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Longitudinal Psychological Empowerment Profiles, Their Determinants, and Some Health-Related Outcomes

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Abstract

This research relies on bifactor models to help improve our understanding of the dimensionality of the psychological empowerment construct. We also examined the configurations, or profiles, taken by psychological empowerment dimensions, and documented their stability over time as well as the associations between these profiles and theoretically-relevant predictors (workload, supervisor support, overall organizational justice, and role clarity) and outcomes (alcohol consumption, sleeping difficulties, and depressive symptoms). A sample of 750 healthcare workers completed a questionnaire twice over a one-year period. First, our results showed that employees' psychological empowerment ratings simultaneously reflected a global overarching construct co-existing with four specific dimensions (competence, impact, meaning, and self-determination). Then, five profiles were identified and found to be highly stable over time: Low Empowerment, Moderately High Empowerment and Impact, Normative, High Empowerment, and Moderately High Empowerment and High Meaning. Role clarity was also associated with a higher likelihood of membership into the *High Empowerment* profile and a lower likelihood of membership into the *Low Empowerment* one relative to the other profiles. Finally, employees' depressive symptoms were the highest in the *Low Empowerment* profile.

Key words: Psychological empowerment; latent transition analyses; job demands and resources; sleep; health; bifactor models

Psychological empowerment (PE) has received a fair amount of attention in the managerial, organizational, and nursing sciences (e.g., Chamberlin et al., 2018; Li et al., 2018) due to its desirable consequences for organizations (e.g., higher levels of performance; Richardson et al., 2021) and employees (e.g., higher levels of job satisfaction and lower levels of mental health complaints; Hansen et al., 2013; Lee et al., 2016). Spreitzer (1995) defines PE as an active motivational orientation regarding one's work role in terms of meaning (i.e., employees perceive a high degree of fit between job requirements and their beliefs, standards, and values), competence (i.e., employees feel they are able to perform their job effectively), self-determination (i.e., employees feel they have a high sense of control in the initiation and regulation of their actions), and impact (i.e., employees believe they can have a significant impact on work outcomes). There is a general recognition (e.g., Morin et al., 2016b; Pigeon et al., 2017) that a comprehensive assessment of PE should tap into these four components.

Despite abundant research supporting the positive consequences of PE components (Chamberlin et al., 2018; Li et al., 2018), a comprehensive assessment of their combined impact is lacking. To this end, two complementary analytic approaches can be used. On one hand, variable-centered analyses can assess the unique and complementary impact of PE facets. Mainly designed to test how a set of variables are able to play a complementary role in the prediction of other variables, variable-centered analyses have to rely on tests of interactions to account for nonadditive effects. However, these approaches are unable to clearly depict the joint effect of variable combinations involving more than two or three interacting predictors and become even more complex to interpret when relations display some nonlinearity. Moreover, these analyses assume that all employees come from the same population for which results can be summarized by a unique set of "average" parameters (Gillet et al., 2019a). On the other hand, person-centered analyses are specifically designed to identify qualitatively distinct subpopulations of workers presenting distinct configurations of the components of multidimensional constructs (Gillet et al., 2019b; Huyghebaert-Zouaghi et al., 2022b), such as PE. They are also designed to account for the joint effect of multiple facets of multidimensional constructs (e.g., PE) without assuming effects that generalize to the whole population, without relying on any assumptions (e.g., linearity) in the shape of these relations, and without relying on tests of interactions. As such, person-centered analyses are able to provide a complementary perspective focused on the most commonly occurring combinations

among a set of variables, and the way these combinations relate to other variables.

We adopt this approach in this study to document the nature of PE profiles and their criterion-related validity by examining their associations with theoretically-relevant predictors and outcomes. Person-centered results are more naturally aligned with managers and practitioners' tendency to think about employees as members of different categories (person-centered) than in terms of dominant relations observed between a series of variables (variable-centered) (Morin et al., 2011). As such, our findings are likely to have important practical implications. Indeed, rather than having to decode complex patterns of interrelations and interactions between variables, person-centered results allows managers and practitioners to easily identify types of employees with knowledge about the likely outcomes of corresponding to these various profiles, as well as actionable levers of intervention to increase the likelihood of more desirable PE profiles. From a theoretical standpoint, person-centered results make it much easier to holistically grasp the nature of employees' feelings of PE, without having to artificially separate this reality into separate components treated as distinct, when in fact they are intimately intertwined.

Person-centered research has started to look at how PE components combine within employees (Hansen et al., 2013). However, research still has to address how these combinations of PE components evolve over time. This research should allow researchers and practitioners to obtain a clearer picture of the nature of PE profiles by investigating the extent to which their characteristics, their prevalence, and employees' profile membership change across a one-year time interval. Investigating stability and change in the nature of these profiles and in workers' profile membership addresses an important theoretical concern given that PE is conceptualized as dynamic processes fluctuating over time (Morin et al., 2016b). As noted by Meyer and Morin (2016), it is also critical to ascertain the stability of person-centered solutions to support their use as guides for the development of interventions tailored at distinct types, or profiles, of employees. Indeed, the ability to devise such interventions is conditioned on evidence that the profiles themselves reflect neither ephemeral phenomena likely to randomly fluctuate over time, nor highly rigid phenomenon unlikely to respond to interventions.

This study was designed to investigate PE among healthcare workers. The healthcare setting

represents a particularly important context to consider given the many problems encountered at both the individual (e.g., high levels of burnout) and organizational (e.g., high levels of turnover) levels (Stemmer et al., 2022). In recent years, economic cuts targeting the healthcare system have indeed forced healthcare employees to manage higher levels of job demands while having fewer resources available to support them (Gillet et al., 2020a). The nature of the work conducted in healthcare organizations also means that employees routinely have to face a high level of emotional demands in their work, which further contributes to increase their vulnerability to the development of health difficulties (Huyghebaert-Zouaghi et al., 2022b). Fortunately, research evidence suggests that PE may represent a powerful individual resource to help nurture and support the well-being, work-related efficacy, and quality of care among healthcare employees (Boudrias et al., 2012; Li et al., 2018), and that interventions focused on PE might be particularly well-suited to healthcare workers (e.g., Owens et al., 2019).

By acknowledging the possibility that some healthcare employees may simultaneously experience high levels of PE across dimensions, while others may experience a combination of high, moderate, and low levels of PE across dimensions, we highlight the need to move beyond the examination of the additive and independent effects of PE components to consider their combined role. For example, what are the implications of displaying high levels of PE across dimensions, or of being characterized by an alternate profile such as high scores on two facets and moderate to low scores on the other components? The ability to rely on person-centered results as a guide for intervention requires knowledge about the outcomes typically associated with each profile, as this knowledge will help identify the profiles which should be prioritized for intervention among healthcare workers (e.g., Meyer & Morin, 2016). From a practical purpose, greater insight into how PE components combine within healthcare employees would thus help organizations and managers better understand PE. However, although the present study was designed to investigate PE in healthcare workers, it could serve as a springboard to a deeper understanding of how these psychological states relate to individual and organizational outcomes in other occupational groups (e.g., teachers, physicians).

Co-Existing Global and Specific PE Components

Despite acknowledging the need to consider PE as a multidimensional construct, some research has

also suggested that employees may experience PE holistically as a single global dimension (Chamberlin et al., 2018; Li et al., 2018). This global representation is supported by the moderate to high correlations reported between the different PE components (Boudrias et al., 2014; Minai et al., 2020), and by the demonstration of stronger associations with covariates (i.e., predictors and outcomes) when PE is defined as a global dimension (Boudrias et al., 2010). However, these various dimensions are also seen as independent from one another (Spreitzer, 1995), and prior studies have shown that each of these components shared unique associations with predictors and outcomes (e.g., Gill et al., 2019; Muduli & Pandya, 2018). These observations raise a series of important questions regarding: (a) whether the PE facets retain specificity beyond the assessment of the overarching PE construct; and (b) whether this overarching construct exists as a global entity including specificities mapped by the facets, or whether these facets reflect distinct correlated dimensions without such a common core (Morin et al., 2016a, 2017). The confirmatory factor analytic (CFA) approach has dominated research focusing on the structure of PE (e.g., Minai et al., 2020). However, CFA includes important restrictions that limit its usefulness when the goal is to conduct a complete investigation of the dimensionality of complex psychological constructs. Fortunately, alternative approaches exist to support a more thorough investigation of these questions (e.g., Gillet et al., 2019b; Hansen et al., 2013).

More precisely, recent research (Gillet et al., 2019b; Huyghebaert-Zouaghi et al., 2021) focusing on competence, autonomy, and relatedness need satisfaction has shown that bifactor modeling allows to address a multidimensionality issue that may be present in multidimensional instruments designed to measure employees' psychological need satisfaction. This multidimensionality issue is ignored in more traditional CFA approaches but can be addressed by bifactor modeling through the disaggregation of global and specific components. The first of those components (global factor) reflects global levels of one's need satisfaction across all needs. The second component (specific factor) reflects the more specific levels of need satisfaction of each need, left unexplained by the global level of need satisfaction. Although no research has used a bifactor model to examine the multidimensional structure of PE, the conceptual proximity between psychological need satisfaction (Deci et al., 2017) and PE (Spreitzer, 1995) suggests that a bifactor model may be adequate to represent PE ratings in this research. Specifically, competence (i.e., employees experience mastery and

optimal challenge in their work environment) and autonomy (i.e., employees feel a sense of ownership of their actions at work) need satisfaction is similar to the feelings of competence and self-determination as defined by Spreitzer (1995). However, additional investigations are needed to confirm that enough specificity exists at the subscale level, once global levels of PE are considered. A first objective of this study is thus to illustrate the utility of bifactor models by showing that they may help to achieve an improved representation of employees' feelings of PE.

A Person-Centered Perspective on PE

Hansen et al. (2013) conducted the only person-centered study of PE profiles to date. They identified eight profiles in two different settings (non-privatized and privatized hospitals) defined based on the competence, impact, meaning, and self-determination components: (1) Empowered (high levels across dimensions); (2) In Control (moderately high to high levels of impact and self-determination, and average to moderately high levels of meaning and competence); (3) Quasi-Empowered (moderately high levels of self-determination, impact, and meaning, and average to moderately low levels of competence); (4) Competent/Normed (average to moderately low levels across dimensions); (5) References (moderately high to high levels of meaning, and average levels of self-determination, competence, and impact); (6) Underused (moderately low to low levels of meaning and impact, average to moderately high levels of competence, and average to moderately low levels of self-determination); (7) Misfit (low levels of competence, and average to moderately low levels of meaning, self-determination, and impact); and (8) Powerless (average to moderately low levels of meaning and competence, and low levels of self-determination and impact).

However, this investigation relied on profile indicators ignoring the dual global and specific nature of PE. Yet, when applying person-centered analyses to indicators known to present a global and specific structure, Morin et al. (2016a, 2017) have shown that relying on profile indicators that fail to properly disaggregate these global and specific factors was likely to result in the erroneous estimation of profiles characterized by matching levels across indicators (e.g., a profile characterized by high levels of PE across dimensions). This study is also limited by its reliance on cluster analyses, which have been criticized (see Meyer & Morin, 2016) particularly for research involving covariates. More specifically, cluster analyses show a greater level of reactivity to the retained clustering algorithm, rely

on rigid statistical assumptions, force the exact assignment of participants into a single profile (rather than taking into account participants' likelihood of membership in all profiles based on their prototypical similarity), and make it impossible to directly incorporate covariates into the model as predictors or outcomes (for details, see Meyer & Morin, 2016; Morin et al., 2011). Additional studies are needed to see whether these findings generalize to other samples by relying on more flexible methods, such as latent profile analyses (LPA), which allowed us to relax the restrictive assumptions of cluster analyses. Indeed, in contrast to cluster analyses, LPA do not assume that the variance of the profile indicators is invariant across profiles. Furthermore, LPA allow all participants to have a probability of membership in all profiles based on their similarity with each prototypical latent profile. LPA also allow for the direct specification of alternative models that can be compared with fit statistics, allowing for the comparison of solutions including differing numbers of latent profiles based on a wide array of statistical indicators. Finally, because the profiles and all of the relations are estimated in a single step, the type 1 errors are limited and the biases in the estimation of the links between covariates and the latent profiles are reduced (see Meyer & Morin, 2016).

Keeping in mind the importance of disaggregating these global and specific components in the identification of PE profiles, and lacking guidance from person-centered research doing so while relying on the PE construct, we leave as an open research question the structure and number of profiles that will best reflect employees' PE configurations. Nevertheless, the bulk of evidence on related constructs (e.g., psychological need satisfaction: Martinent et al., 2021) seems to suggest the presence of at least three profiles, generally including a High Empowerment, a Moderate Empowerment, and a Low Empowerment configuration. Conversely, considering that the bifactor approach adopted in this study helps identify profiles displaying clearer qualitative differences (Gillet et al., 2019b), it seems reasonable to expect additional profiles characterized by a clearer differentiation among the global and specific PE components (i.e., with shape-differences; Morin et al., 2016a). However, despite these considerations, it is important to acknowledge that, due to the lack of prior empirical guidance, we relied on a predominantly inductive approach when studying the characteristics of these profiles. Valuable research insights can emerge from the examination of well-supported research questions, even when it is impossible, due to lack of previous theoretical or empirical guidelines, to clearly

specify the exact nature of the expected results (Morin et al., 2018).

A Longitudinal Person-Centered Perspective

An additional objective of the present study is to assess the extent to which the PE profiles would remain stable over a period of twelve months. In line with prior research (Hagerman et al., 2017), we expected this specific time lag to be suitable because it goes beyond daily fluctuations (e.g., Hancox et al., 2017) but it is still short enough to capture changes that could not be reflected in longer time spans (e.g., Morin et al., 2016b). Two distinct forms of longitudinal stability can, and should, be considered (Gillet et al., 2019a; Sandrin et al., 2020). A first form of longitudinal stability, within-sample stability, is related to the nature of the profiles themselves, which could change over time. For example, the number or structure of the profiles could change over time, which would suggest that the profiles have only limited usefulness as intervention guides as they apparently reflect transient phenomena, or that the sample under consideration has recently been exposed to some rather important internal or external changes. Morin et al. (2016c) refer to these two subtypes of within-sample profile stability as configural (same number of profiles) and structural (profiles with the same nature) similarity. In contrast, changing circumstances may alternatively lead to a change in the degree of similarity among members of specific profiles (dispersion similarity), or in the relative size of the profiles (distributional similarity). These two subtypes of within-sample profile stability do not preclude the reliance on person-centered solutions as intervention guides, but simply suggest that the identified profiles show some degree of reactivity to internal or external changes. A second form of longitudinal stability, within-person stability, is related to changes in employees' membership in specific profiles over time (Gillet et al., 2019a; Sandrin et al., 2020) and can be observed in the absence of within-sample changes.

So far, research on PE profiles has been cross-sectional (Hansen et al., 2013). However, a variable-centered longitudinal study of employees' PE revealed a moderately high level of stability in ratings over one year (Hagerman et al., 2017). Morin et al. (2016b) also demonstrated similar results over a one-year (i.e., between $r = .74$ and $r = .89$) and a two-year ($r = .66$) period. These observations lead us to expect to observe a high level of within-person stability, as well as strong evidence of configural, structural, and dispersion within-sample similarity. However, given the lack of longitudinal person-

centered evidence, we leave as an open research question whether the relative size of the profiles (distributional similarity) will change over time, and whether the dominant within-person transitions will be upward (toward more empowered profiles), downward (toward less empowered profiles), or lateral (toward distinct profiles presenting similar levels of PE).

A Construct Validation Perspective

Another critical step in the assessment of the construct validity of profiles, especially when relying on a predominantly inductive approach such as the one used in this study (Morin et al., 2018), is to document their theoretical and practical implications via the examination of associations between profile membership and theoretically-relevant predictors and outcomes (Marsh et al., 2009; Meyer & Morin, 2016). Without information related to key predictors of PE profiles, knowledge regarding the nature of these profiles will be of very limited utility for managers and organizations who also need to know which levers can be used to influence profile membership. In the present study, we consider the role of workload as a job demand and of various resources (supervisor support, overall organizational justice, and role clarity) as predictors of PE profiles. We consider these job characteristics as they are known to have a significant influence on employees' PE (e.g., Boudrias et al., 2012; Wei et al., 2019). More generally, research anchored in the job demands-resources model has demonstrated that job demands and resources are important dimensions to consider as they are strongly related to employees' health, attitudes, and behaviors (Bakker & Demerouti, 2017).

Likewise, without information on their outcomes, it remains impossible to clearly assess the true desirability of the various profiles, making it hard to decide which profile to target for intervention purposes. In the present study, we consider the role of alcohol consumption (i.e., the extent to which employees drink alcohol), sleeping difficulties (i.e., the extent to which employees have difficulty falling asleep), and depressive symptoms (i.e., the extent to which employees feel sad, down or depressed) as outcomes of these profiles. First, alcohol consumption has negative effect on the economic efficiency and productivity within the workplace, including the healthcare setting (Watson et al., 2015). Likewise, prior investigations emphasized that sleep is particularly important in the recovery process and that sleeping difficulties may lead to detrimental outcomes (e.g., high presenteeism, low performance; Gillet et al., 2020a). Finally, depressive symptoms are known to be

prevalent among healthcare workers and to play a key role in their functioning (Edward & Munro, 2008).

Predictors of Profile Membership

Workload. Among the numerous determinants of PE, workload was emphasized by numerous studies as importantly associated with PE (e.g., Boudrias et al., 2012; Braunstein-Bercovitz, 2013). Workload is a perceived form of job demand (i.e., a work-related characteristic requiring sustained physical and/or psychological effort and assumed to be associated with a variety of physiological and/or psychological costs; Bakker & Demerouti, 2017). Dealing with high levels of workload could deplete employees' energy and hinder their functioning, and might result in low levels of PE (De Gieter et al., 2018). More specifically, feeling overwhelmed by the different work tasks they need to accomplish may prevent employees from performing those tasks that are congruent with their values, and as such it might lead to a lower level of meaningfulness (Fernet et al., 2013). Similarly, high workload takes a heavy toll on employees who feel little control over their work (Parker et al., 2013). As a result, it is highly possible that employees believe that they cannot have influence over strategic, administrative, or operational outcomes (i.e., low impact). High workload also requires ongoing adaptability as there is little time or energy available to step back and properly evaluate and prioritize one's efforts (Mallat et al., 2020). In such circumstances, employees may have difficulties to stabilize their attentional focus and continually display high levels of task effort across the workday. Work is thus not easily managed on a daily basis and may lead to low levels of competence (Dust et al., 2022). In line with these considerations, Wallach and Mueller (2006) found that workload had a negative effect on PE.

Job resources. Job resources (e.g., supervisor support, overall organizational justice, and role clarity) are expected to help enhance psychological functioning (Bakker & Demerouti, 2017). More specifically, job resources are associated with an increase in employees' intrinsic motivation and higher levels of PE (Spreitzer, 1995). For instance, improvements in knowledge, skills, and abilities associated with supervisor support (i.e., employees' perceptions of the extent to which their supervisor cares about their well-being and values their contributions; Caesens et al., 2020) can enhance employees' perceptions of work-related competence (Seibert et al., 2011). Promotions, performance

evaluations, and rewards that are strongly related to overall organizational justice (i.e., employees' perceptions of fairness regarding the organization as a whole; Ambrose & Schminke, 2009) also contribute to employees' perceptions of autonomy and influence at work (Muraven et al., 2007). Employees' participation facilitates a feeling of self-determination and impact at work by providing them with opportunities to control their work (Parker et al., 2013) and increases the sense of meaning at work by offering them more insight into their job and the organization (Seibert et al., 2011).

Role clarity relates to definiteness concerning the goals, tasks, and responsibilities in one's work (Whitaker et al., 2007). When workers experience a high degree of certainty about their job duties, the allocation of time, and policies and expectations of their workplace, they are able to set clear, specific, and challenging goals that activate and stimulate them (Locke & Latham, 2019), resulting in a stronger feeling that their job contributes to their life (i.e., higher levels of meaning). Similarly, employees who know what they need to do and what is expected of them experience choice and willingness (i.e., high levels of self-determination) because they behave in a way that is congruent with their self-endorsed values and interests (Deci et al., 2017). Finally, role clarity represents a critical job resource that is instrumental in cultivating PE (e.g., impact, competence) because it reduces job-related uncertainty (Whitaker et al., 2007), helps employees focus on essential aspects of their work (Bang et al., 2010), and allows them to effectively invest energy in their work roles (Karkkola et al., 2019).

In sum, research in this field shows that job resources trigger a PE process and boost intrinsic motivation. As a result, higher levels of supervisor support, overall organizational justice, and role clarity seem to encourage the emergence of PE, leading us to expect these various job resources to be associated with a higher probability of membership into profiles presenting higher global levels of PE (e.g., High Empowerment). Conversely, higher levels of workload should be a threat to PE, and that workload should be associated with a lower probability of membership into profiles presenting higher global levels of PE (e.g., High Empowerment).

Outcomes of Profile Membership

Research has shown that higher global levels of PE or specific levels of competence, impact, meaning, and self-determination tend to be associated with positive outcomes such as higher levels of well-being (Lee et al., 2016; Li et al., 2018) and better health (Boudrias et al., 2010, 2012). In

addition, Hansen et al. (2013) demonstrated that the Empowered and Control profiles were associated with higher responsibility for work outcomes and job satisfaction, and lower mental health complaints and turnover intentions than the Reference profile. The Quasi-Empowered profile was associated with higher levels of responsibility for work outcomes and job satisfaction, and lower levels of turnover intentions than the Reference profile. The Competent/Normed profile was associated with higher responsibility for work outcomes than the Reference profile, whereas the Underused and Misfit profiles were associated with lower responsibility for work outcomes than the Reference profile. Finally, the Powerless profile was associated with lower levels of job satisfaction and higher levels of turnover intentions than the Reference profile. More generally, these findings showed that high levels of PE are associated with the most adaptive outcomes, while the opposite holds true for employees characterized by low levels of PE.

When workers feel meaningful, they are enthusiastic and want to invest in their work, which results in lower levels of ill-being (e.g., depressive symptoms; Lee et al., 2017). A perceived lack of self-determination has also been proposed as one central factor for the development and perpetuation of depressive disorders (Han et al., 2018), while depressed individuals have reduced beliefs in their own competencies and skills (Edward & Munro, 2008). Further, when employees display low levels of perceived competence, feelings of self-worth are low, possibly leading workers to increase their job involvement in order to prove themselves (Spence & Robbins, 1992). When workers feel oppressed (i.e., low levels of self-determination), they may similarly increase their job involvement to better meet external demands (Deci et al., 2017). More generally, prior research has highlighted the risk for addiction in a context where employees experience little self-determination in their work (Mills et al., 2018). In line with these results, alcohol consumption may serve a compensatory function to fulfill employees' unsatisfied needs (Vansteenkiste & Ryan, 2013). In other words, when PE is lacking in the work domain, employees may turn to alcohol consumption to compensate.

Finally, the quality of sleep and respite of individuals could be affected as a result of not being properly empowered in their work activities. When employees display low levels of PE, they may expend more efforts to cope with these negative experiences, and even ruminate more about these experiences outside of the work setting, thus increasing their sleeping problems (Huyghebaert-Zouaghi

et al., 2022b). In addition, at high levels, sleeping problems gradually turn into more serious difficulties, such as depressive symptoms (Bernhard-Oettel et al., 2020), which themselves share clear relations with low levels of PE (Vansteenkiste & Ryan, 2013). Conversely, empowered employees experience intrinsic motivation for their work activities (Spreitzer, 1995). As being intrinsically motivated to perform their work activities indicates that work engagement is interesting and pleasant in itself (Deci et al., 2017). Yet, the experience of pleasure is associated with the production of certain hormones in the brain's 'pleasure reward' system (e.g. serotonin, dopamine) that will downregulate the stress response (Kringelbach & Berridge, 2017) leading to lower levels of sleeping problems.

The lack of previous person-centered studies of PE, as conceptualized in the present study (i.e., relying on a proper disaggregation of the global and specific factors), makes it hard to formulate precise hypotheses regarding associations between PE profiles and outcomes. However, the results obtained from the few previous person-centered studies of PE and psychological need satisfaction, and previous findings from variable-centered research, allow us to hypothesize that profiles presenting higher global levels of PE (e.g., High Empowerment) should be characterized by lower levels of alcohol consumption, sleeping difficulties, and depressive symptoms relative to profiles presenting lower global levels of PE (e.g., Low Empowerment).

Method

Participants and Procedure

The study was conducted among employees of a French university hospital complex. Data were collected twice over a twelve-month period (between 2018 and 2019) in the occupational health department during the mandatory medical check-ups. Participants were welcomed by a clinical research nurse who presented the research and proceeded to the inclusion on the basis of a written informed consent to participate. Any professional working in a care unit was included (e.g., nurse, care assistant, physician). At each data collection time, participants were assured of the voluntary and anonymous (through an identification code) nature of their participation. Once the participants had completed a tablet questionnaire in the waiting room for the collection of psychometric indicators (i.e., PE, workload, supervisor support, organizational justice, and role clarity), they were received in medical consultation. The physician followed a standardized layout and coded the health indicators

retrieved from the interview on a computer (i.e., alcohol consumption, sleeping difficulties, and depressive symptoms).

Recruitment resulted in a sample of 750 participants (87.2% of females) at Time 1 (T1) and 540 participants (88% of females) at Time 2 (T2) who had already completed the first questionnaire one year earlier. The participants had a mean age of 40.40 years ($SD = 9.71$) and a mean tenure in their current position of 6.34 years ($SD = 6.26$). Most of them worked full time (66.67%) on a permanent employment contract (91.87%). Nurses and nursing assistants represented the largest proportion of the sample (i.e., respectively 40.53% and 27.73%), followed by physicians (13.73%), by secretaries (9.47%), by hospital service agents in charge of cleaning (3.33%), and finally by other professionals (e.g., psychologists, physiotherapists).

Measures

PE (profile indicator). PE was measured using Spreitzer's (1995) 12-item scale, measuring four sub-dimensions with three items each: Self-determination (e.g., "I have significant autonomy in determining how I do my job"; $\alpha = .78$ at T1 and $\alpha = .82$ at T2), competence (e.g., "I am confident about my ability to do my job"; $\alpha = .74$ at T1 and $\alpha = .70$ at T2), impact (e.g., "My impact on what happens in my department is large"; $\alpha = .84$ at T1 and $\alpha = .89$ at T2) and meaning (e.g., "The work I do is very important to me"; $\alpha = .85$ at T1 and $\alpha = .82$ at T2). All items were rated on a seven-point response scale ranging from "Strongly Disagree" to "Strongly Agree".

Workload. Workload was measured using a five-item scale (e.g., "I have to work very fast"; $\alpha = .87$ at T1 and $\alpha = .88$ at T2) developed by Spector and Jex (1998). Participants were asked how often they had been faced with each situation on a five-point scale ranging from "Never" to "Always".

Supervisor support. Supervisor support was measured using a four-item scale (e.g., "My supervisor really cares about my well-being"; $\alpha = .82$ at T1 and $\alpha = .83$ at T2) adapted by Luybaert et al. (2014), based on the scale developed by Eisenberger et al. (1986). All items were rated on a seven-point response scale ranging from "Strongly Disagree" to "Strongly Agree".

Overall organizational justice. Overall organizational justice was measured using a three-item scale (e.g., "Overall, I believe I am treated fairly by the organization"; $\alpha = .73$ at T1 and $\alpha = .77$ at T2)

developed by Jones and Martens (2009). All items were rated on a seven-point response scale ranging from “Strongly Disagree” to “Strongly Agree”.

Role clarity. Role clarity was measured using a four-item scale (e.g., “My work responsibilities are clearly defined”; $\alpha = .77$ at T1 and $\alpha = .78$ at T2) developed by Barling and Frone (2017). All items were rated on a four-point response scale ranging from “Strongly Disagree” to “Strongly Agree”.

Alcohol consumption. Alcohol consumption was measured during the medical visit by the physician who asked participants how many drinks of alcohol they consume per day. The physician reported the number of drinks.

Sleeping difficulties. Sleeping difficulties were assessed during the medical visit by the physician who asked participants if they had difficulty falling asleep. The participants’ responses were coded by the physician on a two-modality scale (0: no and 1: yes).

Depressive symptoms. Depressive symptoms were assessed during the medical visit by the physician, who asked a question from the structured interview developed by Terluin et al. (2002). More precisely, the physician asked participants if they felt sad, down or depressed most of the day. The participants’ responses were coded by the physician on a two-modality scale (0: no and 1: yes).

Ethical statement

The research protocol was approved by the Nantes University Hospital Ethics Committee (i.e., GNEDS, Groupe Nantais d’Éthique dans le Domaine de la Santé) under the reference number GNEDS02122018, and is registered in the ClinicalTrials.gov register under the reference number NCT04010773. All methods were performed in accordance with guidelines of the Declaration of Helsinki. This study was conducted as part of the Chrysalide research project (Cougot et al., 2019).

Analyses

Preliminary Analyses

The psychometric properties of all multi-item measures were verified as part of preliminary factor analyses. Details on these analyses (factor structure, measurement invariance over time, composite reliability, and factor correlations) are reported in the online supplements (Tables S1 to S5). The main analyses relied on factor scores from these preliminary analyses (Meyer & Morin, 2016; Morin et al., 2016c). To ensure comparability over time, factor scores were obtained from models specified as

invariant longitudinally (Millsap, 2011), and estimated in standardized units ($SD = 1$; $M = 0$). Factor scores are able to achieve a partial control for unreliability (Skrondal & Laake, 2001) and to preserve the structure of the measurement model (e.g., invariance; Morin et al., 2016a).

Model Estimation

Models estimation relied on the maximum likelihood robust (MLR) estimator implemented in Mplus 8.7 (Muthén & Muthén, 2021). Missing responses were handled using full information maximum likelihood (FIML) procedures, allowing us to estimate longitudinal models using all participants who responded to at least one time point ($n = 750$) and using all of the available information to estimate each model parameter (without relying on missing data replacement). It was thus not necessary to rely on a suboptimal listwise deletion strategy including only participants ($n = 540$) who completed both measurements. FIML is recognized to be as efficient as multiple imputation, but less computationally demanding (Enders, 2010). LPA are sensitive to the start values used in the model estimation process (Hipp & Bauer, 2006). For this reason, all models were estimated using 5000 sets of random start values allowed 1000 iterations each, and final stage optimization was conducted on the 200 best solutions. These numbers were changed to 10000, 1000, and 500 for the longitudinal analyses.

Latent Profile Analyses (LPA)

LPA models are designed to examine the multivariate distribution of scores on a set of profile indicators to summarize this distribution via the identification of a finite set of latent subpopulations, or profiles, of participants characterized by distinct configurations on this set of indicators, while allowing for within-profile variability on all indicators (McLachlan & Peel, 2000). These profiles are similar to prototypes, and called latent to reflect their probabilistic nature (Morin et al., 2018). More precisely, each participant is assigned a probability of membership in each of the latent profiles, which provides a way to assess the LPA model while controlling for classification errors. In this study, time-specific LPA models were first estimated using the five psychological empowerment factors as indicators. At each time point, solutions including one to eight profiles were estimated while allowing the means and variances of the indicators (global levels of psychological empowerment, and specific levels of meaning, competence, self-determination, and impact) to be freely estimated (Morin &

Litalien, 2019).

Model Comparison and Selection

The decision of how many profiles to retain relies on a consideration of whether the profiles themselves are meaningful, aligned with theory, and statistically adequate (Marsh et al., 2009; Morin, 2016). Statistical indicators (McLachlan & Peel, 2000) can also be consulted. Thus, a lower value on the Akaike Information Criterion (AIC), Consistent AIC (CAIC), Bayesian Information Criterion (BIC), and sample-size Adjusted BIC (ABIC) indicate better fitting models. Statistically significant p-values on the adjusted Lo, Mendell and Rubin's (2001) Likelihood Ratio Test (aLMR), and Bootstrap Likelihood Ratio Test (BLRT) suggest better fit relative to a model with one fewer profile.

Statistical research has shown that the BIC, CAIC, ABIC, and BLRT, but not the AIC and aLMR, were efficient at helping to identify the number of latent profiles (Diallo et al., 2016, 2017). For this reason, the AIC and aLMR will not be used for purposes of model comparison and selection and are only reported for purposes of transparency. These tests all present a strong sample size dependency (Marsh et al., 2009). For this reason, they often fail to converge on a specific number of profiles. When this happens, it is usually recommended to rely on a graphical display of these indicators, referred to as an elbow plot, in which the observation of a plateau in the decrease in the value of these indicators helps to pinpoint the optimal solution (Morin et al., 2011). Finally, the classification accuracy (from 0 to 1) is summarized by the entropy, which should not be used to select the optimal number of profiles present in a solution (Lubke & Muthén, 2007).

Longitudinal Tests of Profile Similarity

Assuming that the same number of profiles would be extracted at both time points (Morin & Wang, 2016), the two time-specific LPA solutions will then be combined into longitudinal LPA for longitudinal tests of within-sample profile similarity. Morin et al.'s (2016c) recommendations, optimized for the longitudinal context by Morin and Litalien (2017), were used to guide these tests. This sequential strategy starts by assessing if each measurement occasion results in the estimation of the same number of profiles. The two time-specific solutions can then be combined in a longitudinal model of *configural* similarity. Equality constraints can then be imposed on the within-profile means (*structural* similarity), variances (*dispersion* similarity), and size (*distributional* similarity). The

CAIC, BIC, and ABIC can be used to contrast these models so that each form of profile similarity can be considered to be supported as long as at least two of these indices decrease following the integration of equality constraints (Morin et al., 2016c).

Latent Transition Analyses (LTA)

The most similar longitudinal LPA solution will then be re-expressed as a LTA to investigate within-person stability and transitions in profile membership (Collins & Lanza, 2010). This LTA solution, as well as all following analyses, were specified using the manual three-step approach (Asparouhov & Muthén, 2014) outlined by Morin and Litalien (2017). Readers interested in a complete coverage of the technical and practical aspects involved in the estimation of LPA and LTA are referred to Morin and Litalien (2019).

Predictors and Outcomes of Profile Membership

We assessed the extent to which the relations between profiles, predictors (*predictive* similarity), and outcomes (*explanatory* similarity) remained the same over time. Demographics (sex, age, status, sector, and country) were first considered across a series of four models in which their association with profile membership was specified using a multinomial logistic regression link function. First, we estimated a null effects model assuming no relations between these variables and the profiles. Second, the effects of these demographic variables were freely estimated, and allowed to vary over time and as a function of T1 profile membership (to assess the effects on specific profile transitions). Third, predictions were allowed to differ over time only. Finally, a model of *predictive* similarity was estimated by constraining these associations to be equal over time. Relations between the theoretical predictors (workload, supervisor support, overall organizational justice, and role clarity) and profile membership were then assessed in the same sequence.

Time-specific outcome measures (sleeping difficulties, alcohol consumption, and depressive symptoms) were included and allowed to vary as a function of profile membership at the same time point. T2 outcome measures can be considered to be controlled for what they share with their T1 counterparts (i.e., stability) due to their joint inclusion. *Explanatory* similarity was assessed by constraining these associations to be equal over time. The multivariate delta method was used to test the statistical significance of between-profile differences in outcome levels (Raykov & Marcoulides,

2004).

Results

Latent Profile Analyses (LPA)

The statistical indicators associated with each of the time-specific LPA solutions are reported in Table S6, and graphically displayed in Figures S1 and S2, of the online supplements. These indicators failed to pinpoint a clear dominant solution at both time points. However, the elbow plots revealed an inflection point after two profiles at both time points. Solutions including more than three profiles were thus carefully examined. This examination revealed that these solutions were highly similar across time points, and that the addition of profiles added meaning to the model up to five profiles. However, adding a sixth profile simply resulted in the splitting of one profile into smaller ones presenting a comparable configuration. On the basis of this examination, we decided to retain the five-profile solution at both time points for further analyses.

The fit indices from all longitudinal models are reported in Table 1. Starting with a model of *configural* similarity including five profiles per time point, equality constraints were progressively integrated. The second model or *structural* similarity resulted in lower BIC, CAIC, and ABIC values, and was thus supported by the data. The *dispersion* similarity of the model was also supported by the data, resulting in lower values on these information criteria. Finally, the *distributional* similarity of the solution was supported by the observation of lower values on these information criteria. The model of *distributional* similarity is graphically represented in Figure 1 and was retained for interpretation. The detailed parameter estimates from this model are reported in Tables S7 and S8 of the online supplements. As shown in Table S8, this solution is associated with a high level of classification accuracy, ranging from 84.8% to 91.0% across T1 profiles, from 84.2% to 92.0% at T2, and summarized in a high entropy value of .826.

Profile 1 displays low global levels of psychological empowerment, and moderately low specific levels of meaning, competence, self-determination, and impact. This *Low Empowerment* profile characterizes 33.58% of the participants. Profile 2 corresponds to participants reporting moderately high global levels of psychological empowerment as well as specific levels of self-determination and impact, average specific levels of competence, and moderately low specific levels of meaning. This

Moderately High Empowerment and Impact profile characterizes 23.85% of the participants. Profile 3 corresponds to participants reporting average global levels of psychological empowerment as well as specific levels of meaning, competence, self-determination, and impact. This *Normative* profile characterizes 19.30% of the participants. Fourth, Profile 4 corresponds to participants reporting high global levels of psychological empowerment, and moderately high specific levels of meaning, competence, self-determination, and impact. This *High Empowerment* profile characterized 6.68% of the participants. Finally, Profile 5 corresponds to participants reporting high specific levels of meaning, moderately high global levels of psychological empowerment and specific levels of competence, average specific levels of self-determination, and moderately low specific levels of impact. This *Moderately High Empowerment and High Meaning* profile characterizes 16.60% of the participants.

Latent Transitions Analyses (LTA)

The transition probabilities estimated as part of the LTA are reported in Table 2. Membership into Profiles 1 (*Low Empowerment*: Stability of 84.1%), 2 (*Moderately High Empowerment and Impact*: Stability of 87.0%), 3 (*Normative*: Stability of 86.7%), and 5 (*Moderately High Empowerment and High Meaning*: Stability of 71.8%) were the most stable over time. Conversely, membership into Profile 4 (*High Empowerment*: Stability of 51.0%) was not as stable. Thus, our results reveal a very high level of profile stability that appears to decrease slightly as the global levels of psychological empowerment associated with each profile increase.

Participants initially presenting high global levels of psychological empowerment, when they transition to another profile at T2, tend to retain moderately global levels of psychological empowerment. Indeed, 49.0% of the members of the *High Empowerment* profile at T1 transition to the *Moderately High Empowerment and Impact* profile at T2. For members of the *Low Empowerment* profile at T1, transitions seem to mainly involve the *Normative* (9.9%) and *Moderately High Empowerment and High Meaning* (5.9%) profiles at T2. For members of the *Moderately High Empowerment and Impact* profile at T1, transitions seem to mainly involve the *Low Empowerment* (7.1%) and *High Empowerment* (5.9%) profiles at T2. For members of the *Normative* profile at T1, transitions seem to mainly involve the *Low Empowerment* (4.0%), *Moderately High Empowerment*

and *Impact* (4.0%), and *Moderately High Empowerment and High Meaning* (4.6%) profiles at T2.

Finally, when they transition to a new profile at T2, members of the *Moderately High Empowerment and High Meaning* profile seem to transition to the *Moderately High Empowerment and Impact* (10.5%), *Normative* (7.7%), *Low Empowerment* (5.4%), and *High Empowerment* (4.6%) profiles at T2.

Predictors of Profile Membership

As shown in Table 1, the lowest values on all information criteria were associated with the null effects model, consistent with a lack of association between profile membership and the demographic variables. This interpretation was further supported by an examination of the parameter estimates associated with all these models, which also revealed a lack of associations between these variables and the profiles. The next set of results indicated that the associations between the theoretical predictors and participants' likelihood of profile membership generalized over time (i.e., supporting the model of *predictive* similarity). The results from this model are reported in Table 3 and revealed that role clarity, overall organizational justice, and supervisor support predicted an increased likelihood of membership into the profiles characterized by the highest levels of PE relative to profiles with lower levels of PE. More specifically, role clarity predicted an increased likelihood of membership into the *Moderately High Empowerment and High Meaning* (5) profile relative to the *Low Empowerment* (1) and *Normative* (3) profiles. Overall organizational justice and role clarity predicted an increased likelihood of membership into the *High Empowerment* (4) profile relative to the *Low Empowerment* (1) profile. Role clarity predicted an increased likelihood of membership into the *High Empowerment* (4) profile relative to the *Moderately High Empowerment and Impact* (2) and *Normative* (3) profiles. Overall organizational justice predicted an increased likelihood of membership into the *Normative* (3) profile relative to the *Low Empowerment* (1) profile. Supervisor support, overall organizational justice, and role clarity predicted a decreased likelihood of membership into the *Low Empowerment* (1) profile relative to the *Moderately High Empowerment and Impact* (2) profile. In contrast, workload predicted an increased likelihood of membership into the *Low Empowerment* (1) and *Moderately High Empowerment and High Meaning* (5) profiles relative to the *Moderately High Empowerment and Impact* (2) one.

Outcomes of Profile Membership

The model of *explanatory similarity* resulted in the lowest values on the information criteria and was thus supported by the data (see Table 1). The mean levels of each outcome in each of the profiles are reported in Table 4. The results revealed clear differentiations across all profiles, with the most positive outcomes (lower levels of alcohol consumption, sleeping difficulties, and depressive symptoms) associated with the profiles characterized by the highest levels of PE. More specifically, Profiles 1 (*Low Empowerment*), 2 (*Moderately High Empowerment and Impact*), and 3 (*Normative*) were associated with higher levels of alcohol consumption than Profile 4 (*High Empowerment*). Profile 3 (*Normative*) was associated with higher levels of alcohol consumption than Profile 5 (*Moderately High Empowerment and High Meaning*). Profile 1 (*Low Empowerment*) was associated with higher levels of sleeping difficulties than Profiles 2 (*Moderately High Empowerment and Impact*) and 4 (*High Empowerment*). Profiles 3 (*Normative*) and 5 (*Moderately High Empowerment and High Meaning*) were associated with higher levels of sleeping difficulties than Profile 4 (*High Empowerment*). Profile 1 (*Low Empowerment*) was associated with higher levels of depressive symptoms than Profiles 2 (*Moderately High Empowerment and Impact*), 3 (*Normative*), 4 (*High Empowerment*), and 5 (*Moderately High Empowerment and High Meaning*). Profiles 2 (*Moderately High Empowerment and Impact*) and 5 (*Moderately High Empowerment and High Meaning*) were associated with higher levels of depressive symptoms than Profile 4 (*High Empowerment*).

Discussion

The present research adopted a dual variable- and person-centered approach to investigate the value of jointly considering global and specific dimensions of the PE construct (e.g., Morin et al., 2016a, 2017). Through the application of this framework, we were able to achieve an improved representation of the structure of PE measurement and of employees' PE profiles. The reliance on a longitudinal design also allowed us to investigate the within-person and within-sample stability of these profiles (Gillet et al., 2019a; Sandrin et al., 2020). Furthermore, the criterion-related validity of the PE profiles was documented by examining their associations with theoretically-relevant predictors (i.e., workload, supervisor support, overall organizational justice, and role clarity) and outcomes (i.e., alcohol consumption, sleeping difficulties, and depressive symptoms).

PE as a Multidimensional Construct

Research had yet to investigate the dual nature of PE as a global construct (the global factor) measured from distinct dimensions retaining some degree of specificity of their own (the specific factors). In this regard, our results confirmed our expectations by supporting the superiority of a bifactor representation of PE. This solution revealed co-existing factors representing global levels of PE and specific levels of competence, impact, meaning, and self-determination left unexplained by global levels of PE. In this solution, the global factor and the four specific factors were all well-defined, supporting the idea that ratings of competence, impact, meaning, and self-determination contributed to the assessment of global PE levels, while retaining something unique, beyond their contribution to global PE levels. This improved representation of PE is a key contribution of this study and suggests that researchers should consider this framework as a starting point for their own research to achieve a clear disaggregation of employees' global levels of PE from the unique qualities associated with each specific PE facet.

PE Profiles

Our results revealed that five profiles best summarized the PE configurations observed in the present sample: (1) *Low Empowerment*, (2) *Moderately High Empowerment and Impact*, (3) *Normative*, (4) *High Empowerment*, and (5) *Moderately High Empowerment and High Meaning*. Similar profiles have already been identified in prior person-centered studies relying on PE (Hansen et al., 2013) and need satisfaction facets (e.g., Huyghebaert-Zouaghi et al., 2022b; Martinent et al., 2021). Our results also supported the generalizability of these profiles across time points. These observations suggest that these profiles seem to reflect some overarching psychological mechanisms involved in the experience of PE, irrespective of the specific facets considered in its definition.

Our results also supported Gillet et al.'s (2019b) results highlighting the value of disaggregating global and specific components of PE prior to the identification of the profiles. Indeed, only one of the profiles identified in the present study (i.e., *Normative*) was characterized by matching levels across all five profile indicators (i.e., global PE and specific competence, impact, meaning, and self-determination). Consequently, although PE components are complementary and known to be highly intercorrelated (Boudrias et al., 2014), our findings demonstrate the added value of simultaneously

considering global and specific facets of PE. On the one hand, our results revealed that employees with low (*Low Empowerment* profile) or high (*High Empowerment* profile) global levels of PE tended to display a more balanced configuration (specific levels of competence, impact, meaning, and self-determination showed less pronounced deviations from global levels). Empowered employees' actions are thought to be mainly autonomously regulated, meaning that they act out of choice and interest, leading to internalization (Deci et al., 2017). This is because behaviors associated with PE tend to provide adaptive advantages when they are congruent with personal goals and values (Spreitzer, 1995). In contrast, for workers in the *Low Empowerment* profile, actions are thought to be only weakly motivated as they have no real will to act for intrinsic or extrinsic reasons (Deci et al., 2017).

Conversely, employees characterized by *Moderately High Empowerment and Impact* or *Moderately High Empowerment and High Meaning* profiles displayed a more unbalanced configuration. Some employees might be exposed to particularly fulfilling work lives, while experiencing an even higher level of impact (*Moderately High Empowerment and Impact* profile) or meaning (*Moderately High Empowerment and High Meaning* profile) because their supervisors assign them various significant tasks and duties (Gillet et al., 2020b). Anchored in the recognition that employees' PE tends to be underpinned by more than one of these dimensions, Hansen et al. (2012) have also tried to identify the most commonly occurring configurations, or profiles, of PE. However, they did not rely on a bifactor approach to achieve a clear disaggregation of employees' global and specific levels of PE, which is known to possibly result in erroneous conclusions in the shape of these profiles (Morin et al., 2016a, 2017). The present study was designed to contribute to this research area via the identification of PE profiles defined based on indicators relying on a proper disaggregation of workers' global levels of PE from their specific levels of competence, impact, meaning, and self-determination. More generally, we relied on a dual variable- and person-centered approach (e.g., Morin et al., 2016a, 2017) to investigate the value of jointly considering global and specific dimensions of PE. In doing so, we were able to achieve an improved representation of the structure of PE measurement and profiles,

Indeed, relying on a bifactor profile approach helped to identify configurations of PE profiles that could have been missed by relying only on a global overarching factor or relying on separate PE

components and giving less information to adequately qualify these profiles. By providing the first direct source of evidence of PE profiles defined according to the recently recommended bifactor operationalization (e.g., Gillet et al., 2019a), the present study represents an important step forward in PE research. The reliance on a more traditional approach (ignoring global levels of PE) would have simply resulted in the estimation of profiles revealing little value to considering the unique nature of each PE facet over and above these global levels. In contrast, our results show that, as expected, both components seem to play a role in the definition of PE profiles, and thus bring valuable information to our understanding of PE.

In terms of within-person stability, our results revealed that membership into four of the five identified PE profiles remained highly stable (71.8% to 87.0%) over a one-year period. In contrast, membership into the *High Empowerment* profile was less stable over time (51.0%). This observation implies that it is more difficult to maintain a profile characterized by high levels of PE across all global and specific indicators over time, probably because of the constant chase of efficiency and speed resulting in work intensification as highlighted in past research focusing on job demands (Korunka et al., 2015). In other words, this result suggests that maintaining high levels of PE may not be sustainable, even in a rather short period of time (i.e., one year), in a society that tends to value hard work (Gillet et al., 2017). Taken together, these findings suggest that individual profiles do not tend to change on their own in the absence of a systematic exposure to external changes or interventions. Indeed, although exposure to changes or interventions was not assessed in the present study, such changes are unlikely to have affected all participants in a systematic manner, suggesting that most participants probably underwent a more normative work experience over the course of the study. The rates of stability observed in this study are aligned with previous results showing that employees' levels of PE tend to be moderately to highly stable over one year (Hagerman et al., 2017; Morin et al., 2016b).

More generally, our results reinforce the idea that the person-centered results do not reflect ephemeral phenomena and can be used as guides for generic interventions seeking to increase the PE process (e.g., Meyer & Morin, 2016). Yet, it would be particularly important for future investigations to confirm if the identified profiles would be replicated in other samples and identify interventions

strategies that can nurture the more desirable profiles across different occupational groups (e.g., teachers, managers) or cultures (e.g., North America, Europe, Asia).

Predictors of PE Profiles

By considering the role played by workload, supervisor support, overall organizational justice, and role clarity in the prediction of profile membership, our results provided some practical guidance regarding some of the likely drivers of the distinct PE configurations observed among employees. In terms of job resources, role clarity was found to be associated with a lower likelihood of membership into the *Low Empowerment* and *Normative* profiles relative to the *Moderately High Empowerment and High Meaning* profile, whereas overall organizational justice and role clarity were found to be associated with a lower likelihood of membership into the *Low Empowerment* profile relative to the *High Empowerment* profile. Furthermore, role clarity was found to be associated with a lower likelihood of membership into the *Moderately High Empowerment and Impact* and *Normative* profiles relative to the *High Empowerment* profile, whereas overall organizational justice was found to be associated with a lower likelihood of membership into the *Low Empowerment* profile relative to the *Normative* profile. Finally, supervisor support, overall organizational justice, and role clarity was found to be associated with a lower likelihood of membership into the *Low Empowerment* profile relative to the *Moderately High Empowerment and Impact* profile. These results thus add further evidence to research supporting the adaptive role of supervisor support (Caesens et al., 2020), overall organizational justice (Ambrose & Schminke, 2019; Bernhard-Oettel et al., 2020), and role clarity (Karkkola et al., 2019; Whitaker et al., 2007).

Despite these generally positive effects of job resources on PE, it is noteworthy that role clarity seems to have the strongest effects on PE. This means that employees really need to have clear and consistent information about the expectations associated with their position to experience PE at work. This is because role clarity may decrease their feelings of strain, while improving their capacity to juggle different work activities that are necessary for the successful accomplishment of personally valued goals (Gillet et al., 2016). In addition, healthcare employees work in highly complex and evolving environments where new technology and interventions are constantly emerging (Huyghebaert-Zouaghi et al., 2022a). Their workplace is also characterized by interdisciplinary

collaboration. In such contexts, role clarity is essential as it allows healthcare workers to be informed of their job roles and responsibilities and to collaborate effectively with their colleagues for establishing an effective and positive patient safety culture (Brunault et al., 2014).

Furthermore, overall organizational justice only predicted differences in membership into the *Low Empowerment* profile relative to the *Moderately High Empowerment and Impact*, *Normative*, and *High Empowerment* profiles, suggesting that overall organizational justice can be encouraged to limit the development of profiles characterized by low levels of PE across dimensions. In contrast, improving overall organizational justice among employees who already have moderate to high global levels of PE will not allow these workers to strengthen their global levels of PE and their specific levels of competence, impact, meaning, and self-determination. For these employees, actions to improve role clarity should be implemented as a priority. What remains to be investigated, however, are the conditions under which overall organizational justice can lead to the emergence of profiles characterized by high relative to moderate global levels of PE, which may depend on the extent to which one's motives for working can be conceptualized as primarily driven by autonomous reasons and pleasure, by a series of internal or external contingencies, or both (e.g., Gillet et al., 2020b). Because organizations may expend these efforts differentially across employees, treating some with high levels of overall justice and others with low levels of overall justice, overall justice differentiation (i.e., a process by which an organization engages in differing levels of overall justice behavior to employees within the organization) may also be an important variable to consider (He et al., 2017).

Finally, supervisor support was only associated with a higher likelihood of membership into the *Moderately High Empowerment and Impact* profile relative to the *Low Empowerment* profile. This is consistent with the idea that employees who perceive high levels of supervisor support are more likely to experience higher levels of PE (Caesens et al., 2020). However, these considerations fail to explain how supervisor support could come to be associated with a comparable likelihood of membership into the other PE profiles. This result is particularly challenging for prior variable-centered research that has consistently positioned supervisor support as a positive driver of work-related outcomes in a “the more, the better” perspective (Caesens et al., 2021). However, this unexpected result could potentially be explained by our adoption of a multivariate perspective in which multiple predictors were jointly

considered. This approach allowed us to assess the unique role of each predictor, beyond what they shared with the others, and thus, to identify the most potent predictors of profile membership. As shown in Table S5 of the online supplements, although these predictors all remained reasonably distinct from one another, it remains important to acknowledge that these predictors were not independent from one another and thus likely to play overlapping roles in prediction. Taken together, our results thus suggest that once role clarity and overall organizational justice are considered, supervisor support no longer contributes, on its own, to differentiate between most of the PE profiles. This also means that supervisor support is less important than role clarity and overall organizational justice in explaining PE profiles. Future research is needed to more extensively look at individual and organizational resources that might facilitate the development of moderate to high global levels of PE and try to unpack the mechanisms underlying the relations.

In terms of job demands, workload was found to be associated with a lower likelihood of membership into the *Moderately High Empowerment and Impact* profile relative to the *Low Empowerment* profile. The present results add to accumulating evidence demonstrating undesirable effects of workload on PE (Boudrias et al., 2012; Braunstein-Bercovitz, 2013) and various outcomes (Parker et al., 2013). More generally, our findings are in line with those demonstrating the negative effects of job demands and the positive effects of job resources in the prediction of a range of outcomes (Bakker & Demerouti, 2017).

Interestingly, our results also revealed that workload was found to be associated with a lower likelihood of membership into the *Moderately High Empowerment and Impact* profile relative to the *Moderately High Empowerment and High Meaning* profile. These two profiles are characterized by similar levels of global PE and specific competence and self-determination, but the *Moderately High Empowerment and High Meaning* profile is characterized by higher specific levels of meaning and lower specific levels of impact relative to the *Moderately High Empowerment and Impact* profile. These results suggest that workload may be associated with higher specific levels of meaning and lower specific levels of impact. This is aligned with prior research showing that workload decreases employees' control over their work, thus resulting in decreased beliefs that they can influence over strategic, administrative, or operational outcomes (Parker et al., 2013). In contrast, workload may be

perceived as a challenging job demand (Crawford et al., 2010). More precisely, challenging job demands have the potential to support mastery, personal growth, or future gains (i.e., demands to be overcome to learn and achieve), thus contributing to an increase in their work autonomous motivation (Deci et al., 2017) and in their perceptions of fit between the job and their values, beliefs, and standards (Spreitzer, 1995). This result is interesting because it shows that job demands can have positive effects on PE (and more precisely on specific meaning), contrary to the initial proposals of the job demands-resources model, according to which job demands are necessarily associated with negative consequences (Bakker & Demerouti, 2017). However, it would be important for future research to consider the mechanisms responsible for the associations observed in this study, as well as to investigate other work-related characteristics involved in the emergence of these specific PE configurations.

Outcomes of Profile Membership

Our results finally revealed well-differentiated associations between the PE profiles and outcomes. More specifically, the *High Empowerment* profile was associated with the most positive outcomes (i.e., the lowest levels of alcohol consumption, sleeping difficulties, and depressive symptoms). In contrast, the *Low Empowerment* profile was associated with higher levels of sleeping difficulties than the *Moderately High Empowerment and Impact* profile, and with higher levels of depressive symptoms relative to the four other profiles. These findings confirm the positive effects of global levels of PE (e.g., Li et al., 2018; Richardson et al., 2021), as well as the utility of accounting for both global and specific facets of PE.

Indeed, it does not appear to be sufficient to consider global levels of PE without also considering the specific facets. For instance, employees characterized by a *High Empowerment* profile did not differ from the *Moderately High Empowerment and High Meaning* profile on alcohol consumption. Thus, although the *High Empowerment* profile was characterized by higher global levels of PE, the higher specific levels of meaning displayed by workers corresponding to the *Moderately High Empowerment and High Meaning* profile seemed to carry some benefits from an outcome perspective. On one hand, these observations suggest that higher global levels of PE are not necessarily associated with lower levels of alcohol consumption. Indeed, the effects of global levels of PE may be moderated

by employees' motivation to perform well (Laschinger et al., 2004). In other words, the adaptive effects of global PE might be stronger among employees who want to do their job well (i.e., high levels of autonomous motivation) relative to those who do not care (i.e., high levels of amotivation; see Deci et al., 2017). Similarly, Gillet et al. (2015) found that motivations underlying achievement goals are stronger predictors of subjective well-being than the endorsement of goals themselves. On the other hand, benefits did not come without a cost, as shown by the fact that the *Moderately High Empowerment and High Meaning* profile was also found to be associated with higher levels of sleeping difficulties and depressive symptoms. Employees who find meaning in their work may work harder and have an exaggerated involvement in their job, which in turn would increase sleeping problems and reduce well-being (Avanzi et al., 2012; Conroy et al., 2017). This suggests a mechanism similar to the Too-Much-of-a-Good-Thing Effect (Pierce & Aguinis, 2013), "that could be summarized in the meta-theoretical principle everything in moderation - nothing in excess" (Avanzi et al., 2022, pp. 1257-1258).

The *Low Empowerment* profile was found to be associated with the highest levels of depressive symptoms but, with few exceptions mainly involving the *High Empowerment* profile, did not differ from the other profiles on alcohol consumption and sleeping difficulties. These results thus suggest that there might be limits to the benefits of displaying low levels of PE. Although these results seem to contradict the negative relations reported between PE and detrimental outcomes in previous studies (Boudrias et al., 2010, 2012), it is important to acknowledge that these variable-centered results focus on the average relations observed among a sample, and thus are not directly comparable to the present person-centered results focusing on distinctive configurations of PE. These unexpected findings could be explained by the fact that employees presenting low levels of PE might perceive a lack of meaning or challenge in their work (Harju et al., 2014), limited opportunities for progression, and lack of options or inadequate resources (Cleary et al., 2016). This sub-optimal individual experience is associated with a range of negative emotions such as frustration and implies that employees feel unstimulated. As a result, employees experience difficulties in focusing on the task at hand and find that their job is uninteresting and unchallenging, thus leading to negative attitudes toward work (e.g., boredom, disengagement) and more generally to negative outcomes (Sousa & Neves, 2021).

However, beyond these non-significant differences between the *Low Empowerment* profile and other profiles characterized by higher levels of global and specific PE, it remains important to keep in mind that this profile still presented the highest levels of depressive symptoms. These results are consistent with our expectations and confirm that employees with low levels of PE are not enthusiastic and ready to invest in their work, and have reduced beliefs in their own competencies and skills, thus leading to higher levels of ill-being (Edward & Munro, 2008; Lee et al., 2017).

Furthermore, the *Normative* profile was associated with higher levels of alcohol consumption than the *High Empowerment* and *Moderately High Empowerment and High Meaning* profiles. In contrast, the *Normative* profile did not differ from the *Moderately High Empowerment and High Meaning* profile on sleeping difficulties and depressive symptoms. Finally, the *Normative* profile was associated with higher levels of sleeping difficulties than the *High Empowerment* profile, but did not differ from the *High Empowerment* profile on depressive symptoms. These results confirm that a profile characterized by lower global levels of PE (i.e., *Normative* profile) is associated with worse outcomes relative to profiles with higher global levels of PE (e.g., *High Empowerment* profile; Richardson et al., 2021). More generally, these results point out the importance of exploring synergistic relations between the PE components, and argue for the added-value of jointly considering the global and specific levels of PE. However, such results also suggest that the combined effects of global and specific levels of PE may differ as a function of the outcomes under study. Given that we only considered three outcomes related to maladaptive functioning (i.e., alcohol consumption, sleeping difficulties, and depressive symptoms), it would be particularly important in future research to consider a broader range of desirable (e.g., organizational citizenship behaviors, organizational commitment) but also undesirable (e.g., workaholism, work-family conflict) outcomes in order to better understand the mechanisms at play in explaining these differential effects. In addition, future studies should examine how the effects of balance in PE change as a function of the imbalance related to competence, impact, meaning, and self-determination (Gillet et al., 2019b).

Limitations and Future Directions

Although the present research offers the first investigation of the nature, stability, predictors, and outcomes of PE profiles defined while accounting for employees' global levels of PE properly

disaggregated from the specific levels of competence, impact, meaning, and self-determination, it has some limitations. First, the fact that this study relied solely on self-report measures increases the risk of social desirability and self-report biases. To alleviate these concerns, it would be useful for future studies to consider the incorporation of objective measures (e.g., organizational data on work performance and absenteeism) and informant ratings of employees' functioning (e.g., colleagues, supervisors, spouse). Second, the present study was conducted solely among a sample of healthcare employees working in France. Further research is thus needed to generalize the current results in different countries, languages, and cultures. Third, the current research assessed the stability of PE profiles over a one-year period, which was not characterized by any specific or systematic change or transition for most participants. Clearly, estimates of stability reported in the current investigation could be reduced if longer time intervals were considered, or if continuity and change were assessed across more meaningful transitions (e.g., promotion) or interventions (e.g., professional training). Moreover, although our first data collection occurred before the COVID-19 pandemic, the present research still took place in the midst of a global pandemic which significantly affected individuals' psychological and social functioning, as well as their work and family experiences (Marceau et al., 2022). This context could have influenced our results and future studies should thus examine the extent to which our findings would generalize to longer periods of time, social changes, and pandemic context. Finally, workload, supervisor support, overall organizational justice, and role clarity were the only predictors of interest in our research. Yet, it would be interesting to examine how other personal characteristics (e.g., psychological capital, self-efficacy) as well as hindrance (e.g., role conflict) and challenge (e.g., role responsibility and complexity) demands relate to employees' PE.

Practical Implications

From an intervention perspective, our findings demonstrate that managers should be particularly attentive to workers exposed to heavy workload, and to those who cannot benefit from job characteristics supporting them in achieving their goals, reducing the costs associated with job demands, and stimulating their personal development (i.e., job resources such as supervisor support, overall organizational justice, and role clarity; Bakker & Demerouti, 2017). Indeed, our results showed that these employees were more likely to be members of the *Low Empowerment* profile (associated

with the highest levels of depressive symptoms) and less likely to be members of the *High Empowerment* profile (associated with the most positive outcomes). Therefore, changes designed to increase workers' perceptions of supervisor support, overall organizational justice, and role clarity, and to reduce workload seem to be associated with better functioning.

For instance, care should be taken to ensure that any unforeseen increase in workload be shared, in a reasonably equitable manner, among colleagues. Efforts to promote justice perceptions in terms of workload allocations also seem promising (Emery et al., 2019). Organizations should also allocate resources to enactive mastery experiences, promote self-directed decision-making, and create opportunities for personal growth (Bakker & Demerouti, 2017). More specifically, our findings suggest that initiatives seeking to increase employees' perceptions of supervisor support are likely to have widespread benefits. Among possible ways to achieve this objective, supervisors might promote a supportive culture within their organization, for instance, by providing employees with the resources or materials they need to perform their job effectively, by providing useful training and developmental programs, by providing assurance of security during stressful times, and by promoting justice and fairness in the way policies are implemented and rewards distributed (Eisenberger & Stinglhamber, 2011). Importantly, care should be taken to maximally limit perceptions of inequity in the availability of these improved support mechanisms. Finally, programs designed to sensitize managers to the benefits of clarifying role among their subordinates, and to provide them with tools on how to implement such an approach (e.g., role negotiation and participative decision-making strategies; Gillet et al., 2016), might prove beneficial.

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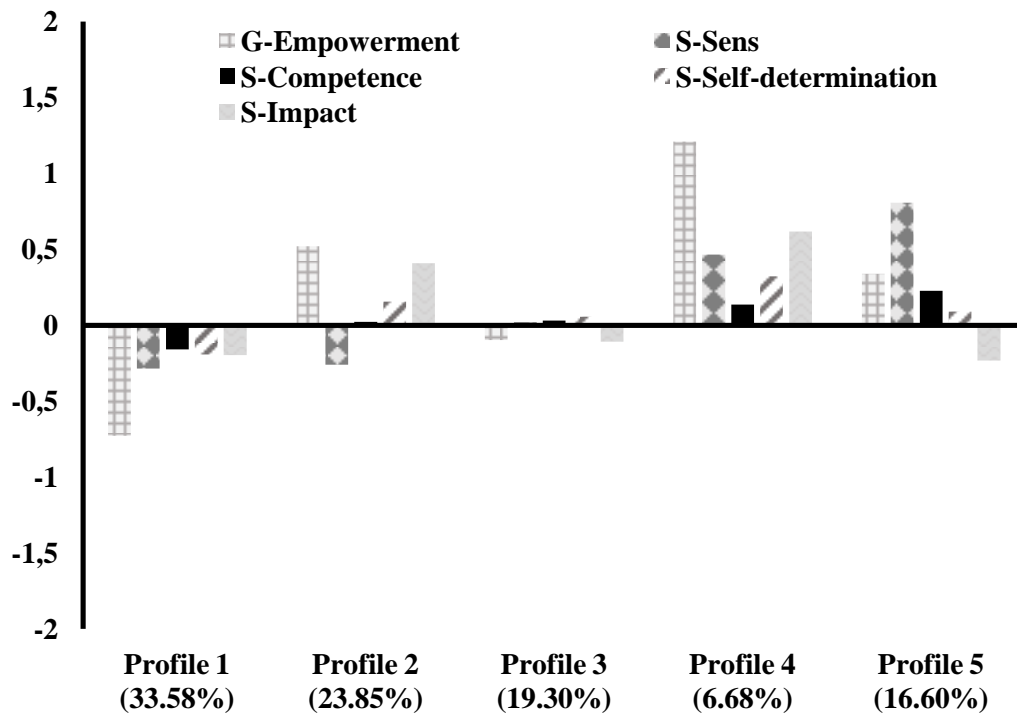


Figure 1. Final Five-Profile Solution

Note. Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.

Table 1*Results from the Time-Specific and Longitudinal Models*

Model	LL	#fp	Scaling	AIC	CAIC	BIC	ABIC	Entropy
<i>Final Latent Profile Analyses</i>								
Time 1	-3900.967	54	1.206	7909.394	8212.878	8158.878	7987.407	.745
Time 2	-3798.109	54	1.186	7704.217	8007.701	7953.701	7782.230	.722
<i>Longitudinal Latent Profile Analyses</i>								
Configural Similarity	-7698.806	108	1.196	15613.611	16220.579	16112.579	15769.637	.733
Structural Similarity	-7723.118	83	1.464	15612.236	16078.702	15995.702	15732.145	.787
Dispersion Similarity	-7749.279	58	1.608	15614.559	15940.523	15882.523	15698.350	.783
Distributional Similarity	-7753.786	54	1.693	15615.571	15919.055	15865.055	15693.584	.784
<i>Predictive Similarity: Demographics</i>								
Null Effects Model	-3900.277	38	.888	7876.554	8090.116	8052.116	7931.451	.825
Profile-Specific Free Relations with Predictors	-3840.353	150	3.503	7980.707	8823.718	8673.718	8197.409	.841
Free Relations with Predictors	-3865.541	70	.963	7871.082	8264.488	8194.488	7972.210	.835
Equal Relations with Predictors	-3876.428	54	.911	7860.855	8164.339	8110.339	7938.868	.828
<i>Predictive Similarity: Predictors</i>								
Null Effects Model	-8114.535	68	1.067	16365.071	16747.235	16679.235	16463.309	.825
Profile-Specific Free Relations with Predictors	-7973.784	180	.711	16307.569	17319.182	17139.182	16567.612	.866
Free Relations with Predictors	-8038.187	100	1.173	16276.375	16838.382	16738.382	16420.843	.839
Equal Relations with Predictors	-8052.939	84	1.077	16273.879	16745.965	16661.965	16395.232	.826
<i>Explanatory Similarity</i>								
Free Relations with Outcomes	-5187.914	60	1.031	10495.829	10833.033	10773.033	10582.510	.829
Equal Relations with Outcomes	-5227.320	45	1.134	10544.640	10797.544	10752.544	10609.651	.828

Note. LL: Model loglikelihood; #fp: Number of free parameters; Scaling: Scaling correction factor associated with robust maximum likelihood estimates; AIC: Akaike information criteria; CAIC: Constant AIC; BIC: Bayesian information criteria; ABIC: Sample size adjusted BIC.

Table 2*Transitions Probabilities*

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5
Profile 1	.841	.000	.099	.001	.059
Profile 2	.071	.870	.000	.059	.000
Profile 3	.040	.040	.867	.007	.046
Profile 4	.000	.490	.000	.510	.000
Profile 5	.054	.105	.077	.046	.718

Note. Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.

Online Supplemental Materials for:

Longitudinal Psychological Empowerment Profiles, Their Determinants, and Some Health-Related Outcomes

Authors' note:

These online technical appendices are to be posted on the journal website and hot-linked to the manuscript. If the journal does not offer this possibility, these materials can alternatively be posted on one of our personal websites (we will adjust the in-text reference upon acceptance).

We would also be happy to have some of these materials brought back into the main manuscript, or included as published appendices if you deem it useful. We developed these materials to provide additional technical information and to keep the main manuscript from becoming needlessly long.

Preliminary Measurement Models

Due to the complexity of the longitudinal models underlying all constructs assessed in the present sample, preliminary analyses were conducted separately for the psychological empowerment variables and the multi-item predictors (workload, supervisor support, organizational justice, and role clarity).

The measurement models were estimated using Mplus 8.7 (Muthén & Muthén, 2021) using the maximum likelihood robust (MLR) estimator, which provides parameter estimates, standard errors, and goodness-of-fit that are robust to the non-normality of the response scales used in the present study. These models were estimated in conjunction with full information maximum likelihood (FIML; Enders, 2010) to handle missing data. Given the known oversensitivity of the chi-square test of exact fit (χ^2) to sample size and minor model misspecifications (e.g., Marsh et al., 2005), we relied on sample-size independent goodness-of-fit indices to describe the fit of the alternative models (Hu & Bentler, 1999): The comparative fit index (CFI), the Tucker-Lewis index (TLI), as well as the root mean square error of approximation (RMSEA) and its 90% confidence interval. Values greater than .90 for the CFI and TLI indicate adequate model fit, although values greater than .95 are preferable. Values smaller than .08 or .06 for the RMSEA respectively support acceptable and excellent model fit.

The goodness-of-fit results from the preliminary measurement models (in which all items have been retained) used to investigate the optimal measurement structure for the psychological empowerment questionnaire are reported in Table S1. Starting with an examination of the first-order confirmatory factor analysis (CFA) solution, the solution was able to achieve an acceptable level of fit to the data at Time 2 (T2) but not at Time 1 (T1)¹. The results also revealed reliable factors that were well-defined by a majority of their indicators. However, they revealed high correlations between the different factors (e.g., $r = .55$ at T1 and $r = .58$ at T2 between the self-determination and impact factors). These correlations argue against the need to incorporate a G-factor.

The subsequent bifactor-CFA solution was able to achieve a satisfactory level of fit to the data, and resulted in generally satisfactory parameter estimates. When interpreting bifactor-CFA results, it is

¹ At T1, an exploratory structural equation modeling (ESEM) model was not able to achieve an acceptable level of fit to the data and more importantly the TLI value was lower in the ESEM model (.867) in comparison to the CFA model (.887). Similar results were obtained at T2 with a TLI value of .828. Based on this statistical information, neither the ESEM nor the bifactor-ESEM solutions could be retained as model comparison should start by contrasting CFA and ESEM solutions (Morin et al., 2016).

important to keep in mind that, because bifactor models rely on two factors to explain the covariance present at the item level for each specific item, factor loadings on global (G) and specific (S) factors are typically lower than their first-order counterparts (e.g., Morin et al., 2016). As such, the critical question when interpreting a bifactor solution is whether the G-factor really taps into a meaningful amount of covariance shared among all items, and whether there remains sufficient specificity at the subscale level unexplained by the G-factor to result in the estimation of meaningful S-factors.

Composite reliability coefficients associated with each of the a priori factors are calculated from the model standardized parameters using McDonald (1970) omega (ω) coefficient:

$$\omega = \frac{(\sum |\lambda_i|)^2}{[(\sum |\lambda_i|)^2 + \sum \delta_i]}$$

where $|\lambda_i|$ are the standardized factor loadings associated with a factor in absolute values, and δ_i , the item uniquenesses.

The bifactor-CFA solution revealed a well-defined G-factor ($\lambda = .335$ to $.650$, $M_\lambda = .498$ at T1; $\lambda = .357$ to $.647$, $M_\lambda = .531$ at T2). Similarly, with the exception of a few items which mainly reflect the global psychological empowerment factor rather than their own a priori S-factors, the S-factors also retained a meaningful degree of specificity over and above employees' global levels of psychological empowerment: $\lambda = .630$ to $.843$, $M_\lambda = .724$ for meaning S-factor at T1, and $\lambda = .497$ to $.899$, $M_\lambda = .686$ for meaning S-factor at T2; $\lambda = .462$ to $.501$, $M_\lambda = .475$ for competence S-factor at T1, and $\lambda = .289$ to $.564$, $M_\lambda = .452$ for competence S-factor at T2; $\lambda = .322$ to $.688$, $M_\lambda = .546$ for self-determination S-factor at T1, and $\lambda = .395$ to $.577$, $M_\lambda = .496$ for self-determination S-factor at T2; and $\lambda = .492$ to $.582$, $M_\lambda = .542$ for impact S-factor at T1, and $\lambda = .582$ to $.638$, $M_\lambda = .602$ for impact S-factor at T2. Thus, these results support the superiority of the bifactor-CFA solution.

This solution was thus retained for sequential tests of measurement invariance (Millsap, 2011): (1) configural invariance; (2) weak invariance (loadings); (3) strong invariance (loadings and intercepts); (4) strict invariance (loadings, intercepts, and uniquenesses); (5) invariance of the latent variance-covariance matrix (loadings, intercepts, uniquenesses, correlated uniquenesses, and latent variances-covariances); and (6) latent means invariance (loadings, intercepts, uniquenesses, correlated uniquenesses, latent variances-covariances, and latent means). These tests were conducted for the total

sample across measurement occasions (longitudinal invariance). Like the chi square, chi square difference tests are oversensitive to sample size and minor misspecifications. For this reason, invariance was assessed by considering changes in CFI and RMSEA (Chen, 2007; Cheung & Rensvold, 2002). A Δ CFI/TLI of .010 or less and a Δ RMSEA of .015 or less between a more restricted model and the previous one support the invariance hypothesis.

The results from these tests, reported in Table S1, supported the configural, weak, strong, strict, latent variance-covariance, and latent means invariance of the model across time points. Factor scores used in the main analyses were extracted from the final longitudinal model of latent means invariance. Parameter estimates from this final longitudinal model of latent means invariance are reported in Table S3. The bifactor-CFA solution revealed a well-defined G-factor ($\lambda = .355$ to $.639$, $M_\lambda = .509$). Similarly, with the exception of a few items which mainly reflect the psychological empowerment G-factor rather than their own a priori S-factors, the S-factors also retained a meaningful degree of specificity over and above employees' global levels of psychological empowerment: $\lambda = .589$ to $.866$, $M_\lambda = .715$ for meaning S-factor; $\lambda = .416$ to $.495$, $M_\lambda = .467$ for competence S-factor; $\lambda = .343$ to $.653$, $M_\lambda = .527$ for self-determination S-factor; and $\lambda = .521$ to $.608$, $M_\lambda = .569$ for impact S-factor.

A CFA model (in which all items have been retained) was also estimated for the multi-item predictor variables at both T1 and T2, and included a total of four factors (workload, supervisor support, organizational justice, and role clarity) at each time point. All factors were freely allowed to correlate. The goodness-of-fit results for these models are reported in Table S4. These results support the adequacy of the a priori model (with all CFI/TLI $\geq .90$ and all RMSEA $\leq .08$), the configural, weak, strong, strict invariance of this model across time points, as well as the invariance of the latent variances-covariances, and latent means (Δ CFI $\leq .010$; Δ TLI $\leq .010$; and Δ RMSEA $\leq .015$). These results show that the parameter estimates can be considered to be fully equivalent across time waves. The parameter estimates and composite reliability scores obtained from the most invariant longitudinal measurement models (latent means invariance) are reported in Table S5. These results show that all factors are well-defined by satisfactory factor loadings ($\lambda = .386$ to $.906$), resulting in satisfactory composite reliability coefficients, ranging from $\omega = .773$ to $.878$. Factor scores were saved from this most invariant measurement model and used as outcome indicators in the main research. The

correlations between all variables are reported in Table S5.

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Table S1*Goodness-of-Fit Statistics for the Estimated Models (Psychological Empowerment)*

Description	χ^2 (df)	CFI	TLI	RMSEA	90% CI	CM	$\Delta\chi^2$ (df)	Δ CFI	Δ TLI	Δ RMSEA
<i>Psychological Empowerment</i>										
Time 1 CFA	251.670 (48)*	.918	.887	.075	[.066; .085]	-	-	-	-	-
Time 1 Bifactor-CFA	198.560 (42)*	.937	.901	.070	[.061; .081]	-	-	-	-	-
Time 2 CFA	159.037 (48)*	.937	.914	.065	[.054; .077]	-	-	-	-	-
Time 2 Bifactor-CFA	144.642 (42)*	.942	.909	.067	[.055; .079]	-	-	-	-	-
<i>Psychological Empowerment: Longitudinal Invariance</i>										
M1. Configural invariance	504.871 (191)*	.944	.919	.047	[.042; .052]	-	-	-	-	-
M2. Weak invariance	524.536 (210)*	.944	.926	.045	[.040; .049]	M1	29.064 (19)	.000	+0.007	-0.002
M3. Strong invariance	547.343 (217)*	.941	.925	.045	[.040; .050]	M2	37.367 (7)*	-0.003	-0.001	.000
M4. Strict invariance	569.701 (229)*	.939	.926	.045	[.040; .049]	M3	25.844 (12)*	-0.002	+0.001	.000
M5. Variance-covariance invariance	572.293 (234)*	.939	.929	.044	[.039; .048]	M4	4.064 (5)	.000	+0.003	-0.001
M6. Latent means invariance	590.135 (239)*	.937	.927	.044	[.040; .049]	M5	16.073 (5)*	-0.002	-0.002	.000

Note. * $p < .05$; CFA: Confirmatory factor analyses; χ^2 : Scaled chi-square test of exact fit; *df*: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: 90% confidence interval; CM: Comparison model; and Δ : Change in fit relative to the CM.

Table S2*Standardized Factor Loadings (λ) and Uniquenesses (δ) for Psychological Empowerment (Bifactor-CFA)*

Items	G-factor λ	S-Meaning λ	S-Competence λ	S-Self-determination λ	S-Impact λ	δ
Meaning						
Item 1	.401	.589				.492
Item 2	.355	.866				.124
Item 3	.366	.691				.390
Competence						
Item 1	.495		.416			.582
Item 2	.492		.495			.513
Item 3	.561		.489			.446
Self-determination						
Item 1	.471			.653		.352
Item 2	.539			.585		.366
Item 3	.639			.343		.474
Impact						
Item 1	.562				.521	.413
Item 2	.594				.608	.278
Item 3	.631				.579	.266
ω	.888	.821	.560	.677	.753	

Note. λ : Factor loading; δ : Item uniqueness; ω : Omega coefficient of composite reliability; all parameters are significant ($p < .001$).

Table S3*Goodness-of-Fit Statistics for the Estimated Models (Predictors)*

Description	χ^2 (df)	CFI	TLI	RMSEA	90% CI	CM	$\Delta\chi^2$ (df)	Δ CFI	Δ TLI	Δ RMSEA
<i>Predictors</i>										
CFA Time 1	258.815 (98)*	.959	.949	.047	[.040; .054]	-	-	-	-	-
CFA Time 2	242.655 (98)*	.954	.943	.052	[.044; .061]	-	-	-	-	-
<i>Predictors: Longitudinal Invariance</i>										
M1. Configural invariance	773.869 (420)*	.958	.951	.034	[.030; .037]	-	-	-	-	-
M2. Weak invariance	786.867 (432)*	.958	.952	.033	[.029; .037]	M1	13.563 (12)	.000	+0.001	-.001
M3. Strong invariance	801.423 (444)*	.958	.953	.033	[.029; .036]	M2	13.890 (12)	.000	+0.001	.000
M4. Strict invariance	806.905 (460)*	.959	.956	.032	[.028; .035]	M3	12.220 (16)	+0.001	+0.003	-.001
M5. Variance-covariance invariance	819.136 (470)*	.959	.957	.031	[.028; .035]	M4	11.887 (10)	.000	+0.001	-.001
M6. Latent means invariance	824.872 (474)*	.959	.957	.031	[.028; .035]	M5	5.599 (4)	.000	.000	.000

Note. * $p < .01$; CFA: Confirmatory factor analysis; χ^2 : Scaled chi-square test of exact fit; *df*: Degrees of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; 90% CI: 90% confidence interval; CM: Comparison model; and Δ : Change in fit relative to the CM.

Table S4

Standardized Factor Loadings (λ) and Uniquenesses (δ) for the M6 Solution (Longitudinal Latent Means Invariance Predictors)

Items	Workload λ	Supervisor support λ	Justice λ	Role clarity λ	δ
Workload					
Item 1	.767				.412
Item 2	.805				.352
Item 3	.744				.447
Item 4	.720				.482
Item 5	.805				.353
Supervisor support					
Item 1		.888			.212
Item 2		.631			.602
Item 3		.872			.239
Item 4		.530			.719
Justice					
Item 1			.906		.180
Item 2			.889		.210
Item 3			.386		.851
Role clarity					
Item 1				.698	.513
Item 2				.669	.553
Item 3				.645	.584
Item 4				.698	.512
ω	.878	.828	.793	.773	
Factor					
<i>Correlations</i>	Workload	Supervisor support	Justice	Role clarity	
Workload	-				
Supervisor support	-.139	-			
Justice	-.315	.409	-		
Role clarity	.018	.349	.389	-	

Note. λ : Factor loading; δ : Item uniqueness; ω : Omega coefficient of composite reliability; the non-significant parameter ($p > .05$) is marked in italics.

Table S5*Correlations Between Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex	-													
2. Age	-.063	-												
3. Status	.152**	.057	-											
4. Position	.106**	.380**	.201**	-										
5. G-Empowerment (T1)†	-.148**	.114**	-.070	.074*	-									
6. S-Meaning (T1)†	.089*	.028	-.014	-.005	.122**	-								
7. S-Competence (T1)†	-.033	.082*	-.001	.116**	.308**	-.004	-							
8. S- Self-determination (T1)†	.030	-.016	-.056	-.015	.207**	-.120**	-.260**	-						
9. S-Impact (T1)†	-.149**	.010	-.032	.059	.264**	-.146**	-.265**	-.104**	-					
10. Workload (T1)†	.004	-.073*	-.104**	-.009	-.060	.153**	-.073*	-.111**	.047	-				
11. Supervisor support (T1)†	-.053	-.035	-.012	-.036	.213**	.016	.016	.122**	.045	-.140**	-			
12. Justice (T1)†	-.049	.073*	.033	.038	.271**	.004	.024	.160**	.070	-.333**	.434**	-		
13. Role clarity (T1)†	-.098**	.102**	-.042	.024	.360**	.103**	.123**	.168**	-.009	.021	.377**	.458**	-	
14. Sleeping problems (T1)	.119**	.025	-.070	.012	-.072*	-.013	-.019	.033	-.081*	.032	-.102**	-.084*	-.017	-
15. Alcohol consumption (T1)	-.218**	-.187**	-.079*	-.195**	-.063	-.063	.022	-.106**	.049	-.047	-.055	-.015	-.069	.015
16. Depressive symptoms (T1)	.106**	.023	.023	.006	-.089*	.050	-.031	-.007	-.098**	.077*	-.085*	-.114**	-.009	.139**
17. G-Empowerment (T2)†	-.124**	.065	-.081*	.047	.714**	.220**	.408**	.020	.246**	-.035	.199**	.248**	.306**	-.034
18. S-Meaning (T2)†	.068	.032	-.015	-.027	.127**	.840**	-.059	-.041	-.246**	.090*	.042	.024	.082*	-.042
19. S-Competence (T2)†	-.024	.064	-.001	.070	.242**	-.299**	.686**	.117**	-.523**	-.150**	.072*	.072	.115**	.011
20. S- Self-determination (T2)†	.076*	-.055	-.039	-.063	-.053	-.039	-.333**	.857**	-.228**	-.088*	.074*	.112**	.109**	.073*
21. S-Impact (T2)†	-.085*	-.015	-.073*	.059	.163**	-.047	-.103**	.228**	.711**	.033	.097**	.092*	.031	-.038
22. Workload (T2)†	.032	-.058	-.085*	-.001	-.065	.161**	-.079*	-.114**	.026	.841**	-.109**	-.305**	-.048	-.027
23. Supervisor support (T2)†	-.057	-.049	.009	.002	.158**	.010	.039	.121**	.067	-.138**	.670**	.376**	.259**	-.035
24. Justice (T2)†	-.017	.100**	.043	.049	.189**	-.010	.076*	.143**	.024	-.283**	.329**	.631**	.297**	-.007
25. Role clarity (T2)†	-.074*	.057	-.011	.037	.279**	.129**	.105**	.167**	-.001	.115**	.327**	.314**	.697**	.034
26. Sleeping problems (T2)	.072	-.017	-.041	-.009	-.069	-.033	-.063	-.036	-.016	.028	-.072	-.100*	-.113**	.324**
27. Alcohol consumption (T2)	-.131**	-.103*	-.052	-.070	-.094*	-.050	.071	-.128**	-.001	-.030	-.029	-.021	-.091*	-.009
28. Depressive symptoms (T2)	.007	-.023	.016	.063	-.036	-.027	.010	-.060	-.009	.078	-.078	-.027	.024	-.002

Note. * $p < .05$; ** $p < .01$; † variables estimated from factor scores with a mean of 0 and a standard deviation of 1; sex was coded 0 for men and 1 for women; status was coded 0 for employed full-time and 1 for employed part-time; and position was coded 0 for temporary workers and 1 for permanent workers.

Table S5 (Continued)*Correlations Between Variables*

	15	16	17	18	19	20	21	22	23	24	25	26	27	28
15. Alcohol consumption (T1)	-													
16. Depressive symptoms (T1)	-.032	-												
17. G-Empowerment (T2)†	-.025	.057	-											
18. S-Meaning (T2)†	-.072	-.056	.154**	-										
19. S-Competence (T2)†	-.016	.042	.167**	-.068	-									
20. S- Self-determination (T2)†	-.080*	-.046	.070	-.031	-.048	-								
21. S-Impact (T2)†	-.005	.094**	.255**	-.130**	-.229**	.010	-							
22. Workload (T2)†	-.027	-.077*	-.073*	.129**	-.129**	-.121**	.036	-						
23. Supervisor support (T2)†	.004	.039	.275**	.018	.037	.140**	.146**	-.174**	-					
24. Justice (T2)†	-.057	.047	.289**	.017	.088*	.167**	.079*	-.379**	.490**	-				
25. Role clarity (T2)†	-.081*	-.018	.367**	.086*	.060	.190**	.069	.021	.450**	.445**	-			
26. Sleeping problems (T2)	.015	-.044	-.100*	-.089*	-.061	-.018	-.060	.025	-.058	-.078	-.060	-		
27. Alcohol consumption (T2)	.482**	.058	-.014	-.054	.028	-.087*	-.014	-.032	.025	-.003	-.051	-.030	-	
28. Depressive symptoms (T2)	.057	.163**	-.139**	-.094*	-.065	-.074	-.090*	.061	-.073	-.031	.053	.062	.003	-

Note. * $p < .05$; ** $p < .01$; † variables estimated from factor scores with a mean of 0 and a standard deviation of 1; sex was coded 0 for men and 1 for women; status was coded 0 for employed full-time and 1 for employed part-time; and position was coded 0 for temporary workers and 1 for permanent workers.

Table S6*Results from the Latent Profile Analysis Models at Times 1 and 2*

Model	LL	#fp	Scaling	AIC	CAIC	BIC	ABIC	Entropy	aLMR	BLRT
<i>Time 1</i>										
1 Profile	-4514.811	10	1.513	9049.621	9105.822	9095.822	9064.068	Na	Na	Na
2 Profiles	-4140.966	21	1.148	8323.932	8441.954	8420.954	8354.271	.693	< .001	< .001
3 Profiles	-4027.108	32	1.177	8158.215	8338.058	8306.058	8204.445	.675	.002	< .001
4 Profiles	-3966.123	43	1.119	8018.245	8259.908	8216.908	8080.367	.741	< .001	< .001
5 Profiles	-3900.967	54	1.206	7909.394	8212.878	8158.878	7987.407	.745	.046	< .001
6 Profiles	-3827.744	65	1.193	7785.487	8150.792	8085.792	7879.392	.774	.128	< .001
7 Profiles	-3782.554	76	1.394	7717.109	8144.234	8068.234	7826.904	.776	.705	< .001
8 Profiles	-3737.513	87	1.245	7649.026	8137.972	8050.972	7774.713	.793	.451	< .001
<i>Time 2</i>										
1 Profile	-4396.734	10	1.696	8813.467	8869.668	8859.668	8827.914	Na	Na	Na
2 Profiles	-3991.234	21	1.093	8024.468	8142.490	8121.490	8054.807	.735	< .001	< .001
3 Profiles	-3910.366	32	1.150	7884.732	8064.574	8032.574	7930.962	.671	.006	< .001
4 Profiles	-3857.908	43	1.179	7801.816	8043.480	8000.480	7863.938	.733	.046	< .001
5 Profiles	-3798.109	54	1.186	7704.217	8007.701	7953.701	7782.230	.722	.032	< .001
6 Profiles	-3765.476	65	1.145	7660.952	8026.256	7961.256	7754.856	.726	.021	< .001
7 Profiles	-3720.203	76	1.105	7592.406	8019.532	7943.532	7702.202	.728	.163	.013
8 Profiles	-3674.382	87	1.209	7522.763	8011.710	7924.710	7648.451	.786	.509	< .001

Note. LL: Model loglikelihood; #fp: Number of free parameters; scaling: Scaling correction factor associated with robust maximum likelihood estimates; AIC: Akaike information criteria; CAIC: Constant AIC; BIC: Bayesian information criteria; ABIC: Sample size adjusted BIC; aLMR: Adjusted Lo-Mendel-Rubin likelihood ratio test; and BLRT: Bootstrap likelihood ratio test.

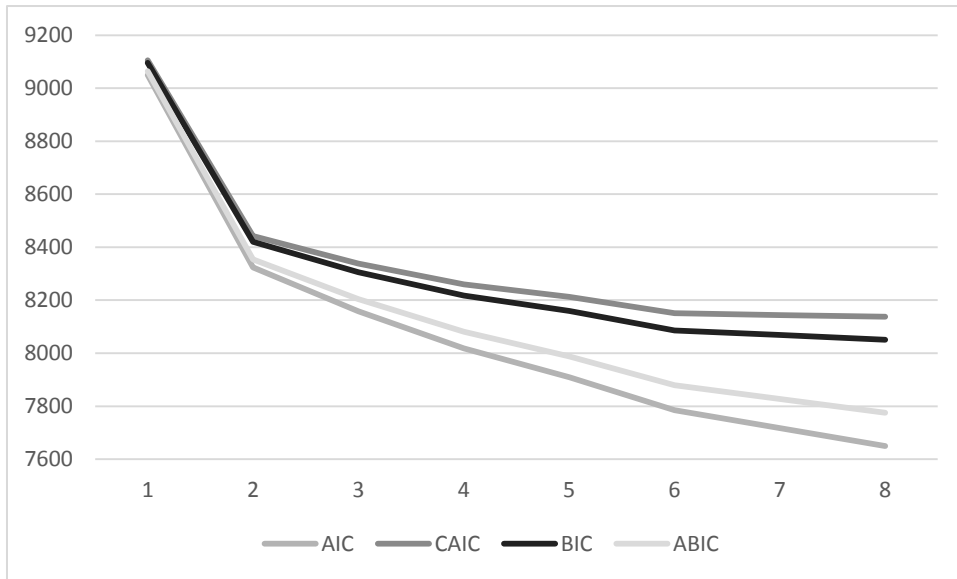


Figure S1
Elbow Plot of the Value of the Information Criteria for Solutions Including Different Numbers of Latent Profiles at Time 1

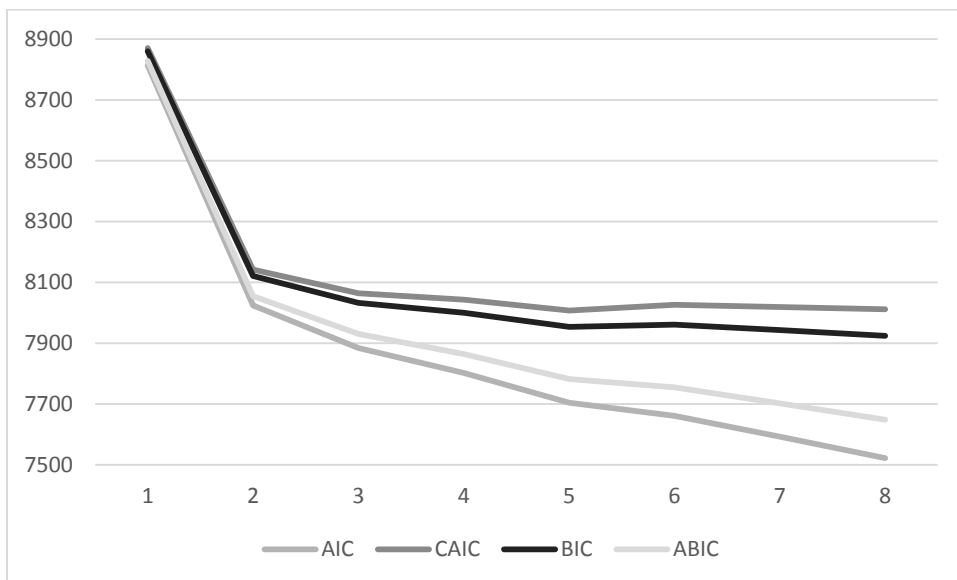


Figure S2
Elbow Plot of the Value of the Information Criteria for Solutions Including Different Numbers of Latent Profiles at Time 2

Table S7*Detailed Parameter Estimates from the Final LPA Solution (Distributional Similarity)*

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5
	Mean [CI]	Mean [CI]	Mean [CI]	Mean [CI]	Mean [CI]
G-Empowerment	-.728 [-.869; -.587]	.519 [.413; .625]	-.097 [-.236; .043]	1.209 [1.051; 1.367]	.339 [.242; .436]
S-Meaning	-.285 [-.458; -.112]	-.260 [-.408; -.113]	.002 [-.056; .060]	.464 [.422; .506]	.807 [.767; .847]
S-Competence	-.158 [-.281; -.035]	.022 [-.049; .093]	.031 [-.080; .141]	.137 [.047; .226]	.227 [.109; .346]
S-Self-determination	-.192 [-.335; -.049]	.154 [.080; .228]	.056 [-.072; .183]	.321 [.141; .500]	.090 [-.094; .275]
S-Impact	-.197 [-.317; -.077]	.409 [.300; .517]	-.109 [-.235; .017]	.616 [.484; .747]	-.233 [-.366; -.100]
	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5
	Variance [CI]	Variance [CI]	Variance [CI]	Variance [CI]	Variance [CI]
G-Empowerment	.758 [.612; .904]	.153 [.104; .203]	.114 [.085; .143]	.085 [.055; .115]	.146 [.098; .194]
S-Meaning	1.699 [1.302; 2.096]	.269 [.146; .393]	.026 [.016; .036]	.013 [.008; .019]	.027 [.021; .033]
S-Competence	1.010 [.799; 1.221]	.133 [.093; .172]	.240 [.163; .318]	.113 [.068; .159]	.229 [.157; .302]
S-Self-determination	1.228 [1.025; 1.432]	.150 [.097; .202]	.391 [.234; .548]	.100 [-.025; .224]	.496 [.201; .792]
S-Impact	.962 [.771; 1.152]	.146 [.101; .192]	.327 [.201; .452]	.616 [.072; .167]	.328 [.232; .423]

Note. CI = 95% confidence interval; the profile indicators are estimated from factor scores with a mean of 0 and a standard deviation of 1; Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.

Table S8

Classification Accuracy: Average Probability of Membership into Each Latent Profile (Column) as a Function of the Most Likely Profile Membership (Row)

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5
<i>Time 1</i>					
Profile 1	.910	.015	.056	.000	.020
Profile 2	.059	.848	.070	.013	.011
Profile 3	.034	.095	.869	.000	.002
Profile 4	.005	.109	.000	.860	.026
Profile 5	.065	.071	.001	.015	.848
<i>Time 2</i>					
Profile 1	.920	.031	.028	.000	.021
Profile 2	.016	.842	.090	.020	.033
Profile 3	.098	.030	.871	.000	.001
Profile 4	.005	.103	.000	.873	.020
Profile 5	.068	.020	.002	.003	.907

Note. Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.

Table 3*Results from the Predictive Analyses*

Predictors	Profile 1 vs 5		Profile 2 vs 5		Profile 3 vs 5		Profile 4 vs 5		Profile 1 vs 4	
	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR
Workload	-.081 (.130)	.922	-.407 (.139)**	.666	-.246 (.133)	.782	-.153 (.198)	.858	.072 (.190)	1.075
Supervisor support	-.060 (.136)	.941	.213 (.153)	1.237	.172 (.149)	1.188	.048 (.198)	1.049	-.108 (.190)	.897
Overall organizational justice	-.259 (.157)	.772	.124 (.177)	1.132	.094 (.157)	1.099	.243 (.222)	1.276	-.503 (.219)*	.605
Role clarity	-.512 (.177)**	.599	-.136 (.193)	.873	-.331 (.169)*	.718	.513 (.298)	1.671	-1.026 (.298)**	.359
Predictors	Profile 2 vs 4		Profile 3 vs 4		Profile 1 vs 3		Profile 2 vs 3		Profile 1 vs 2	
	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR	Coef. (SE)	OR
Workload	-.254 (.193)	.776	-.093 (.193)	.911	.165 (.121)	1.179	-.161 (.128)	.851	.326 (.123)**	1.385
Supervisor support	.165 (.195)	1.179	.124 (.199)	1.133	-.233 (.135)	.792	.041 (.159)	1.041	-.273 (.136)*	.761
Overall organizational justice	-.120 (.225)	.887	-.149 (.221)	.861	-.353 (.145)*	.702	.030 (.176)	1.030	-.383 (.166)*	.682
Role clarity	-.649 (.304)*	.522	-.844 (.284)**	.430	-.181 (.127)	.834	.195 (.150)	1.215	-.376 (.159)*	.687

Note. * $p \leq .05$; ** $p < .01$; SE: Standard error of the coefficient; OR: Odds ratio; the coefficients and OR reflect the effects of the predictors on the likelihood of membership into the first listed profile relative to the second listed profile; workload, supervisor support, overall organizational justice, and role clarity are estimated from factor scores with a standard deviation of 1 and a mean of 0; Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.

Table 4*Associations between Profile Membership and the Outcomes Taken from the Model of Explanatory Similarity (Equal across Time Points)*

	Profile 1 M [CI]	Profile 2 M [CI]	Profile 3 M [CI]	Profile 4 M [CI]	Profile 5 M [CI]	Summary of Statistically Significant Differences
Alcohol consumption	1.731 [1.559; 1.903]	1.799 [1.592; 2.006]	1.861 [1.585; 2.138]	1.346 [1.068; 1.625]	1.498 [1.283; 1.713]	1 = 2 = 3 > 4; 3 > 5; 1 = 2 = 5; 4 = 5
Sleeping difficulties	.329 [.274; .385]	.216 [.154; .279]	.315 [.225; .405]	.179 [.087; .272]	.310 [.233; .388]	1 > 2 = 4; 2 = 3 = 5; 1 = 3 = 5 > 4
Depressive symptoms	.143 [.101; .185]	.075 [.037; .114]	.060 [.025; .094]	.028 [.003; .053]	.070 [.037; .103]	1 > 3 = 4; 2 = 5 > 4; 1 > 2 = 3 = 5

Note. M: Mean; CI: 95% confidence interval; Profile 1: *Low Empowerment*; Profile 2: *Moderately High Empowerment and Impact*; Profile 3: *Normative*; Profile 4: *High Empowerment*; and Profile 5: *Moderately High Empowerment and High Meaning*.