

Empirical Articles

Longitudinal development of well-being among Finnish employees during 2019–2021: Relationships with personality trait profiles

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We examined well-being profiles among Finnish employees before and during the COVID-19 pandemic and their links with personality trait profiles. Longitudinal survey data were collected in 2019–2021, and 733 respondents participated in all five surveys. The data were analyzed with a person-centered approach using latent profile analysis (LPA). Measures included burnout, work engagement, psychological distress; and Big Five personality traits. Six well-being profiles: *Disengaged*, *Declined*, *Engaged*, *Fluctuated*, *Stable*, and *Burned-out*, and four personality profiles: *Ordinary*, *Reserved*, *Resilient*, and *Overcontrolled* were identified. Resilient participants typically belonged to the Engaged well-being profile and Reserved to Burned-out and Fluctuated well-being profiles. Although some separation in developmental well-being profiles existed, overall, well-being was rather stable. Personality trait profiles played a crucial role in maintaining well-being.

Key words: Big Five, burnout, COVID-19, personality trait profiles, psychological distress, well-being, work engagement.

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INTRODUCTION

The COVID-19 pandemic has transformed ways of working and challenged employees' mental well-being (Eurofound, 2020, 2021; Kniffin, Narayanan, Anseel *et al.*, 2021; WHO, 2021). Studies during the pandemic have reported increased mental health problems such as depression, psychological distress, anxiety, stress, and burnout (Daly, Sutin, & Robinson, 2020; Galanis, Vrakka, Fragkou, Bilali, & Kaitelidou, 2021; Pierce, Hope, Ford *et al.*, 2020; Salari, Hosseini-Far, Jalali *et al.*, 2020). The pandemic itself may be a great stressor for many, and together with changed working conditions and limited support from social environments, the situation can be overwhelming (Brooks, Webster, Smith *et al.*, 2020; Kaushik & Guleria, 2020; Kniffin *et al.*, 2021). However, cross-sectional studies have reported that work engagement has been moderate or even high during the pandemic, especially in the medical field that has heavily been affected by the pandemic in ways of working and direct contact with COVID-19 patients (Allande-Cussó, García-Iglesias, Ruis-Frutos, Domínguez-Salas, Rodríguez-Domínguez & Gómez-Salgado, 2021; Kim, Lee & Cho, 2020; Zhang, Zhang, Liu, Wang, Hu & Du, 2021), and longitudinally across occupational fields (Oksa, Kaakinen, Savela, Hakanen & Oksanen, 2021). It is evident that some employees have enjoyed and benefited from the changed working conditions, and others' well-being has suffered (Eurofound, 2020, 2021; Kniffin *et al.*, 2021; Mäkikangas, Juutinen, Mäkinen, Sjöblom & Oksanen, 2022).

The global COVID-19 pandemic provides a unique opportunity to study the various well-being and personality profiles. Our aims were to: (1) identify various levels and changes in longitudinal well-being profiles formed based on work engagement, burnout, and mental distress; (2) analyze personality profiles; and (3) examine how personality trait profiles were linked to well-being

profiles. This was done by investigating developmental well-being paths longitudinally among Finnish working population from various occupational fields, with specific interest in Big Five personality trait profiles (i.e., various personality types) (Kinnunen, Metsäpelto, Feldt *et al.*, 2012). In prior research, five-factor personality traits have been associated with general and occupational well-being (for a meta-analysis, see Alarcon, Eschleman & Bowling, 2009). Hence, examining the relationship was essential also considering the global pandemic that has impacted on individuals in multiple ways. The results of this research provide first-hand longitudinal knowledge on well-being profiles and intra-individual differences in employees' personalities that were analyzed via personality trait profiles. The prior studies have been limited with examining associations between distinct personality traits and well-being variable(s) (Asendorpf, 2015; Hofmans, Wille & Schreurs, 2020; Howard & Hoffman, 2018; Mäkikangas, Leiter, Kinnunen & Feldt, 2020; Udayar, Urbanaviciute, Koorosh & Rossier, 2020). To fill this gap, with person-centered approach we were able to gain more detailed information on the longitudinal development of well-being and also well-being-personality relationship.

Well-being at work during the pandemic time

Work engagement, characterized by *vigor* (i.e., higher energy levels, resilience, and persistence experienced at work), *dedication* (i.e., sense of significance, pride, and enthusiasm of work), and *absorption* (i.e., immersion to one's work), is theorized as the central positive work-related motivational state of well-being at work (Schaufeli & Bakker, 2004a; Schaufeli, Salanova, Gonzales-Roma & Bakker, 2002). Numerous studies have demonstrated the importance of work engagement in employee well-being, highlighting positive health outcomes such as lower levels of

absences, anxiety, depression, and burnout (Bailey, Madden, Alfes & Fletcher, 2017; Hakanen & Schaufeli, 2012; Halbesleben, 2010; Innstrand, Langballe & Falkum, 2012; Schaufeli, Bakker & Van Rhenen, 2009; Schaufeli, Taris & Van Rhenen, 2008).

Burnout, on its half, refers to work-stress syndrome, denoting *exhaustion* that involves reduced mental resources, *cynicism*, feelings of depersonalization, and *reduced professional efficacy* in individual's performance at work that can lead to reduced work-related self-esteem (Maslach, Jackson & Leiter, 1996). Work engagement and burnout are closely linked well-being concepts regarding their common history in burnout research, in which the concept of work engagement was developed to indicate the opposite side of employee well-being (Bakker, Schaufeli, Leiter & Taris, 2008; Maslach *et al.*, 1996; 2001; Schaufeli *et al.*, 2002). Studies have also shown that although the concepts correlate with each other, they are independent constructs (Bakker, Demerouti & Sanz-Vergel, 2014; Mäkikangas, Feldt, Kinnunen & Tolvanen, 2012; Mäkikangas, Hyvönen & Feldt, 2017).

Psychological distress refers to nonspecific symptoms of lowered mental well-being such as depression and anxiety and can involve somatic symptoms such as insomnia and fatigue and other behavioral and functional problems (Cuijpers, Smits, Donker, ten Have & de Graaf, 2009; Drapeau, Marchand & Beaulieu-Prévost, 2011; Kleinman, 1991). As work engagement and burnout represent work-specific well-being states, psychological distress captures context-free mental symptoms, hence it is important indicator of lowered general mental well-being (Horwitz, 2007; Mirowsky & Ross, 2002). Work engagement, burnout, and psychological distress have been widely studied indicators of well-being at work before and during the COVID-19 pandemic (e.g., Goldberg, Gater, Sartorius *et al.*, 1997; Mäkikangas, Juutinen, Mäkinen, Sjöblom & Oksanen, 2022; Maslach *et al.*, 1996; Oksa *et al.*, 2021; Oksa, Kaakinen, Savela, Ellonen & Oksanen, 2020; Oksanen, Oksa, Savela, Mantere & Kaakinen, 2021; Schaufeli *et al.*, 2002; Viertiö, Kiviruusu, Piirtola *et al.*, 2021).

Longitudinal analyses on work engagement prior to and during COVID-19 are still scarce, and the published studies have indicated controversial results. Prior to COVID-19, work engagement remained rather stable over time (for a review, see Mäkikangas, Kinnunen, Feldt & Schaufeli, 2016), as theorized in its definition. Similar findings on stability over time have also been reported during the COVID-19 pandemic (Kaltiainen & Hakanen, 2022; Oksa *et al.*, 2021). Some studies have demonstrated a decrease of work engagement during the pandemic (Oksa *et al.*, 2021; Syrek, Kühnel, Vahle-Hinz & de Bloom, 2021), but it has also been reported to returned to its prior level when the crisis continued and employees adapted to the new situation and the likelihood that employees psychosocial and physical working conditions changed less (Bernstein, Blunden, Brodsky, Sohn & Waber, 2020; Kaltiainen & Hakanen, 2022). There is also recent evidence that highlighted the within-person work engagement processes during remote work and yielded altogether four different longitudinal profiles (Mäkikangas *et al.*, 2022). Therefore, there is need to understand the heterogeneity of the remote work experience, as done also in the current study. Work engagement can be crucial also for

psychological well-being, as low work engagement and a low sense of coherence have been associated with higher COVID-19-related psychological distress (Ruiz-Frutos, Ortega-Moreno, Allande-Cussó, Ayuso-Murillo, Domínguez-Salas & Gómez-Salgado, 2021). Thus, we need more evidence on how work engagement experiences develop over time simultaneously with the other well-being indicators, and the role of personality in that development.

Regarding the development of burnout experiences, a study on Dutch intensivists indicated that burnout levels were higher during the COVID-19 compared to the prepandemic time but was still lower than generally stated in former international studies (Meynaar, Ottens, Zegers, van Mol & van der Horst, 2021). Indeed, increased burnout has been reported in the medical field specifically (Di Giuseppe, Nepa, Prout *et al.*, 2021; Galanis *et al.*, 2021). In contrast, no major changes in job exhaustion or burnout have been established during the pandemic among nonhealthcare employees (Chen & Eyoun, 2021; Oksanen *et al.*, 2021). Overall, the detrimental effects of burnout might be realized only after a period of time has passed, particularly among remote workers, due to organizational challenges in supporting employees' well-being (Hayes, Priestley, Ishmakhametov & Ray, 2020; Oksanen *et al.*, 2021).

Increased psychological distress has been reported in both cross-sectional and longitudinal studies across the globe during the pandemic (Chen, Liang, Li *et al.*, 2020; Labrague & De los Santos, 2020; Lorant, Smith, Van Den Broek & Nicaise, 2021; McGinty, Presskreischer, Han & Barry, 2020; Oksa *et al.*, 2021; Oksanen *et al.*, 2021; Pierce *et al.*, 2020; Suvisaari, Appelqvist-Schmidlechner, Solin *et al.*, 2021). Some evidence points out that the highest point of psychological distress took place in the early stages of the COVID-19 pandemic and that it has declined relatively quickly after (Daly & Robinson, 2021; Pierce, McManus, Hope *et al.*, 2021). Still, findings supporting prolonged negative effects on mental health have also been demonstrated (Daly *et al.*, 2020). Hence, it is important to also discover the longitudinal development of simultaneously evaluated psychological distress, work engagement and burnout, as well as their antecedents such as personality traits profiles – issues of which have not been investigated in prior research.

Bearing in mind that person-centered analysis is a data-driven method, we do not make formal predictions about specific profiles or their number. As in this case there is no prior empirical evidence to rely on to predict the longitudinal development of latent profiles formed by simultaneously estimated work engagement, burnout, and mental distress, our first hypothesis is:

Hypothesis 1: During the data across two years, different levels and change profiles in work engagement, burnout and mental distress can be identified.

Antecedents of well-being

Unexpected and stressful situations such as crises are apt to create negative psychological and well-being outcomes (Heymann, Chen, Takemi *et al.*, 2015; Wahlbeck & McDaid, 2012). Nevertheless, how people cope with crises varies individually and societally, and people can be exceptionally resilient and cope with

various disease outbreaks, manmade disasters, and wars (Bonanno, 2004; Chen & Bonanno, 2020; Waugh, Fredrickson & Taylor, 2008). Based on the theory of transactional stress (Lazarus & Folkman, 1984), coping is defined as individuals' conscious, cognitive, and behavioral efforts to mitigate the stress response caused by the stressful situation. The decision on how to react to a stressful situation depends on two-fold appraisals: a primary appraisal of how the threatening situation is conceived, and a secondary appraisal concerning which recourses are available to manage the situation (Lazarus & Folkman, 1984).

Various individual and situational factors are likely to impact the coping response (Bandura, 1991; Folkman & Moskowitz, 2004; Schwarzer & Schwarzer, 1996). Moreover, Bolger and Zuckerman (1995) suggest that stress processes (i.e., stressor exposure and reactivity) are shaped by personality, and there are several mechanisms through which personality impacts well-being at work. In the current study, we assume personality to have a direct association on well-being (Mäkikangas, Feldt, Mauno & Kinnunen, 2013).

In the present study, our focus was on personality, specifically on five-factor personality traits known to be associated with general and occupational well-being (Alarcon *et al.*, 2009). The Big Five model is the most widely used and accepted taxonomy for personality traits, including dimensions of extraversion, agreeableness, openness to experience, conscientiousness, and neuroticism (Digman, 1990; John, Naumann & Soto, 2008). Instead of examining single personality traits, our aim was to study personality profiles (i.e., various personality types) based on Big Five personality traits. This person-centered approach has the potential to give more detailed information on the personality and its linkages with well-being than variable-oriented approaches focusing on separate personality traits (Asendorpf, 2015; Hofmans *et al.*, 2020; Howard & Hoffman, 2018; Mäkikangas *et al.*, 2020; Udayar *et al.*, 2020). The benefit of using a person-oriented research approach is related to the possibility to gain more complete view on occupational well-being by examining various employee groups and identifying potential divergent well-being experiences (Mäkikangas *et al.*, 2015, 2022). Furthermore, the more holistic picture on personality is gained by examining patterns of personality traits among individuals, thus modelling the data as higher-order typologies, which is one of the main strengths of the person-centered approach (Kinnunen *et al.*, 2012; Merz & Roesch, 2011; Parr, Lanza & Bernthal, 2016; Zhang, Bray, Zhang & Lanza, 2015).

The relationship between well-being at work and personality traits has been established in research over the decades (Lazarus & Folkman, 1984; Spector, 2003), but studies combining well-being profiles with personality profiles are limited (with exceptions; see Mäkikangas *et al.*, 2015). Personality profiles are known to be good indicators of how people behave and perceive the world, but also denote their well-being (Min & Su, 2020). Understanding of the mechanisms of how personality trait profiles can foster or hinder well-being at work is still emerging (Mäkikangas *et al.*, 2015; Min & Su, 2020).

The so-called RUO typology (Asendorpf, 2015); *Resilient* (high conscientiousness, extraversion, agreeableness, openness to experience and low neuroticism), *Undercontrolled* (high in openness, extraversion and neuroticism and low conscientiousness

and agreeableness), and *Overcontrolled* (high in neuroticism and low extraversion, conscientiousness, agreeableness and openness) personality profiles, have been established in many countries (Donnellan & Robins, 2010; Herzberg & Roth, 2006; Rammstedt, Riemann, Angleitner & Borkenau, 2004; Rosenström & Jokela, 2017; Specht, Luhmann & Geiser, 2014; Van Leeuwen, De Fruyt & Mervielde, 2004). In addition to RUO typology, studies have identified other well-being profiles. For example, study by Kinnunen *et al.* (2012) identified five personality trait profiles including *Ordinary* and *Reserved*, in addition to RUO, measured in a Finnish adult population and presented high stability over 17 years. Moreover, the personality profiles' labelling varies to some extent between studies; for example, *Rigid* and *Oversensitive* have been used from the Overcontrolled personality profile, *Confident* from the Resilient personality profile, and *Average* from the Ordinary personality profile (Min & Su, 2020; Udayar *et al.*, 2020; Zhang *et al.*, 2015).

Kinnunen *et al.* (2012) have also examined associations with health indicating that the Resilient group had the best self-rated health, Undercontrolled reported moderate health, and Overcontrolled the lowest subjective health. In a study by Mäkikangas *et al.* (2015), personality profiles identified by Kinnunen *et al.* (2012) were linked with occupational well-being profiles. Altogether, four occupational well-being profiles emerged, namely, *Engaged*, *Burned-out*, *Ordinary*, and *Bored-Out*. The study revealed that the Resilient individuals belonged to an Engaged well-being profile, and Overcontrolled typically belonged to the Burned-out profile. Undercontrolled participants typically belonged to the Bored-Out profile, and Ordinary personality types typically belonged to Ordinary well-being profiles (Mäkikangas *et al.*, 2015). In other studies, the Resilient personality profile has been associated with beneficial individual and organizational health outcomes such as high life satisfaction (Udayar *et al.*, 2020), organizational citizenship behavior, and lower levels of job-related burnout and counterproductive working behavior (Min & Su, 2020). The current study contributes over and above of study by Mäkikangas *et al.* (2015) by examining also general well-being besides just focusing on work-related well-being indicators. Moreover, in the current study longitudinal development of well-being is in the focus instead of cross-sectional data utilized in prior personality trait profile and well-being study (Mäkikangas *et al.*, 2015). In this study, it was assumed that:

Hypothesis 2: Resilient employees have higher likelihood of belonging to profiles where well-being is at a high level or increases during follow-up compared with the other personality trait profiles.

In addition to personality aspects, numerous sociodemographic factors have influenced employee well-being during the pandemic, hence they were also selected as variables for our study. For example, younger age and female gender have been associated with higher stress, exhaustion, burnout, and COVID-19 anxiety as well as generally lower mental well-being and work-life balance (Di Giuseppe *et al.*, 2021; Eurofound, 2021; Mäkinen *et al.*, 2020; Savolainen, Oksa, Savela, Celuch & Oksanen, 2021; Smith, Jacob, Yakkundi *et al.*, 2020). Moreover, lower education and living alone

(Bartoszek, Walkowiak, Bartoszek & Kardas, 2020; Jia, Ayling, Chalder *et al.*, 2020; Koval, Coll-Martin, Ikizer *et al.*, 2020) have been linked with lower well-being. Remote work has been associated with higher technology related stress (i.e., technostress), digital exhaustion, fatigue, and poorer health in general (Bailenson, 2021; Leonardi, 2021; Molino, Ingusci, Signore *et al.*, 2020). More favorable aspects of remote work include better autonomy, self-leadership (Galanti, Guidetti, Mazzei, Zappala & Toscano, 2021; Richter, 2020), and clearer segmentation, resulting in better balance between work and nonwork time (Allen, Merlo, Lawrence, Slutsky & Gray, 2020). There is some evidence that those working in managerial positions have managed the pandemic better (Oksanen *et al.*, 2021), although contradicting results exist (International Labour Organization, 2020; Kirchner, Ipsen & Paulin Hansen, 2021). Finally, frequent use of work-related social media has been demonstrated to facilitate enhanced working practices (Eurofound, 2020; Waizenegger, McKenna, Cai & Bendz, 2020) and even work engagement in organizations (Oksa *et al.*, 2020, 2021) during times of social distancing.

MATERIAL AND METHODS

Participants and procedure

A five-time-point longitudinal Social Media at Work in Finland survey data set from 2019–2021 and collected every half a year was designed to represent the Finnish working population across various occupational fields. The first survey was collected in March–April 2019 (Time Point 1 [T1]; $N = 1,817$). The participants were recontacted in September–October 2019 (Time Point 2 [T2]; $N = 1,318$), March–April 2020 (Time Point 3 [T3]; $N = 1,081$), September–October 2020 (Time Point 4 [T4]; $N = 1,152$), and March–April 2021 (Time Point 5 [T5]; $N = 1,018$). The fourth and fifth surveys were sent to all original respondents, whereas the third was sent only to those who had responded to the second survey. Of the original respondents, 46.23% responded to all five surveys ($N = 840$). The study was drawn from a representative sample of Finnish employees from various occupational groups. Overall, the sample covered all largest areas in Finland, aligned with official census figures of the Finnish working population, and demonstrated all major occupational fields (Oksanen, Oksa, Savela, Celuch & Savolainen, 2021).

The Academic Ethics Committee of Finland's Tampere region declared no ethical problems in the study. The survey was fully voluntary, and participants were allowed to stop at any point in the survey. Only fully completed responses were included in the study. The survey was collected in collaboration with Norstat, but it was designed by the research group. The Norstat panel was used to recruit participants. The survey was conducted in Finnish.

The final sample used in this study ($n = 733$, 42.43% female, $M_{age} = 43.79$, $SD = 10.55$) included respondents who answered all five surveys and the variable statements of our interest in this study and who were also working during each time point. We conducted the nonresponse analyses between time points, and no major bias was identified. The listwise deletion exclusion used in this study was justifiable as in the data we did not identify any systematic attrition in the main study variables, hence we can assume that the analysis provides reliable estimates regardless of the listwise deletion (see Newman, 2003).

Measures

Big five personality traits. Personality traits were measured using the 15-item instrument of the Big Five Inventory (Hahn, Gottschling & Spinath, 2012). The personality traits were measured only once at T3 because personality and thus, personality profiles, have been demonstrated

to be rather stable among working-age adults (Cobb-Clark & Schurer, 2012; Kinnunen *et al.*, 2012). For each personality trait, a three-item composite variable was created with a range of 1 to 7. Response options ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Interitem reliability of the measures ranged from good to acceptable based on Cronbach's alphas (α): extraversion (0.87), conscientiousness (0.67), openness to experience (0.69), agreeableness (0.56), and neuroticism (0.71).

Work engagement. Work engagement was measured with the Utrecht Work Engagement Scale (UWES; Schaufeli *et al.*, 2002; Schaufeli & Bakker, 2004b). For this study, the nine-item Finnish version of the UWES was utilized (Seppälä, Mauno, Feldt *et al.*, 2009). Response options ranged from 0 (*never*) to 6 (*always/every day*). All three dimensions of the UWES were summed up to a composite variable ranging from 0–54 that showed internal consistency at all time points (T1: $\alpha = 0.96$, T2: $\alpha = 0.96$, T3: $\alpha = 0.96$, T4: $\alpha = 0.96$, T5: $\alpha = 0.96$). Work engagement was measured at all five time points.

Burnout. Burnout was measured with the Maslach Burnout Inventory General Survey (MBI-GS; Maslach, Jackson & Leiter, 2018). The answer scale ranged from 0 (*never*) to 6 (*every day*). The scale showed good interitem reliability at all time points. (T1: $\alpha = 0.88$, T2: $\alpha = 0.89$, T3: $\alpha = 0.86$, T4: $\alpha = 0.88$, T5: $\alpha = 0.88$). The scale ranged from 0 to 96. Burnout was measured at all time points.

Psychological distress. Psychological distress was measured with the 12-item General Health Questionnaire (Goldberg *et al.*, 1997). The items were summed up to a composite variable ranging from 0–36. The higher the results, the higher the participants' psychological distress. Cronbach's alphas indicated good reliability for all measurement points: (T1: $\alpha = 0.92$, T2: $\alpha = 0.91$, T3: $\alpha = 0.90$, T4: $\alpha = 0.91$, T5: $\alpha = 0.92$). Psychological distress was measured at all time points.

Social media use. We measured the frequency of social media use for work-related communication using the question, "How often do you use social media to keep in touch with your colleagues or work community regarding work-related matters (e.g., sharing information or agreeing on timetables)?" The response options were *I do not use it*, *less than weekly*, *weekly*, *daily*, and *many times a day*, with answers assigned numerical values of 0–4, respectively. We created a dummy variable to assess those who used social media for work-related communication at least once a day compared to less frequent users. Social media use was measured in all measurement points.

Background variables. Age in years, gender (1 = male, 2 = female), education (1 = primary or secondary education, 2 = applied university or university degree), remote work (1 = no, 2 = yes), living alone (1 = no, 2 = yes), and managerial position (1 = no, 2 = yes) were used as sociodemographic background variables.

Statistical analyses

Latent profile analysis (LPA; McLachlan & Peel, 2000) was used to identify longitudinal well-being profiles and cross-sectional Big Five trait profiles. LPA is a suitable method for investigating unknown population heterogeneity by identifying profiles of participants with similar response patterns to the observed continuous variables in question (Lubke & Muthén, 2005). Longitudinal well-being profiles were estimated based on the levels of and changes in work engagement, psychological distress, and burnout from T1 to T5. Big Five personality trait profiles were estimated based on the means of extraversion, conscientiousness, openness to experience, agreeableness, and neuroticism measured at T3. The parameters of the profile solutions were estimated using maximum likelihood with robust standard errors (Muthén & Muthén, 1998–2017) and the full information maximum likelihood was used to process the missing data. The LPAs were performed using Mplus (version 8.5; Muthén & Muthén, 1998–2017).

No single standard for the best fit criteria exists for selecting the correct number of latent profiles and usually a combination of best fit criteria is

used (Tein, Coxe & Cham, 2013). Hence, to evaluate the statistical power to detect the correct model and determine the number of latent profiles, the following seven fit indices and statistical power tests were used: (1) Akaike information criterion (AIC) index; (2) Bayesian information criterion (BIC) index; (3) sample adjusted Bayesian information criterion (SABIC) index; (4) Vuong-Lo-Mendell-Rubin (VLMR) test; (5) Lo-Mendell-Rubin (LMR) test; (6) bootstrap likelihood ratio test (BLRT); and (7) entropy value. AIC and BIC are the most used model selection methods (Tein *et al.*, 2013). Lower AIC and BIC values indicate the superiority of the model under consideration compared to other solutions. The BLRT, VLMR, and LMR tests examine whether the k profile solution has a better fit ($p < 0.05$) than the $k-1$ profile solution. Classification quality was assessed via entropy value that range from 0 to 1 and are preferably over 0.70 (Celeux & Soromenho, 1996). In addition, the theoretical interpretability and meaningfulness of the profile content was also included among the selection criteria.

In the next stage, the relationships between background variables and well-being profiles were investigated using the R3STEP method (Asparouhov & Muthén, 2014). The R3STEP method uses multinomial logistic regression analysis to predict belonging to a profile with values of antecedent variables. The multinomial logistic regression analysis was interpreted using the model estimates – their values describe the increased or decreased probability of belonging to the latent profiles being compared (Asparouhov & Muthén, 2014). Odds ratios (ORs), their 95% confidence intervals, and p -values for statistical significance are reported. In the third and the final step, we investigated the relationship between Big Five personality trait profiles and the identified well-being profiles with the χ^2 test and adjusted residuals.

RESULTS

Descriptive statistics

Descriptive statistics of all study variables are shown in Table 1, and correlations between the study variables are shown in Appendix Table A1.

Longitudinal well-being profiles

In the first phase, participants' longitudinal well-being profiles were identified using the LPA. Table 2 reports the fit indices and tests associated with the profile solutions. Both the VLMR and

LMR tests converged on the two-profile solution, but the BLRT did not converge on any specific profile solution. The elbow plot (Fig. 1) demonstrated that the AIC, BIC, and SABIC reached their lowest point for the seven-profile solution. However, one of its profiles was very small, consisting of only 1% of the participants. In up to six profiles, each increase resulted in a qualitatively meaningful novel profile. Based on all available information, a six-profile solution was selected for the subsequent analyses. Longitudinal similarity of the six profile-solution between T1 and T3 measurements, that is, prior and after COVID-19, were also tested and reported in Table 3.¹ The results supported the configural, structural, dispersion and distribution similarity of the profiles. Figure 2 shows the results of the six-profile solution in more detail. Individuals belonging to Disengaged (well-being profile 1; $n = 113$; 15%) reported moderate work engagement, average burnout, and low levels of psychological distress. The levels of well-being remained stable over time, that is there were no statistically significant mean level changes in any of the studied well-being construct evident. Those in Declined (well-being profile 2; $n = 132$; 18%) reported relatively high work engagement, but its levels decreased significantly over time, $F(4, 128) = 5.86$, $p < 0.001$ being evident in T4 and T5, and levels of burnout increased, $F(4, 128) = 5.43$, $p < 0.001$ over time especially between T4 and T5. Psychological distress was at the moderate level and no mean level changes in it were evident. Engaged (well-being profile 3; $n = 156$; 21%) was characterized by the highest level of work engagement and the lowest levels of burnout and psychological distress at all measurement points. In this profile, the levels of work engagement slightly increased, $F(4, 152) = 4.66$, $p < 0.001$, and burnout decreased, $F(4, 152) = 2.52$, $p < 0.05$, over time. No statistically significant changes were evident in psychological distress. Individuals in Fluctuated (well-being profile 4; $n = 77$; 10%) reported a curvilinear in work engagement, $F(4, 73) = 4.41$, $p < 0.01$, burnout, $F(4, 73) = 4.99$, $p < 0.001$, and psychological distress, $F(4, 73) = 8.48$, $p < 0.001$. That is, work engagement increased, and

Table 1. Descriptive Overview of the Study Variables ($n = 733$)

Continuous variables	Range	T1, mean (SD)	T2, mean (SD)	T3, mean (SD)	T4, mean (SD)	T5, mean (SD)	Within-person (SD)
Extraversion	3–21	N/A	N/A	13.48 (4.35)	N/A	N/A	N/A
Conscientiousness	5–21	N/A	N/A	15.65 (3.01)	N/A	N/A	N/A
Openness to experience	4–21	N/A	N/A	14.75 (3.30)	N/A	N/A	N/A
Agreeableness	3–21	N/A	N/A	14.43 (2.99)	N/A	N/A	N/A
Neuroticism	3–21	N/A	N/A	11.67 (3.60)	N/A	N/A	N/A
Work engagement	0–54	38.92 (12.20)	39.07 (12.29)	39.54 (11.72)	38.44 (12.11)	38.26 (12.09)	5.55
Burnout	0–96	37.21 (16.07)	37.06 (16.33)	36.05 (14.89)	36.97 (15.83)	37.08 (16.04)	7.55
Psychological distress	0–36	12.89 (6.22)	12.09 (5.63)	12.30 (5.31)	12.04 (5.43)	12.39 (5.73)	3.44
Age in years	18–64	43.79 (10.55)					
Categorical variables	Range	T1, %	T2, %	T3, %	T4, %	T5, %	Within-person (SD)
Gender ^a	1/2	42.43	N/A	N/A	N/A	N/A	N/A
Education ^b	1/2	48.02	N/A	N/A	N/A	N/A	N/A
Living alone ^c	1/2	26.88	28.38	27.15	27.42	27.01	0.13
Managerial position ^d	1/2	21.15	21.28	20.46	20.60	18.42	0.17
Remote work ^e	1/2	31.11	31.79	41.34	41.61	47.07	0.25
Social media use ^f	1/2	34.11	36.56	45.70	48.16	47.61	0.30

Note: ^aGender (1 = male, 2 = female), ^bEducation (1 = primary or secondary education, 2 = applied university or university degree), ^cLiving alone (1 = no, 2 = yes), ^dManagerial position (1 = no, 2 = yes), ^eRemote work (1 = no, 2 = yes), ^fSocial media use at work (1 = less frequent than daily, 2 = at least daily), N/A: Not applicable.

Table 2. Enumeration of Fit Statistics for Longitudinal Well-being Profiles ($n = 733$)

Number of profiles	LL	FP	AIC	BIC	SABIC	VLMR (p)	LMR (p)	BLRT (p)	Entropy	Latent profile proportions %
1	-13875.03	30	27810.10	27947.9	27852.7	—	—	—	—	100
2	-11949.80	46	23991.6	24203.0	24057.0	< 0.01	< 0.01	< 0.001	0.92	58/42
3	-11197.95	62	22519.9	22804.9	22608.0	0.164	0.166	< 0.001	0.92	16/37/47
4	-10758.89	78	21673.7	22032.3	21784.6	0.610	0.611	< 0.001	0.91	28/39/27/6
5	-10460.62	94	21109.2	21541.3	21242.9	0.210	0.210	< 0.001	0.93	25/22/38/5/10
6	-10278.47	110	20776.9	21282.6	20933.3	0.186	0.187	< 0.001	0.91	15/18/21/11/30/5
7	-10139.77	126	20531.5	21110.7	20710.6	0.603	0.605	< 0.001	0.92	16/30/21/10/4/18/1

Note: LL = log-likelihood; FP = free parameters; AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample-size adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin test; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test.

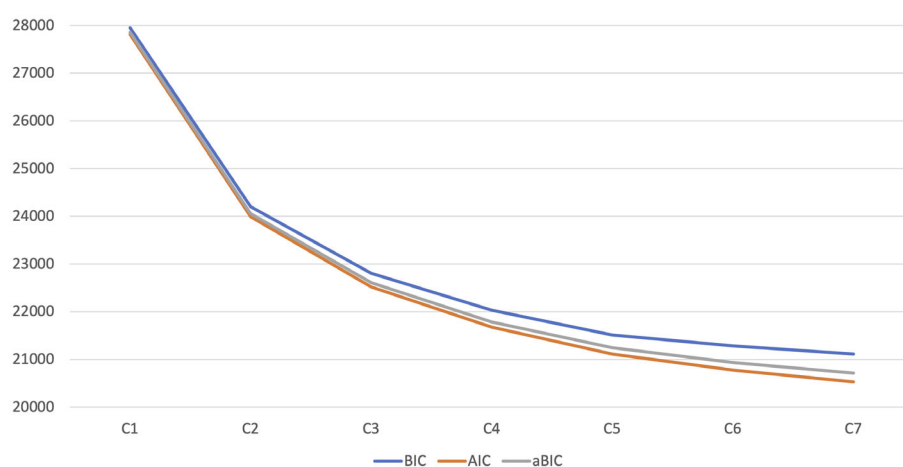


Fig. 1. Elbow plot of information criteria for different profile solutions.

Table 3. Results of the profile similarity test

T1–T3 profile similarity	k	LL	FP	AIC	BIC	SABIC	Entropy
Configural	6	-4327.26	82	8818.53	9195.50	8935.12	0.72
Structural	6	-4344.91	64	8817.83	9112.05	8908.83	0.70
Dispersion	6	-4343.36	46	8778.72	8990.19	8844.12	0.71
Distributional	6	-4348.62	41	8779.24	8967.72	8837.53	0.71

Note: LL = model log likelihood; FP = number of free parameters; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; SABIC = sample-size adjusted BIC.

burnout and psychological distress decreased between T1 and T3, but between T4 and T5 opposite development was evident. At T3 the well-being has at the highest level. Stable (well-being profile 5; $n = 222$; 30%) was characterized by high work engagement, low burnout symptoms, and low psychological distress across all measurement points. No statistically significant mean level changes were evident in any of the well-being indicators. Those in Burned-out (well-being profile 6; $n = 33$; 4%) scored the lowest levels of work engagement and the highest levels of burnout and psychological distress. No statistically significant changes mean level changes were evident in work engagement, burnout, or psychological distress. Longitudinal similarity of the profile-solution between T1 and T3 measurements were also tested and reported in Table 3.

Antecedents of the Well-Being profiles

Furthermore, we analyzed antecedents of well-being profiles using R3STEP analysis (see Table 4). Engaged was used as a reference profile. Based on the results, women were more likely to be in Engaged profile rather than Disengaged profile, and men were more likely to belong Declined rather than Engaged profile. Older participants were more likely belong to Engaged than any other profile. Those with primary or secondary education were more likely to belong to the Burned-out profile compared with the Engaged profile. Those not living alone belonged more often to Engaged than Disengaged or Burned-out profiles. Those who worked remotely at T2 were more likely to belong to the Engaged rather than Declined profile. Daily social media use for work at T3 increased the likelihood of belonging to the Engaged profile

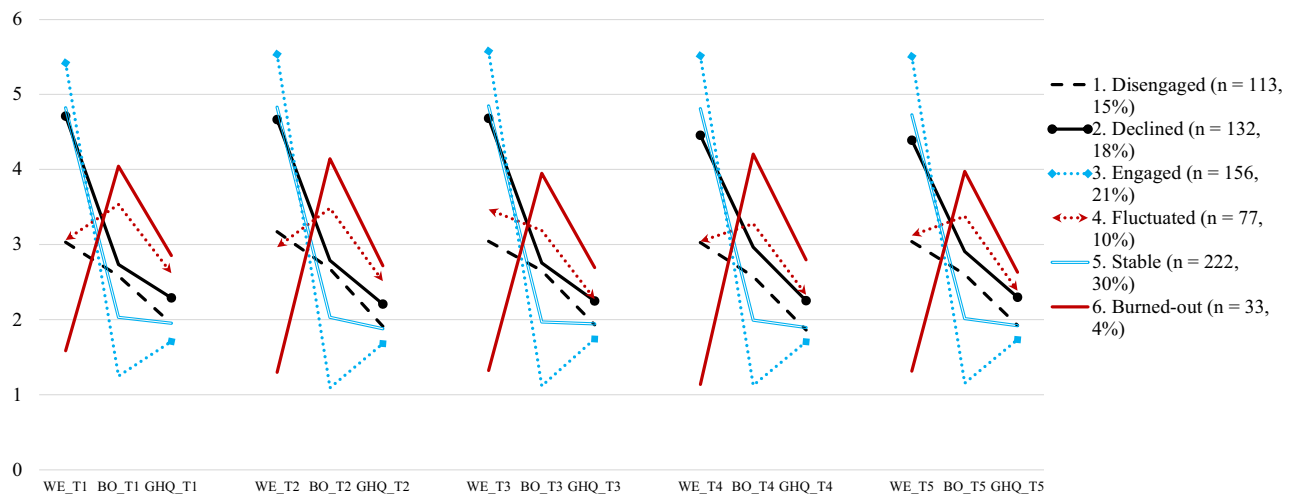


Fig. 2. Longitudinal well-being profiles.

Note. WE = work engagement, BO = burnout, GHQ = psychological distress. T1, T2, T3, T4 & T5 = time points 1–5.

rather than Fluctuated or Stable profiles. Finally, those using social media for work less than daily at T3 were more likely to belong to the Burned-out profile than Engaged profile.

Personality profiles

The person-centric approach revealed four personality profiles. Table 5 reports the fit indices and tests associated with the various profile solutions. The largest portion of our sample was Ordinary (Personality profile 4: 54.0%), characterized by relatively high levels of extraversion, conscientiousness, openness, and agreeableness, but relatively low levels of neuroticism. The second biggest profile was Reserved (Personality profile 2: 22.6%), representing those high in conscientiousness, moderate openness, and agreeableness and neuroticism as well as lower extraversion. The third profile was Resilient (Personality profile 3: 12.6%), with participants who were high in extroversion, conscientiousness, openness, and agreeableness but low in neuroticism. The smallest profile was Overcontrolled (Personality profile 1: 10.8%) with relatively high neuroticism associated with relatively high levels of conscientiousness, openness, and agreeableness but lower extraversion (Fig. 3).

Combinations of well-being and personality profiles

The combinations of well-being and personality profiles were analyzed using cross-tabulation (see Table 6). Association between Engaged well-being and Resilient personality profiles was particularly strong, as those with Resilient personality profile typically belong to the Engaged profile. Moreover, those belonging to the Ordinary personality profile typically belonged to the Stable well-being profile. Employees in the Reserved personality profile typically belonged to the Disengaged or Burned-out well-being profiles. Finally, Overcontrolled participants typically belonged to the Fluctuated well-being profile.

DISCUSSION

This study investigated well-being profiles and developmental well-being paths longitudinally among Finnish working

population with the special focus on the role of personality trait profiles. The analysis exposed six longitudinal well-being profiles: Disengaged, Declined, Engaged, Fluctuated, Stable and Burned-out supporting our first hypothesis of identifying different level and change profiles of our well-being indicators. Moreover, four personality profiles: Ordinary, Reserved, Resilient and Overcontrolled were identified. Combinations of well-being and personality profiles were also identified, Resilient and Engaged being the strongest and thus, supporting our second hypothesis. We also exposed several antecedents of well-being.

Our study contributes to the existing literature by using unique longitudinal data to enable investigation of well-being development over the course of two years 2019–2021, during which the global COVID-19 pandemic outbreak. Utilizing a person-centered approach (Hofmans *et al.*, 2020) enabled us to explore longitudinal profiles of well-being, and intra-individual differences were considered in employees' personalities and analyzed via personality trait profiles. Furthermore, our study yielded comprehensive information about the association between employee personalities and well-being, whereas earlier studies have been limited to separate associations between certain personality traits and well-being variable(s).

Although work life has undergone a rapid digital transformation due to the COVID-19 and working methods have changed, imposing a potential mental burden, the well-being of most of the respondents has remained rather stable despite of the dramatic environment change. However, the results revealed separation in developmental well-being paths, indicating a smaller group of individuals with decreased well-being and certain groups of individuals with temporarily increased well-being during the pandemic. Aligning with prior research regarding stability of work engagement (Kaltainen & Hakanen, 2022; Mäkilangas *et al.*, 2016; Oksa *et al.*, 2021), most respondents belonged to the Stable well-being profile, with high stable levels of work engagement and low burnout and psychological distress across all measurement points. The second biggest group belonged to the Engaged well-being profile, with the highest work engagement and lowest burnout and psychological distress symptoms across all measurement points compared with the other profiles. Our

Table 4. Antecedents of well-being profiles. Profile 3 "Engaged" used as a reference profile

Antecedent variables	Engaged vs. Disengaged			Engaged vs. Declined			Engaged vs. Fluctuated			Engaged vs. Stable			Engaged vs. Burned-out		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Gender ^a	0.32	0.17 to 0.62	< 0.001	1.77	1.04 to 3.02	0.035	1.48	0.79 to 2.77	0.210	1.26	0.77 to 2.07	0.343	0.61	0.26 to 1.43	0.256
Age in years	0.94	0.91 to 0.96	< 0.001	0.96	0.94 to 0.99	0.011	0.94	0.92 to 0.97	< 0.001	0.96	0.93 to 0.98	0.002	0.94	0.91 to 0.98	0.003
Education ^b	1.08	0.59 to 1.98	0.785	0.89	0.49 to 1.62	0.723	1.13	0.58 to 2.19	0.709	1.12	0.68 to 1.86	0.645	0.30	0.12 to 0.79	0.015
Living alone ^c	0.47	0.23 to 0.96	0.040	1.11	0.61 to 2.00	0.718	0.53	0.24 to 1.18	0.125	0.58	0.32 to 1.03	0.066	0.14	0.03 to 0.66	0.013
Managerial position ^d	0.93	0.49 to 1.75	0.832	1.55	0.86 to 2.78	0.138	0.62	0.28 to 1.36	0.238	0.81	0.45 to 1.43	0.475	1.21	0.52 to 2.82	0.655
Remote work T1 ^e	0.44	0.16 to 1.24	0.124	0.46	0.15 to 1.36	0.163	1.99	0.74 to 5.36	0.171	0.96	0.41 to 2.23	0.940	1.47	0.28 to 7.52	0.641
Remote work T2 ^e	1.79	0.66 to 4.86	0.250	3.17	1.03 to 9.74	0.044	1.13	0.40 to 3.14	0.813	1.36	0.60 to 3.08	0.462	0.39	0.07 to 2.10	0.276
Remote work T3 ^e	1.07	0.41 to 2.74	0.887	0.83	0.28 to 2.44	0.746	0.53	0.18 to 1.54	0.246	0.79	0.31 to 2.02	0.637	2.01	0.44 to 9.04	0.360
Remote work T4 ^e	0.95	0.34 to 2.66	0.936	0.45	0.14 to 1.42	0.177	0.48	0.16 to 1.46	0.198	1.00	0.41 to 2.42	0.989	2.59	0.65 to 10.3	0.175
Remote work T5 ^e	1.12	0.38 to 3.30	0.829	2.02	0.77 to 5.32	0.151	2.05	0.73 to 5.74	0.169	1.24	0.53 to 2.91	0.615	0.59	0.15 to 2.33	0.454
Social media use T1 ^f	0.89	0.42 to 1.90	0.781	0.85	0.39 to 1.82	0.678	0.82	0.35 to 1.87	0.639	1.09	0.55 to 2.14	0.803	1.67	0.48 to 5.85	0.417
Social media use T2 ^f	0.74	0.36 to 1.48	0.399	1.34	0.58 to 3.10	0.482	0.88	0.40 to 1.93	0.753	0.54	0.27 to 1.06	0.076	1.02	0.33 to 3.20	0.960
Social media use T3 ^f	0.97	0.43 to 2.17	0.950	1.11	0.50 to 2.47	0.792	2.28	1.09 to 4.76	0.028	2.52	1.31 to 4.83	0.005	0.16	0.03 to 0.73	0.018
Social media use T4 ^f	0.71	0.34 to 1.47	0.360	1.36	0.62 to 2.99	0.432	1.24	0.55 to 2.78	0.591	1.15	0.59 to 2.23	0.676	0.67	0.19 to 2.38	0.539
Social media use T4 ^f	0.50	0.22 to 1.17	0.114	1.40	0.61 to 3.20	0.419	0.70	0.32 to 1.54	0.385	0.46	0.22 to 0.97	0.044	0.75	0.20 to 2.79	0.672

Note: Bold refers to statistical significance of the result.

^aGender (1 = male, 2 = female or other), ^bEducation (1 = primary or secondary education, 2 = applied university or university degree), ^cLiving alone (1 = no, 2 = yes), ^dManagerial position (1 = no, 2 = yes), ^eRemote work (1 = no, 2 = yes), ^fSocial media use at work (1 = less frequent than daily, 2 = at least daily).

Bold refers to statistical significance of the result.

Table 5. Enumeration of fit statistics for Big Five personality trait profiles ($n = 733$)

Number of profiles	LL	FP	AIC	BIC	SABIC	VLMR (p)	LMR (p)	BLRT (p)	Entropy	Latent profile proportions %
1	−5672.74	10	11365.4	11411.4	11379.7	—	—	—	—	100
2	−5546.40	21	11134.8	11231.3	11164.6	< 0.01	< 0.01	< 0.001	0.71	71/29
3	−5514.89	32	11093.7	11240.8	11139.2	0.063	0.065	< 0.001	0.79	69/3/28
4	−5475.12	43	11036.2	11233.9	11097.3	0.318	0.322	< 0.001	0.72	39/36/20/5

Note: LL = log-likelihood; FP = free parameters; AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample-size adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin test; LMR = Lo-Mendell-Rubin test; BLRT = Bootstrapped likelihood ratio test.

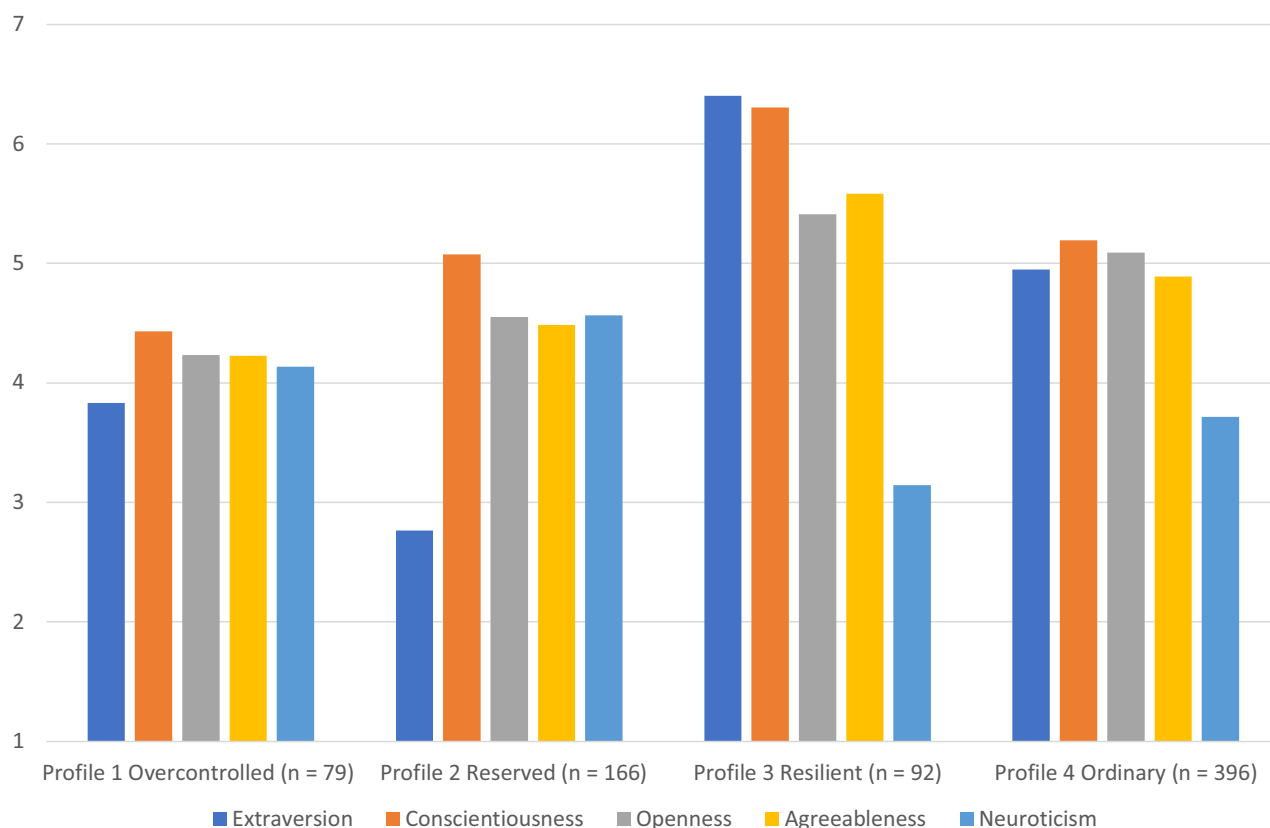


Fig. 3. Personality profiles.

results contradict, to some extent, prior literature which has strongly indicated that especially psychological distress has increased during the pandemics (Chen *et al.*, 2020; Labrague & De los Santos, 2020; Lorant *et al.*, 2021; McGinty *et al.*, 2020; Pierce *et al.*, 2020; Suvisaari *et al.*, 2021).

Moreover, the findings support the previous research on burnout, which indicate that burnout has not dramatically increased in nonmedical occupational fields during the pandemics (Chen & Eyoum, 2021; Oksanen *et al.*, 2021). The worst well-being was reported by a small group of individuals in the Burned-out profile, with the lowest levels of work engagement and highest levels of burnout and psychological distress across all measurement points. The well-being weakened during the measurement time for those who belonged to the Declined well-being profile, with relatively high work engagement that decreased at T4 and T5 (i.e., during autumn 2020 and spring 2021), which supports the findings of Oksa *et al.* (2021) and

Syrek *et al.* (2021). Also, variation in well-being was found within the Fluctuated well-being profile, members of which reported a slight increase in work engagement and decrease in both burnout and psychological distress during T3 (i.e., during spring 2020, when COVID-19 started). Overall, these findings indicate that although COVID-19 did not drastically affect the majority of employees, among some it did have both positive and negative well-being implications.

Moreover, our results indicated that most individuals belonged to the Ordinary personality profile, with relatively high levels of extraversion, conscientiousness, openness, and agreeableness, but relatively low level of neuroticism. The smallest group was Overcontrolled, with relatively high levels of neuroticism, conscientiousness, openness, and agreeableness, but lower extraversion. Analyzing combinations of these profiles showed that the highest well-being was reported among respondents within the Resilient personality profile (i.e., high in extroversion,

Table 6. Cross-tabulation of profile combinations

Occupational	1. Overcontrolled	2. Reserved	3. Resilient	4. Ordinary	Total
well-being types	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
	Adj. res	Adj. res	Adj. res	Adj. res	Adj. res
1. Disengaged	18 1.9	45 4.7	3 -3.5	47 -2.9	113
2. Declined	16 0.5	26 -0.9	9 -2.2	81 1.9	132
3. Engaged	3 -4.0	17 -4.0	47 7.5	89 0.9	156
4. Fluctuated	17 3.4	28 3.0	3 -2.4	29 -3.0	77
5. Stable	19 -1.3	34 -3.1	28 0.0	141 3.4	222
6. Burned-out	6 1.4	16 3.6	2 -1.2	9 -3.2	33
Total	79	166	92	396	733

Note: Adj. res = adjusted residuals.

contentiousness, openness, and agreeableness and low in neuroticism), supporting our second hypothesis. The results support the findings of a study by Mäkikangas *et al.* (2015) reporting that Resilient individuals with the greatest well-being are typically linked to an Engaged well-being profile. Moreover, according to previous literature, individuals belonging to the Ordinary personality profile generally belong to the Ordinary well-being profile, which aligns with our findings – the Stable well-being profile is very similar to Ordinary (Mäkikangas *et al.*, 2015). Individuals in this profile combination also reported good well-being. On the contrary, Reserved and Overcontrolled personality profiles were associated with the lowest well-being profiles – Burned-out, Disengaged, and Fluctuated.

Based on the analysis of antecedents for well-being, our results indicate that various sociodemographic and occupational factors are related to well-being profiles. Employees with older age belong typically to Engaged rather than the other profiles which support the prior studies which have demonstrated that older people tend to be more engaged to their work (Hakanen, Ropponen, Schaufeli & De Witte, 2019; Oksa *et al.*, 2021). Indeed, younger age has been associated with generally lower well-being during COVID-19 (Di Giuseppe *et al.*, 2021; Eurofound, 2021; Mäkinen *et al.*, 2020; Mäkikangas *et al.*, 2022; Savolainen *et al.*, 2021; Smith *et al.*, 2020), which could be since younger employees have been lacking the sense of togetherness and social support due to the pandemic. Hence, for organizations it is vital to acknowledge and develop supporting elements especially for younger employees to maintain their well-being.

Daily social media use for work at T3 (during spring 2020, at the beginning of COVID-19 outbreak) was associated with Engaged well-being profile, and less-than-daily social media use for work at T3 with Burned-out well-being profile. Thus, the more frequent use of social media for work purposes was associated with better well-being, which aligns with prior studies that has demonstrated association of work-related social media communication with enhanced social support, organizational identification, task

resources and work engagement (Oksa *et al.*, 2020, 2021). Therefore, social media use for work can be regarded to stay in touch even during social distancing times that can help to maintain employees' well-being. Not living alone was also associated with Engaged rather than Disengaged or Burned-out well-being profiles; those living together with others managed better in terms of well-being aligning with previous findings (Bartoszek *et al.*, 2020). This could be explained by a sense of togetherness and support of cohabitants. Female gender was associated with Engaged profile rather than Declined profile and men with Declined profile rather than Engaged well-being profile. Remote work at T2 in autumn 2019 before the COVID-19 outbreak was associated with the Engaged profile rather than Declined well-being profile.

Strengths, limitations and future directions

The main strength of the study was a nationally representative longitudinal sample that facilitated the analysis of well-being implications both before and during the COVID-19 pandemic. Another strength was that we were able to reach a high response rate and had a very limited number of missing observations. We did not conduct the survey cross-nationally; thus, our study was limited to Finnish employees with self-reported information and cannot be generalized to other countries. The nature of the study was observational; therefore, drawing direct causal relationships is not possible. For future studies, it would be interesting to examine if there are differences in personality and well-being profile combinations across various occupational fields and nations to delve deeper into comparable data on combinations of the well-being and personality profiles and if there are similarities and differences between different industries and between different countries.

CONCLUSIONS

The aim of this study was to investigate longitudinal well-being profiles, which we evaluated comprehensively through burnout,

work engagement, and psychological distress as measured from spring 2019 to spring 2021. In addition, we investigated several antecedents for well-being including personality trait profiles. We were able to demonstrate several well-being and personality profile combinations. The greatest well-being was reported by respondents within the Resilient personality profile, which characterized the highest scores of all other personality traits except, scoring low in neuroticism and which was associated with the Engaged well-being profile. The lowest level well-being was evident among Reserved and Overcontrolled personality trait profiles. However, the Ordinary personality profile with high scores of all other personality traits except scoring low in neuroticism was the most common, and it was associated with the Stable well-being profile. The results demonstrate the developmental variation of well-being in relation to personality traits and revealed both support, but also some contradictions to prior research in terms of well-being as our results indicate that majority of respondents regarded their well-being rather good. Hence, our findings denote that although there has been major turbulence in work life during the years 2019–2021 with the COVID-19 pandemic and some variations in well-being exist, overall, well-being has stayed rather stable among majority of the studied employees. Personality trait profiles played a crucial role in how employees were able to maintain their well-being during the years 2019–2021.

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AUTHOR CONTRIBUTIONS

R.O., A.M., N.S., R.L., A.O.: conceptualization; R.O., N.S., R.L., A.O.: data curation; A.M., N.S.: formal analysis; R.O., A.O.: funding acquisition; R.O., A.M., N.S., R.L., A.O.: investigation; A.M.: methodology; A.O.: project administration; R.O., A.M., N.S., R.L., A.O.: resources; A.M. software; A.O. supervision; R.O., A.M., N.S., R.L., A.O.: validation; A.M.: visualization; R.O., A.M., N.S., R.L., A.O.: roles/writing – original draft; R.O., A.M., N.S., R.L., A.O.: writing – review and editing.

PRE-REGISTRATION

The study was not pre-registered.

CONFLICT OF INTEREST

None of the authors has a conflict of interest to declare.

DATA AVAILABILITY STATEMENT

Data for this research is available upon request from corresponding author.

ENDNOTE

¹ The results of these tests are presented in Table 3. First, configural similarity was supported, that is, at both time points the same number of profiles were estimated ($k = 6$). After that, the subsequent tests of similarity were estimated following the guidelines provided in the article by Morin, Meyer, Creusier and Bietry (2016). Compared with the baseline configural similarity model, the structural similarity model resulted in lower values on the AIC, BIC and SABIC, thereby supporting the structural similarity of the six-profile solution across time. Moreover, a dispersion similarity of the profiles across time was supported, as indicated by the lower values of all indicators (i.e., AIC, BIC and SABIC). Finally, we estimated a model of distributional similarity. This similarity model was also supported, as demonstrated by lower values of BIC and SABIC. Altogether this evidence demonstrated that the number of well-being profiles are the same across time, as are also the within-profile means, within-profile variability and profile probabilities. This information and test results provided us with solid ground and evidence to use longitudinal LPA in our study.

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APPENDIX A

Table A1. Correlation matrix of the study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
1. Gender ^a T1	1																																			
2. Age in years T1	0.04	1																																		
3. Education ^b T1	-0.04	-0.15	1																																	
4. Living alone ^c T1	0.05	-0.06	-0.05	1																																
5. Managerial position ^d T1	-0.13	0.01	0.04	-0.09	1																															
6. Remote work ^e T1	-0.08	0.02	0.30	-0.07	0.16	1																														
7. Remote work ^e T2	-0.06	0.02	0.27	-0.12	0.10	0.75	1																													
8. Remote work ^e T3	-0.09	0.03	0.32	-0.08	0.07	0.66	0.67	1																												
9. Remote work ^e T4	-0.05	0.03	0.32	-0.06	0.01	0.62	0.67	0.76	1																											
10. Remote work ^e T5	-0.09	0.05	0.34	-0.06	0.02	0.54	0.59	0.72	0.78	1																										
11. Social media use ^f T1	-0.07	-0.09	0.13	-0.01	0.07	0.31	0.29	0.31	0.30	0.27	1																									
12. Social media use ^f T2	-0.05	-0.09	0.12	-0.03	0.10	0.24	0.24	0.25	0.25	0.24	0.61	1																								
13. Social media use ^f T3	-0.04	-0.08	0.19	-0.02	0.08	0.21	0.22	0.29	0.25	0.24	0.51	0.55	1																							
14. Social media use ^f T4	-0.02	-0.10	0.17	-0.09	0.12	0.23	0.26	0.33	0.32	0.30	0.46	0.48	0.57	1																						
15. Social media use ^f T5	-0.03	-0.09	0.20	-0.05	0.10	0.23	0.25	0.30	0.33	0.31	0.48	0.50	0.58	0.65	1																					
16. Extraversion T3	0.06	0.06	-0.04	-0.13	0.08	0.00	0.04	-0.01	-0.04	-0.02	0.10	0.12	0.13	0.12	0.10	1																				
17. Conscientiousness T3	0.10	0.10	-0.05	-0.11	0.06	-0.04	-0.07	-0.08	-0.05	-0.08	-0.06	0.00	-0.07	-0.02	-0.01	0.20	1																			
18. Openness to experience T3	-0.07	0.13	0.03	-0.06	0.09	0.08	0.08	0.05	0.05	0.04	0.06	0.06	0.07	0.10	0.10	0.25	0.20	1																		
19. Agreeableness T3	0.08	0.00	0.03	-0.04	-0.01	0.02	0.05	0.02	0.05	0.03	0.01	0.05	0.05	0.06	0.11	0.23	0.25	0.15	1																	
20. Neuroticism T3	0.23	-0.10	-0.04	0.08	-0.16	-0.06	-0.07	-0.05	-0.02	-0.05	-0.05	-0.01	-0.01	-0.01	-0.05	-0.33	-0.06	-0.04	-0.16	1																
21. Work engagement T1	0.16	0.08	0.08	-0.02	0.10	0.07	0.08	0.05	0.03	0.04	0.09	0.10	0.10	0.10	0.08	0.29	0.28	0.20	0.18	-0.12	1															
22. Work engagement T2	0.11	0.11	0.09	-0.04	0.10	0.07	0.09	0.04	0.05	0.05	0.08	0.09	0.12	0.12	0.09	0.24	0.28	0.20	0.18	-0.13	0.78	1														
23. Work engagement T3	0.12	0.12	0.06	-0.03	0.14	0.08	0.08	0.07	0.02	0.03	0.09	0.09	0.16	0.16	0.15	0.28	0.37	0.24	0.22	-0.15	0.72	0.76	1													
24. Work engagement T4	0.10	0.15	0.02	-0.02	0.08	0.07	0.08	0.08	0.06	0.05	0.11	0.09	0.14	0.14	0.14	0.27	0.33	0.20	0.21	-0.15	0.69	0.72	0.78	1												
25. Work engagement T5	0.11	0.09	0.06	0.00	0.10	0.07	0.08	0.09	0.06	0.06	0.06	0.04	0.11	0.09	0.07	0.31	0.30	0.18	0.25	-0.19	0.70	0.70	0.75	0.79	1											
26. Burnout T1	0.01	-0.09	-0.04	0.03	-0.05	0.01	-0.02	-0.01	0.00	0.00	0.02	0.00	-0.02	0.00	0.01	-0.20	-0.21	-0.07	-0.19	0.29	-0.66	-0.57	-0.51	-0.53	-0.52	1										
27. Burnout T2	0.03	-0.10	-0.02	0.06	-0.10	-0.01	-0.01	0.00	0.01	0.00	0.01	-0.01	-0.02	-0.02	0.00	-0.20	-0.25	-0.06	-0.18	0.31	-0.55	-0.67	-0.55	-0.55	-0.53	0.75	1									
28. Burnout T3	0.01	-0.14	0.01	0.06	-0.08	0.00	0.01	-0.01	0.00	0.00	0.01	0.00	-0.02	0.00	-0.01	-0.26	-0.29	-0.12	-0.22	0.36	-0.50	-0.57	-0.65	-0.62	-0.58	0.67	0.76	1								
29. Burnout T4	0.03	-0.19	0.01	0.03	-0.05	-0.04	-0.03	0.00	-0.01	0.01	-0.01	0.00	0.00	0.02	0.00	-0.26	-0.26	-0.10	-0.21	0.33	-0.49	-0.52	-0.55	-0.69	-0.60	0.67	0.72	0.77	1							
30. Burnout T5	-0.01	-0.13	0.02	0.02	-0.04	-0.04	-0.02	-0.02	-0.02	0.00	0.01	0.00	0.00	0.03	0.02	-0.25	-0.24	-0.08	-0.21	0.30	-0.50	-0.52	-0.51	-0.60	-0.68	0.66	0.68	0.72	0.78	1						
31. Psychological distress T1	0.15	-0.04	-0.07	0.03	-0.05	0.03	0.02	0.02	0.03	0.02	0.04	0.09	0.03	0.04	0.06	-0.09	-0.11	0.01	-0.14	0.33	-0.38	-0.33	-0.27	-0.30	-0.32	0.62	0.52	0.45	0.45	0.43	1					
32. Psychological distress T2	0.08	-0.05	-0.01	0.04	-0.07	0.07	0.05	0.04	0.01	0.01	0.02	0.04	0.03	0.02	0.02	-0.13	-0.16	0.03	-0.11	0.35	-0.32	-0.39	-0.28	-0.35	-0.33	0.47	0.60	0.49	0.48	0.46	0.62	1				
33. Psychological distress T3	0.09	-0.08	0.02	0.10	-0.04	0.03	0.04	0.00	-0.01	0.00	-0.02	0.04	-0.01	0.02	-0.01	-0.17	-0.13	0.00	-0.12	0.40	-0.17	-0.23	-0.28	-0.30	-0.25	0.36	0.40	0.52	0.44	0.38	0.47	0.57	1			
34. Psychological distress T4	0.08	-0.09	-0.01	0.01	-0.02	0.04	0.06	0.02	0.03	0.01	0.00	0.01	0.02	0.04	0.04	-0.18	-0.13	0.00	-0.14	0.41	-0.24	-0.24	-0.27	-0.37	-0.34	0.42	0.42	0.46	0.55	0.48	0.54	0.57	0.57	1		
35. Psychological distress T5	0.10	-0.10	0.00	0.05	-0.02	0.03	0.05	0.00	-0.01	0.01	0.04	0.01	-0.02	0.05	0.01	-0.14	-0.11	0.04	-0.11	0.36	-0.22	-0.22	-0.21	-0.31	-0.40	0.37	0.37	0.38	0.42	0.57	0.48	0.53	0.49	0.62	1	

Notes: *p* values <0.05 are indicated with bold font. ^aGender (1 = male, 2 = female or other). ^bEducation (1 = primary or secondary education, 2 = applied university or university degree), ^cLiving alone (1 = no, 2 = yes), ^dManagerial position (1 = no, 2 = yes), ^eRemote work (1 = no, 2 = yes), ^fSocial media use at work (1 = less frequent than daily, 2 = at least daily).