employee well-being (e.g. Li et al., 2020). Correspondingly, we examined whether the identified appraisal profiles exhibited different levels of three commonly examined well-being outcomes of job demands: work engagement, burnout and job satisfaction (e.g. Alarcon, 2011; Christian et al., 2011; Humphrey, Nahrgang, & Morgeson, 2007). *Work engagement* refers to a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). *Burnout* represents a negative type of well-being, which is a syndrome of weariness with work characterized by exhaustion, cynicism and inefficacy (Maslach & Leiter, 2008). *Job satisfaction* is a pleasurable state resulting from the job (Bowling, Eschleman, & Wang, 2010). Thus, these three variables represent important well-being constructs.

Vroom's (1964) expectancy theory explains why different appraisals are differentially related to well-being outcomes. Challenge appraisals of demands are expected to be associated with high motivation, as people are likely to anticipate that there is a positive relationship between the effort expended on coping with these demands and the likelihood of meeting these demands, and they are also likely to believe that if these demands are met, valued outcomes will be obtained. Conversely, hindrance appraisals of

demands are likely to be related to low motivation because these employees are likely to believe that no reasonable level of effort will be adequate to meet these types of demands. Prior studies showed that negative appraisals are associated with reduced control and increased escape coping (Fugate, Kinicki, & Prussia, 2008). Therefore, this type of employee will tend to have low motivation to expend effort on coping, regardless of any desire to cope based on the subjective value of potential outcomes (LePine et al., 2005). Moreover, any effort expended on coping with the demands would likely be viewed as sapping resources that could otherwise be used for dealing with demands associated with valued outcomes that could be met (LePine et al., 2005, p. 765-766). In support of these arguments, challenge appraisal has been shown to be positively related to employee well-being (Ben-Zur & Michael, 2007), whereas hindrance appraisal showed negative associations with employee well-being (Parker et al., 2019). Thus, individuals who deal with high job demands using dominant-hindrance appraisal are expected to be more exhausted, less satisfied and less engaged with their jobs than those with a dominant-challenge appraisal. Specifically, the combination of low challenge appraisal and high hindrance appraisal is expected to be the most detrimental to worker well-being. Therefore, we propose.

Hypothesis 3a. Positivists (highest challenge appraisal & lowest hindrance appraisal) will exhibit the highest levels of engagement and job satisfaction and lowest burnout, both concurrently and after a 1-year time lag.

Hypothesis 3b. Negativists (lowest challenge appraisal & highest hindrance appraisal) will exhibit the lowest levels of well-being.

Hypothesis 3c. Employees in a mixed profile will exhibit well-being higher than those with a negativist profile, but lower well-being than those in the positivist profile.

Stability of appraisals

Appraisals can be defined as a trait or as a state-like variable (Ohly & Fritz, 2010; Skinner & Brewer, 2002). Several studies have investigated the dynamic feature of appraisal of work stressors (e.g. Mitchell et al., 2019; Ohly & Fritz, 2010; Searle & Auton, 2015). Although these studies have demonstrated that appraisals of work stressors fluctuate over time, to date no study has investigated *how* the appraisal patterns of job demands change over time and whether and how employees transfer from one appraisal profile to another (i.e. individual stability). Therefore, we examine whether and how employees change their profiles of appraisals over 1 year.

Research Question 1: How do employees transfer from one type of appraisal of job demands profile to another over time?

Predictors of stability and change of appraisals

Work characteristics may influence the variations in employee appraisals. Especially, negative working conditions (e.g. high job demands) may influence employees' appraisals. Since challenge appraisals are more likely when there is a sense that an investment in time and energy will be rewarded in the demanding environment (Crawford

et al., 2010; Lazarus & Folkman, 1984), job demands likely elicit challenge appraisals. Empirical studies have shown that workload and time pressure are appraised as being largely challenging (Webster et al., 2011). Similarly, Ohly and Fritz (2010) found that time pressure is related to challenge appraisals. Further, Bujacz et al. (2018) showed that employees' working conditions changed over time. Thus, with a change in job demands, their appraisals of these demands might change accordingly. We propose:

Hypothesis 4. Job demands (time urgency, role conflict and emotional demands) will relate positively to the likelihood of an employee transitioning from a favourable (e.g. a dominant-challenge appraisal profile) to a less favourable profile (e.g. a dominant-hindrance appraisal profile or mixed profile) and will relate negatively to the likelihood of transitioning from an unfavourable profile to a more favourable profile.

Method

Procedures and participants

We collected data at two time points, with a one-year interval in between. We mailed surveys to full-time employees who were randomly selected from a multi-occupation database in China through an online survey company. The study was conducted following APA ethical principles (American Psychological Association, 2019). Questionnaires included a cover letter that assured confidentiality and informed participants about the study purpose. After providing consent for using their responses for research purposes, respondents could continue with the questionnaire. We received 535 usable responses at Time 1 (an overall response rate of 20.50%). This cross-sectional sample has been used in a previous study (Li et al., 2020). We contacted these 535 respondents one year later to ask them if they were willing to participate in a follow-up study (Time 2). They were asked to answer questions in line with Time 1 questions. As a reward for participating in our study, respondents received the equivalent of €1.67 in Chinese Renminbi. The Time 2 sample consisted of 152 adults (58.6% female, $n = 89$; the Time 1-Time 2 response rate was 24%). Most participants held a bachelor's degree ($n = 118$, 90.8%), their age ranged from 21 to 54 years ($M = 32.59$, $SD = 5.65$), and they had worked in their current job on average 6.9 years ($SD = 4.93$). On average, they worked 40.10 hours per week ($SD = 10.48$).

Measures

The survey items were translated into Chinese using the back-translation procedures proposed by Brislin (1986). Unless otherwise stated, we used 7-point Likert-type scales ranging from 1 ('strongly disagree') to 7 ('strongly agree'). The Cronbach's alphas of our measures are reported in Table 1.

Job demands

Time urgency was measured using four items. Three of them were adapted from Maruping, Venkatesh, Thatcher, and Patel (2015). An example item is 'I am not afforded much time to complete my tasks'. One item from Rodell and Judge (2009) was added to increase reliability (i.e. 'I often experience time pressures in my work'). *Role conflict* was assessed with the three-item Cross-Cultural Role Conflict, Ambiguity and Overload Scale

Table 1. Means, standard deviations, Cronbach's alphas and correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Time urgency	**.89**											
2 Role conflict	.46**	**.81**										
3 Emotional demands	.55**	.50**	**.77**									
4 Time urgency CA	.14**	.16**	.04	**.89**								
5 Time urgency HA	.15**	.04	.18**	-.58**	**.89**							
6 Role conflict CA	.04	.28**	.04	.60**	-.41**	**.91**						
7 Role conflict HA	.11*	-.14**	.09*	-.38**	.52**	-.62**	**.92**					
8 Emotional demands CA	.01	.15**	.02	.47**	-.29**	.68**	-.41**	**.93**				
9 Emotional demands HA	.08	-.08	.05	-.35**	.44**	-.49**	.65**	-.64**	**.92**			
10 Job satisfaction	-.40**	-.31**	-.48**	.25**	-.29**	.24**	-.19**	.21**	-.15**	**.86**		
11 Burnout	.51**	.36**	.54**	-.11*	.27**	-.13*	.15**	-.13*	.15**	-.67**	**.95**	
12 Engagement	-.29**	-.21**	-.41**	.22**	-.28**	.30**	-.21**	.28**	-.24**	.66**	-.46**	**.94**
13 Time urgency	.44**	.35**	.33**	.12	-.01	.01	-.09	-.07	-.08	-.17*	.34**	-.13
14 Role conflict	.25**	.45**	.19**	.19**	-.07	.15	-.14	.04	-.14	-.02	.14	-.04
15 Emotional demands	.27**	.32**	.26**	.07	.01	.07	-.18*	-.04	-.12	-.23**	.36**	-.27**
16 Time urgency CA	-.03	.16	-.02	.32**	-.12	.35**	-.25**	.29**	-.27**	.17*	-.17*	.28**
17 Time urgency HA	.08	-.004	.08	-.06	.07	-.37**	.10	-.27**	.07	-.25**	.31**	-.35**
18 Role conflict CA	.10	.32**	.08	.39**	-.22**	.47**	-.39**	.32**	-.30**	.13	-.11	.17*
19 Role conflict HA	.11	-.04	.06	-.07	.21**	-.42**	.23**	-.37**	.22**	-.23**	.31**	-.25**
20 Emotional demands CA	-.01	.25**	.07	.29**	-.19**	.39**	-.28**	.45**	-.36**	-.02	-.11	.18*
21 Emotional demands HA	.03	-.17*	-.06	-.02	.03	-.28**	.04	-.32**	.12	-.08	.12	-.13
22 Job satisfaction	-.21**	-.18*	-.22**	.08	-.09	.07	.08	.20*	.01	.42**	-.40**	.39**
23 Burnout	.27**	.18*	.25**	-.15	.07	-.17*	.10	-.21**	.09	-.38**	.58**	-.52**
24 Engagement	-.18*	-.08	-.26**	.12	-.13	.18*	-.03	.25**	-.16*	.31**	-.41**	.47**
M	4.06	3.78	2.81	4.77	3.68	4.12	4.23	3.75	4.44	5.27	2.76	4.24
SD	1.42	1.38	.79	1.28	1.41	1.52	1.52	1.60	1.53	1.09	1.30	1.18

Table 1 (continued)

Variables	13	14	15	16	17	18	19	20	21	22	23	24
13 Time urgency	**.89**											
14 Role conflict	.68**	**.86**										
15 Emotional demands	.65**	.678**	**.82**									
16 Time urgency CA	.20*	.27**	.11	**.88**								
17 Time urgency HA	.17*	.20*	.33**	-.19*	**.90**							
18 Role conflict CA	.23**	.44**	.32**	.65**	-.05	**.92**						
19 Role conflict HA	.28**	.11	.26**	-.02	.68**	-.23**	**.91**					
20 Emotional demands CA	.23**	.31**	.27**	.58**	-.04	.61**	-.05	**.90**				
21 Emotional demands HA	.23**	.21*	.20*	.04	.49**	-.05	.65**	-.09	**.90**			
22 Job satisfaction	-.22**	-.23**	-.39**	.18*	-.31**	-.01	-.25**	.12	-.12	**.85**		
23 Burnout	.41**	.34**	.39**	-.19*	.27**	-.03	.20*	-.10	.14	-.29**	**.93**	
24 Engagement	-.18*	-.16*	-.35**	.22*	-.34**	.03	-.25*	.19*	-.12	.73**	-.28**	**.93**
M	3.63	3.19	2.58	4.17	3.48	3.86	4.00	3.42	4.11	4.98	1.74	3.35
SD	1.53	1.63	0.96	1.64	1.65	1.72	1.75	1.69	1.82	1.50	1.19	1.35

Note. *, $p < .05$, **, $p < .01$. Variables 1–12 are measured at Time 1, $N = 535$; Variables 13–24 are measured at Time 2, $N = 152$; CA = challenge appraisal; HA = hindrance appraisal; Cronbach's alphas are reported on the diagonal and in bold.

(Peterson et al., 1995). A sample item is 'In my job I often get involved in situations in which there are conflicting requirements'. *Emotional demands* were measured with a four-item Emotional job demands scale (Peeters, Montgomery, Bakker, & Schaufeli, 2005). An example item is 'Does your work bring you in emotionally difficult situations'? (1 = 'never', 5 = 'often').

Appraisals of demands

In line with Li et al. (2020), for each of the three demands, we used eight items adapted from Searle and Auton (2015) to measure the appraisals of job demands. Specifically, participants were asked to indicate to what extent they considered a job demand as a challenge or a hindrance. An example of challenge appraisal is 'will help me to learn a lot', and for hindrance appraisal 'it will hinder any achievements I might have'.

Well-being

Job satisfaction was measured using Cook, Hepworth, Wall, and Warr's (1981) three-item scale that reflects employees' general satisfaction with their current jobs. Representative items include 'Generally speaking, I'm really satisfied with my job' and 'Usually, I really enjoy my work'. *Engagement* was assessed with the nine-item version of the Utrecht Work Engagement Scale (UWES) (Schaufeli, Bakker, & Salanova, 2006). A sample item is 'at my work, I feel bursting with energy'. *Burnout* was measured with nine items of the Chinese version (Hu & Schaufeli, 2011) of the Maslach Burnout Inventory-General Survey (MBI-GS, Maslach, Jackson, Leiter, Schaufeli, & Schwab, 1986) with two subscales: Exhaustion (five items; e.g. 'I feel used up at the end of the workday') and Cynicism (four items; e.g. 'I have become less enthusiastic about my work'). These two subscales tap the core dimensions of burnout (Schaufeli & Taris, 2005). For engagement and burnout, responses were given on a 7-point frequency scale (0 = 'never', 6 = 'daily').

Statistical analyses

Preliminary analyses

We conducted preliminary factor analyses to test the measurement model for the study variables at the two time points. The results in Table S2 revealed that the hypothesized twelve-factor model provided an adequate fit to the data at Time 1, CFI = .963, TLI = .957, RMSEA = .037, χ^2 (753) = 1294.27; and a reasonably good fit at Time 2, CFI = .899, TLI = .885, RMSEA = .033, χ^2 (753) = 1191.27. In addition, we tested the longitudinal measurement invariance of appraisals (i.e. configural invariance, metric invariance, scalar invariance and residual variance), and found that the appraisals of three job demands were measurement-invariant for factor loadings (i.e. the configural invariance model showed adequate fit, CFI = .936, TLI = .927, RMSEA = .039). We conducted similar measurement invariance tests for three job demands (time urgency, role conflict and emotional demands) and three outcomes (job satisfaction, burnout and engagement). The model fit remained stable as additional constraints were imposed, supporting the measurement equivalence of our measures (see Table S3). The factor scores generated on the basis of these preliminary results were saved and used for our main analysis (i.e. LPA and LTA), as researchers have suggested that factor scores can provide partial control for measurement errors, which is better than using mean scores.

A similar approach has been used in previous LPA studies (e.g. Gillet, Morin, Cougot, & Gagné, 2017; Gillet, Morin, Ndiaye, Colombat, & Fouquereau, 2020).

Latent profile analyses

To identify groups of individuals with similar appraisals profiles of the three job demands, we conducted latent profile analyses at Time 1 and Time 2 separately (i.e. using the 12 appraisals factors: challenge and hindrance appraisals of time urgency, role conflict and emotional demands, at two time points). We estimated the model fit indices for the 2 to 8-profile solution at each time point, in which the means and variances of the appraisals factors were freely estimated in all profiles. Following Morin et al. (2011) we also estimated alternative models in which the variances of the indicators were constrained to be equal across profiles. When conducting the latent profile analyses for each model, we used 3,000 random sets of start values and 100 iterations for these random starts, and retained the 100 best solutions for final stage optimization (Morin & Litalien, 2019). In addition, to validate our profiles, we examined how different latent profiles related to well-being outcomes. In line with previous research (Gabriel, Daniels, Diefendorff, & Greguras, 2015), we used the R3STEP and the BCH commands (Lanza, Tan, & Bray, 2013) in Mplus 8 to model these outcomes, testing mean differences between profiles in terms of outcomes. To ensure that the nature of the profiles remained unchanged by the inclusion of outcomes, we used the SVALUES from the final LPA solution (Morin et al., 2019).

Latent transition analyses

To estimate which employees changed their profiles between two time points, a Mover-Stayer Latent Transition Analysis (MS-LTA; e.g. Collins & Lanza, 2010; Nylund, 2007) was used. Following the suggestions of Nylund (2007), we tested the MS-LTA in a sequential, step-wise progression. First, a measurement invariance test using LTA was applied to test whether the identified profiles held up at two time points. In particular, following the tutorial by Morin et al. (2019, pp. S31-S33), we compared the longitudinal profile similarities of configural, structural, dispersion and distributional similarity. From the LPA model of dispersion similarity, we conducted latent transition analysis. Next, a second-order latent transition analysis was conducted to detect which employees did or did not change their profile (i.e. 'movers' and 'stayers' respectively). We tested a final model by adding (a) predictors of latent profile membership at Time 1 and Time 2 and (b) a variable that specified movement between profiles from Time 1 to Time 2. We used Mplus 8 and followed the user's guide (Muthén & Muthén, 1998-2017) and Morin et al. (2019) to test the LTA. The Mplus syntax of our analyses can be found in the Data S1.

Results

Table 1 reports the unstandardized means, standard deviations, Cronbach's alphas and correlations of the study variables at Time 1 and Time 2. Our response-nonresponse analyses showed no differences for participants' gender, age, education, tenure and work engagement (i.e. vigour, dedication and absorption, see Table S1). However, employees who joined twice showed lower levels of emotional demands ($t = -2.166, p = .031$), role conflict ($t = -2.140, p = .033$) and burnout ($t = -12.123, p < .001$) than those who only joined at Time 1. With this pattern of missing data, following the recommendation of

Enders (2010) and in line with previous research (Bujacz et al., 2018), we used all available data and utilized the maximum likelihood estimator with robust standard errors (MLR) in Mplus instead of using listwise deletion of missing values approach (for technical issues in Mplus, see Bujacz et al., 2018).

Step 1: Diagnosis and exploration of cross-sectional data using LPA

Following suggestions for conducting latent transition analysis (LTA) (Nylund, 2007; Ryoo, Wang, Swearer, Hull, & Shi, 2018), we first diagnosed and explored the data cross-sectionally, that is within each time point. We tested the LPA solutions of appraisals up to eight profiles (Kam et al., 2016). The decision on which model should be retained was based on model parsimony, fit statistics and the substantive meaning of profiles. Specifically, for model fit the Bayesian Information Criterion (BIC) and the Bootstrap Likelihood Ratio Test (BLRT) have been shown to be the best indicators of the number of classes (Nylund, 2007). Table 2 provides the fit statistics for potential latent profile solutions of job demands appraisals. This table shows that for the appraisals of three job demands at Time 1, the models in which the variances were left free across profiles showed better fit than models in which these variances were constrained to be equal across profiles. The seven and eight-profile solutions were favoured, with the values of AIC, BIC and ABIC being the lowest for these models. Similarly, at Time 2 the seven and eight-profile solution models were favoured with AIC, BIC and ABIC being the lowest for these solutions. However, when considering LMRT, the lack of significance when moving from three to four profiles at Time 1 and 2 indicated that the four-profile solution did not fit the data better (especially for equal variances model), but the transition from two-profile to three-profile was significant. In addition, the four-profile solution did not show much improvement in model fit for AIC and BIC (Time 1, ΔAIC = 265, ΔBIC = 210; Time 2, ΔAIC = 73, ΔBIC = 36); however, the three-profile solution showed better improvement (Time 1, ΔAIC = 502, ΔBIC = 446; Time 1, ΔAIC = 113, ΔBIC = 73). Altogether, there was a significant improvement in model fit when the three-profile solution was chosen. Thus, we retained the three-profile structure based on model parsimony, model fit and ease of interpretation.

Based on item probabilities, we classified the most common profile (at Time 1) for employee appraisal of job demands as 'indifferent workers', reporting low levels of both challenge and hindrance appraisals (Time 1, n = 333, 62.24%; Time 2, n = 54, 35.76%). Those with the next most common profile were labelled as 'negativists', referring to employees who appraised job demands as involving low challenge and high hindrance (Time 1, n = 137, 25.61%; n = 81, 53.64%, Time 2). 'Positivists' were those who appraised their job demands as the highest challenge and lowest hindrance (Time 1, n = 65, 12.15%; n = 16, 10.60%, Time 2). Thus, the results revealed three different profiles (i.e. indifferent workers, negativists and positivists) at two measurement time points. Figures 1 and 2 show the final patterns of our three profile models. The results supported Hypotheses 1 and 2.

To establish the validity of this solution we compared employees' well-being among these three different profiles. As shown in Table 3, at Time 1 positivists (high challenge and low hindrance appraisal) showed the best well-being (i.e. the highest job satisfaction, highest employee engagement in terms of vigour, dedication and absorption; and the lowest burnout of cynicism and emotional exhaustion) as compared to negativists and indifferent workers. Even 1 year later, the lagged effect of Time 1 membership in the

Table 2. Model comparison in cross-sectional latent profile analyses

Model	k	LL	SCF	fp	AIC	BIC	ssaBIC	Entropy	VLMRT	BLRT
Time 1 Free variances in all profiles	2	-3388.79	1.53	25	6827.57	6934.63	6855.27	.84	.04	<.001
	3	**-3124.58**	**1.11**	**38**	**6325.16**	**6487.88**	**6367.26**	**.92**	**<.001**	**<.001**
	4	-2978.94	1.19	51	6059.89	6278.28	6116.39	.89	.06	<.001
	5	-2907.53	1.67	64	5943.05	6217.12	6013.96	.90	.77	<.001
	6	-2840.09	1.28	77	5834.18	6163.91	5919.49	.88	.23	<.001
	7	-2774.45	1.11	90	5728.90	6114.30	5828.61	.89	.10	<.001
	8	-2714.63	1.13	103	5635.26	6076.33	5749.37	.88	.19	<.001
Time 1 Equal variances across profiles	2	-3445.90	1.27	19	6929.80	7011.16	6950.85	.82	<.001	<.001
	3	-3206.17	1.10	26	6464.33	6575.67	6493.14	.88	<.001	<.001
	4	-3093.08	1.53	33	6252.16	6393.47	6288.72	.84	.31	<.001
	5	-3036.92	1.65	40	6153.83	6325.12	6198.15	.82	.47	<.001
	6	-2969.57	1.53	47	6033.13	6234.40	6085.21	.85	.23	<.001
	7	-2917.49	1.37	54	5942.99	6174.23	6002.81	.86	.10	<.001
	8	-2875.57	1.36	61	5873.13	6134.35	5940.72	.86	.24	<.001
Time 2 Free variances in all profiles	2	-1049.45	1.06	25	2148.89	2224.32	2145.20	.94	<.001	<.001
	3	**-980.19**	**1.03**	**38**	**2036.38**	**2151.04**	**2030.77**	**.94**	**.01**	**<.001**
	4	-929.74	1.02	51	1961.48	2115.36	1953.95	.92	.05	<.001
	5	-887.81	1.01	64	1903.62	2096.73	1894.17	.93	.12	<.001
	6	-858.85	0.96	77	1871.70	2104.03	1860.33	.97	.30	<.001
	7	-835.38	1.13	90	1850.75	2122.30	1837.46	.91	.88	<.001
	8	-814.86	0.98	103	1835.73	2146.51	1820.52	.95	.20	<.001
Time 2 Equal variances across profiles	2	-1075.72	1.03	19	2189.45	2246.78	2186.64	.91	<.001	<.001
	3	-1014.17	1.05	26	2080.35	2158.80	2076.51	.87	.01	<.001

Table 2. (*Continued*)

Model	k	LL	SCF	fp	AIC	BIC	ssaBIC	Entropy	VLMRT	BLRT
	4	-986.87	1.13	33	2039.74	2139.31	2034.87	.89	.16	<.001
	5	-963.48	1.04	50	2006.96	2127.65	2001.06	.89	.14	<.001
	6	-939.00	1.07	47	1972.01	2113.82	1965.07	.90	.18	<.001
	7	-914.87	1.16	54	1937.74	2100.68	1929.77	.91	.48	<.001
	8	-892.12	1.20	61	1906.25	2090.30	1897.24	.91	.45	<.001

Note. k = number of latent profiles in the model; LL = model log likelihood; SCF = scaling correction factor of the robust maximum likelihood estimator. fp = number of free parameters; AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample-adjusted BIC; BLRT = p value of the parametric bootstrapped likelihood ratio test for k-1 vs. k classes; VLMRLRT = Vuong–Lo–Mendell–Rubin likelihood Ratio Test.
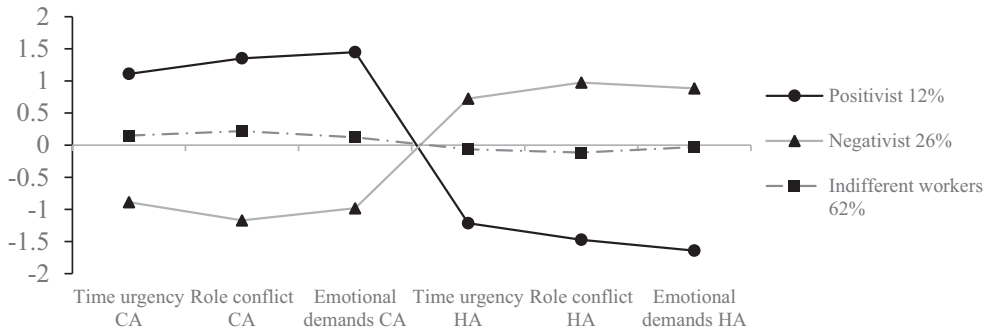
Figure 1. Time 1 Patterns of item response probabilities for the three profiles. *Note.* CA = Challenge appraisal; HA = Hindrance appraisal; Profile indicators are estimated from factor scores.
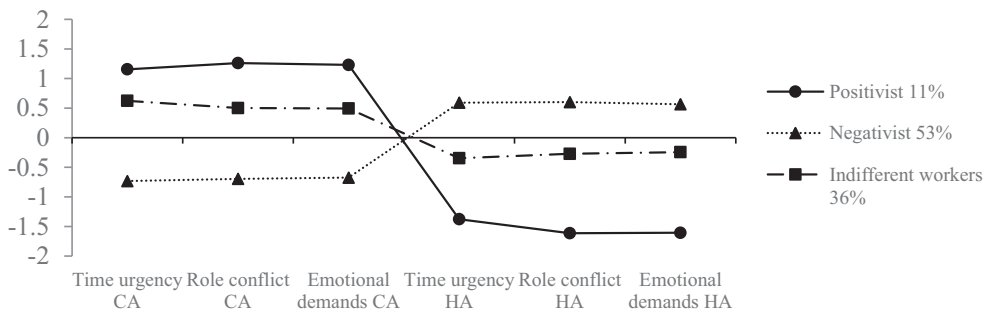
Figure 2. Time 2 Patterns of item response probabilities for the three profiles. *Note.* CA = Challenge appraisal; HA = Hindrance appraisal; Profile indicators are estimated from factor scores.

positivist profile resulted in the best well-being. Conversely, the negativist workers showed the worst well-being (i.e. the lowest job satisfaction, lowest work engagement and the highest burnout) compared to other profiles. The indifferent workers (low challenge appraisal and low hindrance appraisal) reported the second-best well-being (i.e. work engagement), but there was no significant difference between negativists and indifferent workers regarding employee job satisfaction and burnout.

As expected, at Time 2 we found that positivists showed significantly better well-being (the highest job satisfaction, highest engagement and the lowest burnout) than those in other profiles. The indifferent workers showed significantly higher levels of job satisfaction and work engagement than the negativists. For burnout, while positivists differed significantly from negativists and indifferent workers (for details see Table 3), there was no significant difference between indifferent workers and negativists. These results illustrate that different profiles of appraisal of job demands relate to different levels of employee well-being. Hypothesis 3 was partially supported.

Step 2: Test longitudinal measurement invariance using LTA
On the basis of Step 1, the three-profile model was retained at both time points and validated using different outcome variables. Next, we tested the longitudinal measurement invariance to examine whether this solution is supported by using LTA. In particular,

Table 3. Latent profiles and its outcomes for Time 1 and Time 2

Variables	Positivist (1) 65 (12.2%)		Negativist (2) 137 (25.6%)		Indifferent workers (3) 333 (62.2%)		Equality test	Overall test
Time 1	M	SE	M	SE	M	SE		
T1 Job satisfaction	6.09	.08	5.00	.12	5.23	.06	1 > 2; 1 > 3; 3 > 2, p = .08	101.62***
T1 Engagement	5.31	.10	3.78	.13	4.22	.06	1 > 2; 1 > 3; 3 > 2, p < .01	120.62***
T1 Vigour	5.29	.11	3.74	.13	4.16	.06	1 > 2; 1 > 3; 3 > 2, p < .01	107.70***
T1 Dedication	5.31	.11	3.85	.12	4.29	.06	1 > 2; 1 > 3; 3 > 2, p < .01	89.35***
T1 Absorption	5.34	.10	3.74	.14	4.21	.07	1 > 2; 1 > 3; 3 > 2, p < .01	118.89***
T1 Cynicism	1.64	.11	2.64	.14	2.76	.08	1 < 2; 1 < 3; 2 = 3, p = .48	69.31***
T1 Emotional exhaustion	1.90	.13	2.97	.14	3.04	.07	1 < 2; 1 < 3; 2 = 3, p = .64	62.11***
T1 Burnout	1.79	.12	2.82	.13	2.92	.07	1 < 2; 1 < 3; 2 = 3, p = .56	71.41***
T2 Job satisfaction	5.68	.26	4.99	.17	5.21	.13	1 > 2, p < .05; 1 = 3, p = .11; 3 = 2, p = .30	5.15†, p =.08
T2 Vigour	4.53	.18	3.21	.18	3.42	.12	1 > 2; 1 > 3; 3 = 2, p = .34	34.03***
T2 Dedication	4.50	.16	3.27	.18	3.60	.12	1 > 2; 1 > 3; 3 = 2, p = .14	30.65***
T2 Absorption	4.52	.20	3.25	.21	3.61	.14	1 > 2; 1 > 3; 3 = 2, p = .14	21.53***
T2 Engagement	4.52	.15	3.24	.18	3.54	.12	1 > 2; 1 > 3; 3 = 2, p = .17	37.17***
T2 Cynicism	0.87	.16	1.73	.18	1.81	.16	1 < 2; 1 < 3; 2 = 3, p = .75	20.84***
T2 Emotional exhaustion	1.11	.18	2.28	.16	2.09	.15	1 < 2; 1 < 3; 2 = 3, p = .41	26.70***
T2 Burnout	1.00	.13	2.03	.16	1.96	.15	1 < 2; 1 < 3; 2 = 3, p = .75	35.20***

	Positivist 16 (10.6%)		Negativist 81 (53.6%)		Indifferent workers 54 (35.8%)		Equality tests	Overall test
Time 2	M	SE	M	SE	M	SE		
T2 Job satisfaction	5.94	.13	4.79	.14	5.55	.13	1 > 2; 1 > 3, p < .05; 3 > 2	37.35***
T2 Vigour	4.40	.13	3.08	.13	3.81	.14	1 > 2; 1 > 3, p < .01; 3 > 2	49.15***

Continued

Table 3. (*Continued*)

Time 2	Positivist 16 (10.6%)		Negativist 81 (53.6%)		Indifferent workers 54 (35.8%)		Equality tests	Overal test
T2 Dedication	4.57	.14	3.22	.13	3.86	.14	1 > 2; 1 > 3; 3 > 2, p < .01; 1 > 2; 1 > 3; 3 > 2, p < .01	48.15***
T2 Absorption	4.80	.15	3.12	.15	3.95	.15	1 > 2; 1 > 3; 3 > 2	62.53***
T2 Engagement	4.59	.08	3.14	.13	3.88	.13	1 > 2; 1 > 3　　3 > 2	97.03***
T2 Cynicism	0.74	.13	1.88	.15	1.63	.18	1 < 2; 1 < 3　　2 = 3, p = .29	36.96***
T2 Emotional exhaustion	0.88	.10	2.32	.14	1.96	.16	1 < 2; 1 < 3　　2 = 3, p = .11	80.19***
T2 Burnout	0.82	.08	2.12	.14	1.82	.15	1 < 2; 1 < 3　　2 = 3, p = .15	81.19***

Note. †, p < .10; *, p < .05; **, p < .01; ***, p < .001; T1 = Time 1, T2 = Time 2; For equality tests 1 = positivist; 2 = negativist; 3 = indifferent workers; all of the other means are significantly different from one another (***, p < .001).

we tested the longitudinal profile similarities of configural, structural, dispersion and distributional similarity within the three-profile solution. The results supported the dispersion similarity of the three-profile solutions, based on the lowest BIC standard as well as theoretical and practical considerations (for detailed results see Table S4). We also compared the solutions up to eight profiles at two time points. However, the three-profile solution still showed the highest ΔAIC and ΔBIC. Thus, we decided to retain the three-profile solution and considered the latent profile model as longitudinally invariant. This further supported Hypothesis 2, stating that the same profile would exist at both time points.

Step 3: latent transition analysis

The latent transition analysis addressed our first research question of whether employees change their profile across time. Table 4 presents the probabilities of change between profiles from Time 1 and Time 2. The results showed that membership of the 'negativist' and 'indifferent worker' profiles was fairly stable ($n = 137$, 26% and $n = 307$, 57% of workers tend to stay in these profiles over time); whereas membership of the positivist profile was rather unstable (1% of workers stayed in this class over time), and they were more likely to move to the group of indifferent workers ($n = 57$, 11%). Interestingly, overall these transitions resulted in an increasing prevalence of the indifferent workers' subgroup, due to positivists ($n = 57$, 11%) and negativists ($n = 11$, 2%) moving to the indifferent workers' group. Only few participants moved towards the positivist subtype (for indifferent workers, $n = 11$, 2%; for negativists, $n = 1$, 0.2%). This shows that employees are more likely to change their appraisal profile of job demands to indifferent workers while they were less likely to change their profile to positivist and negativist. Note that because of the high dropout of participants, we

Table 4. Profile membership and transition probabilities

	Positivist (1)	Negativist (2)	Indifferent workers (3)
	Transition probabilities from Time 1 classes (rows) to Time 2 classes (columns)		
Positivist (1)	**0.38**	0.00	0.62
Negativist (2)	0.02	**0.81**	0.18
Indifferent workers (3)	0.15	0.07	**0.78**

Final profile counts and proportions based on the most likely latent pattern

Time 1	Time 2	N	%
3	3	307	0.57
2	2	137	0.26
1	3	57	0.11
2	3	11	0.02
3	1	11	0.02
1	1	7	0.01
3	2	4	0.01
2	1	1	0.002

Note. Probabilities of staying in the same profile are marked in bold. Time 1, $N = 535$; Time 2, $N = 152$.

further conducted LTA using a listwise approach, and the results reported in Table S5 underline the robustness of our conclusion.

Analyses of predictive similarity and explanatory similarity

Due to the high dropout of participants, we also tested the similarity of the predictors and outcomes of class membership at the two time points (Morin & Litalien, 2017, 2019). We integrated the predictors and outcomes into the most similar latent profile solution identified in the previous stage (i.e. longitudinal profile measurement invariance tests), and compared two models: while one freely estimated the relations between predictors/ outcomes and profile membership, the other constrained these relations to be equal across two time points (Morin, Meyer, Creusier, & Biétry, 2016). The results showed that the freely estimated models fitted the data better. Table S6 shows that after controlling for age, gender, education, tenure and work time, when the predictors were included in the predictive model, at both time points time urgency, role conflict and emotional demands did not predict the membership of the positivist and negativist profiles compared to the indifferent worker profile. However, at Time 2 low levels of emotional demands predicted an increased likelihood of membership of the indifferent worker profile compared to the positivist profile. Further, higher role conflict perceptions at Time 1 predicted a higher likelihood of membership of the indifferent worker profile compared to the negativist profile. Thus, the predictors of profile membership differed across both time points. Notably, when the outcomes were included in the model, the positivists' profile had the highest levels of job satisfaction and engagement and the lowest level of burnout at both time points (Table S7). This further supported Hypothesis 3, and to some extent, supported the explanatory similarity (i.e. the pattern of predictors of profile membership was partly the same for both time points).

Step 4: Mover-Stayer LTA with predictors

Finally, we tested whether job demands (time urgency, role conflict and emotional demands) predicted the presence or absence of change in appraisal profile membership. We found that Time 1 role conflict (B = 0.680, p = .091) and time urgency (B = 0.554, p = .002) predicted a higher relative likelihood to be move from one profile to another. In addition, Time 1 role conflict (B = 0.206, p < .001) was associated with having a negativist profile. Similarly, Time 2 role conflict (B = 0.409, p = .036) and time urgency (B = 1.543, p = .003) were positively related to belonging to the negativist workers profile. Emotional demands significantly predicted a higher relative likelihood of being in the positivist profile (for the likelihood of belonging to the Time 1 positivist profile, B = 0.220, p < .001; for the Time 2 positivist profile, B = 0.244, p < .001). Thus, hypothesis 4 was partially supported.

Discussion

The current study employed a person-centred approach (Wang & Hanges, 2011) to investigate how employees appraise different job demands across time. In a two-wave study (with Ns of 532 and 152 at T1 and T2 respectively), we identified at both time points the existence of three groups of employees (i.e. positivists, negativists and indifferent workers) that differed qualitatively (challenge and hindrance) and quantitatively (i.e. high and low) in their perceived job demands. The measurement of these three profiles was

invariant across time. These results supported Hypotheses 1 and 2 in that distinct profiles of appraisals exist among employees at both time points.

In addition, we validated these profiles by associating them with well-being outcomes. At both time points, employees labelled as positivists showed the highest job satisfaction and work engagement, and the lowest level of burnout. Conversely, the negativists reported the worst well-being at both time points. Even one year later, the lagged effect of Time 1 membership in the positivist profile resulted in the best well-being, as compared to indifferent workers and negativists. These results partially supported Hypothesis 3 by showing how employees' well-being differs as a function of job demands appraisal profile membership, both concurrently and after a 1-year time lag.

Our first research question was whether employees change their appraisal across time. Our results showed that membership of the 'negativist' and 'indifferent workers' profiles was fairly stable, whereas membership of the 'positivists' profile was rather unstable. Interestingly, 'movers' moved from the groups of positivists and negativists towards an indifferent workers' profile. Moreover, employees were less likely to move towards the positivist group and negativist group. This might be because high appraisal (challenge and hindrance) draws on one's resources, and in order to conserve their limited resources, employees will use different strategies when addressing different job demands (Hobfoll & Shirom, 2000).

Finally, Hypothesis 4 stated that job demands (time urgency, role conflict and emotional demands) would predict a change of appraisal profile membership. We found that job demands indeed predicted appraisal profile membership, in that employees with high job demands (i.e. role conflict and time urgency) were more likely to be movers. Moreover, role conflict and time urgency were positively related to belonging to the negativist profile. These findings partially support Hypothesis 4.

Theoretical implications

One major theoretical contribution of this study is that our results showed differences in appraisals of job demands within a group of employees, who were in the past treated as a homogeneous group. We identified the existence of three groups of employees (positivists, indifferent workers and negativists) that differed in their appraisals of job demands. These results are consistent with the notion that different types of appraisals are not mutually exclusive (Lazarus & Folkman, 1984); Similarly, prior studies found that job demands can be appraised as challenging and hindering at the same time (Li et al., 2020). Notably, this is the first empirical study that examined the combined effect of appraisals of job demands, and how these combined challenge and hindrance appraisals relate to outcomes. Although this could also have been tested using a variable-centred approach involving an interaction effect of challenge and hindrance appraisal, our study focused on subgroup members and showed how the appraisal of three different demands influences employee outcomes in a more nuanced way. Furthermore, our study revealed differences in the outcomes of particular appraisal profiles. This validates the existence of different subgroups, and contributes to the appraisal literature by showing how different appraisal profiles relate to employee well-being (i.e. positivists show higher well-being than negativists and indifferent workers).

Second, our study also showed that employees appear to change their appraisal of demands across time. This sheds light on the measurement of appraisals. Apparently, a single measurement of appraisals cannot truly capture the dynamic status of appraisals and more state-of-the-art multi-wave designs, such as experience sampling methods,

should be used in future research on the appraisals of job demands. In addition, although previous studies using a diary method already revealed that appraisals can vary within persons (e.g. Ohly & Fritz, 2010), our study demonstrated *how* employees changed their appraisal of job demands over time. Our results showed that membership of the 'negativists' and 'indifferent workers' profiles was fairly stable; however, employees often changed towards an indifferent workers appraisal style and were less likely to change their appraisal profile towards a positivist appraisal style. Finally, our study revealed that job demands can influence the variances of employee mover-stayer status. Employees with high job demands (i.e. role conflict) were more likely to be movers.

Practical implications

Our study has three important practical implications regarding the role of appraisals of job demands when it comes to preventing burnout and increasing employee job satisfaction and work engagement. First, since we found that employees labelled as positivists showed the highest level of job satisfaction and work engagement and the lowest level of burnout, managers need to create a climate in organizations in which it becomes possible for employees to appraise their job demands as challenging. For instance by emphasizing the potential gains and achievements of job demands. Relatedly, our mover-stayer analysis demonstrated that positivists were most likely to change their profile membership, often moving from a positivist to an indifferent worker profile. Negativists were less likely to become positivists. Managers can do many things to maintain or enhance challenge appraisals when there is a change in their job demands (e.g. due to organizational change). For instance creating a supportive environment that maintains a positivist outlook and that fosters positive change (i.e. moving away from a negativist or an indifferent worker profile to a positivist profile) seems important. Relatedly, providing useful job resources is also important (e.g. by employing positive leadership styles; LePine et al., 2016), as it can buffer the detrimental effect of job demands (Bakker & Demerouti, 2017) and enhance challenge appraisals.

Second, when designing a training or intervention program, managers need to consider individual differences and should think of using differentiated training practices to target different subgroups. Specifically, we found that workers who appraise their job demands as negative showed the worst well-being. This suggests that intervention programs are especially needed for these employees. In addition, as positivists were most likely to change their profile membership across time, suggesting interventions are needed for them about how to maintain their positivist profile. By identifying to which appraisal profile an employee belongs, managers may consider which interventions need to be introduced for whom. Our study implies that employees benefit from appraising job demands as challenging and not hindering in terms of levels of work engagement, burnout and job satisfaction. Appraisal training workshops may be provided in order to improve employee well-being. In particular, job crafting-based intervention programs could be helpful. This could involve training employees to view their work in a larger context or focusing on personally meaningful aspects (e.g. broader benefits for oneself and others; Wrzesniewski & Dutton, 2001) (for a protocol of such a job crafting intervention, see Demerouti, Peeters, & van den Heuvel, 2019, p. 107). Empirical studies have shown that job crafting interventions can increase employee well-being (Demerouti, Soyer, Vakola, & Xanthopoulou, 2021). In addition, we found that job demands influence the variances of employee mover-stayer status and that high job demands are positively related to belonging to the negativist profile. Teaching employees how to seek

resources (e.g. performance feedback) may help them address their job demands (Demerouti et al., 2019) and to achieve a 'positive appraisal profile'. Previous findings have shown that employees who have enough job resources available can cope better with their job demands (Bakker & Demerouti, 2017), and it can also promote one's challenge appraisal (LePine et al., 2016).

Finally, although prior job design practice has been popular in using a top-down approach by designing a good job to promote employee well-being (Grant & Parker, 2009), which does not mean employees can do nothing. In line with recent job crafting research (e.g. Demerouti et al., 2019), our results suggest that employees can use a bottom-up strategy to change some of their job aspects. We found that employees benefit from seeing the positive sides of their job demands, whereas they suffer being negativists. This suggests that workers can improve their job requirements in terms of time, role and emotion by changing their cognitive appraisals (i.e. viewing their demands as an opportunity and a challenge), which may be good for their well-being. Employees should also realize that high challenge appraisal is not easy to achieve or maintain (today's 'positivists' could be tomorrow's 'negativists'), as it may cost resources. Thus, although employees are encouraged to appraise their job demands as challenging, it is still the responsibility of managers to design a good job and provide the resources that are necessary to make it possible for employees to appraise their job demands as highly challenging rather than hindering.

Limitations and future directions

Several limitations of this study should be addressed in future research. First and foremost, as we used an online data pool, the response rates were relatively low (i.e. less than 30%; note that this is not uncommon in longitudinal research, cf. Taris, 2013), in spite of the fact that we tried to increase the response rate by reminding participants several times and by providing incentives. Furthermore, our nonresponse analyses showed that the non-respondents who joined only once tended to experience a higher level of job demands and burnout than participants who joined twice. This might have biased our results, as our conclusions are based on the participants who tend to experience relatively low levels of burnout. For instance at Time 1 the largest profile was that of the indifferent workers (62%), however, at Time 2, we found that the negativist profile was the largest (54%). We can interpret this as that participants changed their membership. However, an alternative explanation is that some 'indifferent workers' were dropped out. To address this limitation, instead of using a listwise approach, we utilized the maximum likelihood estimator with robust standard errors (MLR) (Bujacz et al., 2018) to conduct our analyses. In addition, when including outcomes into our model, the relations between outcomes and profile membership were quite similar at two time points, which supported the explanatory similarity. Notably, in order to test for the rigorousness of our results, we also used a listwise approach to test our model, and the results were identical for the relations between outcomes and profile membership, which supported the robustness of our results (see Figure S1 and Table S8). However, the predictive similarity was not fully supported (i.e. the correlations between predictors and profiles were not same at two time points). Thus, generalization of our results beyond the current sample and context should still be undertaken with caution.

Second, we relied on self-report measures, which means that results might be biased by social desirability and common method bias (Podsakoff, MacKenzie, & Podsakoff, 2012). Related to this, we measured job demands also in a subjective way, which might

already include some subjective appraisals. We suggest that future research could focus on some objective job demands, such as the number of customers a service worker needs to take care of, or the number of hours of overtime work. In the same vein, it would be good to include other-ratings of outcome variables, such as from the supervisor or colleagues.

Finally, we did not conduct the LTA analysis for appraisals of each demand separately, instead, we included appraisals of three job demands. It is reasonable to investigate the appraisals profiles of different job demands together, because employees need to address multiple demands in their work. Moreover, it is highly possible that there are subgroups of employees who perceive different job demands in a similar way (as illustrated in our study: positivist, negativist and indifferent workers). A similar approach was also used in previous work, for instance Bujacz et al. (2018) investigated the latent class of employees' working conditions with seven job characteristics (e.g. workload, time pressure and learning opportunities), and found four classes of psychological work conditions: supporting, constraining, demanding and challenging. This methodological decision may be regarded as a limitation since these are different demands. Future research can investigate whether our findings apply to other job demand appraisals as well.

Conclusion

Studies on the nature and consequences of job characteristics usually assume that all employees experience particular job demands similarly. Using a two-wave panel design, our research demonstrated that employees can experience job demands as simultaneously challenging and hindering. There appeared to be three subgroups when appraising job demands: 1) positivists, 2) indifferent workers and 3) negativists. The positivists showed the best well-being (as indicated by high scores on job satisfaction, work engagement and low scores on burnout). The negativists showed the worst well-being. In addition, employees tended to change their profile over time, especially from a positivist or negativist profile to an indifferent workers profile. Moves towards a positivist profile were less likely. Practitioners are encouraged to consider promoting a challenge appraisal of job demands, and to help the negativists and indifferent workers to look on the bright side of working life.

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Author contribution

Peikai Li: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Software; Validation; Visualization; Writing – original draft; Writing – review & editing. **Toon W. Taris:** Conceptualization; Investigation; Methodology; Project administration; Resources; Supervision; Writing – review & editing. **Maria C. W. Peeters:** Conceptualization; Investigation; Methodology; Project administration; Supervision; Writing – review & editing.

Conflicting of interests

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Data availability statement

The data that support the results of this paper are available from the corresponding author, upon reasonable request.

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