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Untangling the Complexity: A Diversified Approach to Longitudinal Analysis of the Interplay between Quantitative and Qualitative Job Insecurity.

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Untangling the Complexity: A Diversified Approach to Longitudinal Analysis of the Interplay between Quantitative and Qualitative Job Insecurity.

In the aftermath of the pandemic, the labour market has entered a phase of unprecedented evolution driven by global economic recovery efforts. While certain sectors have witnessed a rebound, others continue to grapple with ongoing challenges and uncertainties. In response to changing circumstances, organisations embrace remote work as a prevalent practice. Furthermore, advancements in digital transformation and automation (e.g., the rise of AI) result in rapid job roles and skill requirements shifts. Consequently, the labour market has become increasingly volatile, leading to heightened perceptions of both quantitative (i.e., the perceived threat of job loss) and qualitative job insecurity (i.e., the perceived threat of losing valued job features). Despite the familiarity with job insecurity, there remains a paucity of research designed to understand the relationship between these two dimensions. This dissertation's aim is twofold. First, we apply a theoretical framework to elucidate the relationship between quantitative and qualitative job insecurity. Second, we employ the latest data analysis methods and statistical inference techniques to overcome common methodological barriers in work and organisational psychology research. Specifically, we address the second aim guided by three objectives: 1) conducting a longitudinal analysis to examine the associations between these dimensions over time, 2) distinguishing within-person and between-person effects, and 3) employing variable and person-centered approaches.

We conducted three empirical studies and used two longitudinal datasets from the Belgian population. The first dataset— used in studies 1 and 3— is a three-wave panel data gathered among 2355 Flemish employees between 2017/2018. The second dataset— used in Study 2— is a three-wave panel data gathered among 4981 Flemish and Walloon employees between 2013/2014. In the first study, we conducted a cross-lagged panel model to estimate the temporal stability and lagged effects between quantitative and qualitative job insecurity. Our findings showed significant and stable carry-over effects (autoregressive process) for quantitative and qualitative job insecurity, which indicates that job insecurity is relatively stable at the population level. Furthermore, we found that qualitative job insecurity was positively associated with quantitative job insecurity six months later. In the second study, we disaggregated the between-person and within-person effects before analysing autoregressive and cross-lagged effects. We found that over 60% of the quantitative and qualitative job insecurity variation is due to individual differences (between-person variance). We employed a random-intercept cross-lagged panel model to control for the between-person variance when exploring the relationship at the within-person level. The results indicated that, when controlling for between-person variance, the intraindividual autoregressive paths were significant (however, weaker than in study 1) for quantitative but not qualitative job insecurity. In addition, compared to Study 1, we found a reverse relationship between quantitative and qualitative job insecurity. The results indicated that an employee who experiences a higher-than-usual threat to job loss (i.e., quantitative job insecurity) is more likely to experience a higher-than-usual threat to job characteristics (i.e., qualitative job insecurity) six months later. In study 3, we used a person-centered approach and analysed latent class growth to investigate parallel trajectories for quantitative and qualitative job insecurity. We found five distinct classes of job insecurity trajectories that varied in their base level and shape of experienced job insecurity. Whereas in four out of five trajectories, employees experienced similar base levels of both dimensions (high, moderate, low), a fifth of the sample (≈20%) experienced a high threat to job characteristics (i.e., high qualitative job insecurity) while simultaneously feeling secure about keeping their job (i.e., low quantitative job insecurity).

In sum, our results demonstrate the complexity of both quantitative and qualitative job insecurity and the processes of the interdependency between the two dimensions of job insecurity. Although we found no evidence for a reciprocal relationship, the results suggest that the relationship between quantitative job insecurity occurs in both directions. Altogether, this project corroborates employing longitudinal designs, a person-centered approach, and within-person analysis in work and organisational psychology, considering the extensive insights gained regarding the development and interdependence of the two prevalent psychosocial work stressors— quantitative and qualitative job insecurity.

Complexiteit ontward: een veelzijdige analyse van de wisselwerking tussen kwantitatieve en kwalitatieve jobonzekerheid vanuit longitudinaal perspectief

De arbeidsmarkt is in de nasleep van de coronapandemie een fase van ongekende evolutie ingegaan, aangedreven door wereldwijde economische herstelinspanningen. Terwijl bepaalde sectoren een opleving hebben gekend, blijven andere worstelen met voortdurende uitdagingen en onzekerheden. Als reactie op deze veranderde omstandigheden passen organisaties zich aan door telewerk als gangbare praktijk te omarmen. Bovendien leiden de ontwikkelingen op het gebied van digitale transformatie en automatisering (bijv. de opkomst van AI) tot snelle verschuivingen in functies en vaardigheidseisen. Als gevolg hiervan werd de arbeidsmarkt steeds volatieler, wat leidt tot een verhoogde perceptie van zowel kwantitatieve (d.w.z. de waargenomen dreiging van jobverlies) als kwalitatieve jobonzekerheid (d.w.z. de waargenomen dreiging van het verliezen van gewaardeerde werkkenmerken). Ondanks de bekendheid met het fenomeen jobonzekerheid, is er schaarste aan onderzoek naar de relatie tussen deze twee dimensies. Het doel van dit proefschrift is tweeledig. Ten eerste passen we een theoretisch kader toe om de relatie tussen kwantitatieve en kwalitatieve jobonzekerheid te verhelderen. Ten tweede maken we gebruik van de nieuwste data-analysemethoden en statistische inferentietechnieken om veelvoorkomende methodologische barrières in arbeids- en organisatiepsychologisch onderzoek te overwinnen. Dit tweede doel wordt bereikt via drie doelstellingen: 1) het uitvoeren van een longitudinale analyse om de associaties tussen beide dimensies in de tijd te onderzoeken, 2) het onderscheiden van binnen-persoon en tussen-persoon effecten, en 3) het toepassen van zowel variabele- als persoonsgerichte benaderingen.

We voerden drie empirische studies uit en gebruikten twee longitudinale datasets, verzameld onder de Belgische bevolking. De eerste dataset, die werd gebruikt in studies 1 en 3, is een paneldatabase met drie meetgolven, verzameld bij 2355 Vlaamse werknemers in 2017/2018. De tweede dataset, die werd gebruikt in studie 2, is een paneldatabase met drie meetgolven, verzameld bij 4981 Vlaamse en Waalse werknemers in 2013/2014.

In de eerste studie voerden we een cross-lagged panelmodelstudie uit om de temporele stabiliteit van en de vertraagde effecten tussen kwantitatieve en kwalitatieve jobonzekerheid te schatten. Onze bevindingen toonden aan dat kwantitatieve en kwalitatieve jobonzekerheid relatief stabiel zijn op populatieniveau. Bovendien vonden we dat kwalitatieve jobonzekerheid positief geassocieerd was met kwantitatieve jobonzekerheid zes maanden later. In de tweede studie hebben we, voorafgaand aan de analyse van autoregressieve en cross-lagged effecten, de effecten tussen personen en binnen personen uitgesplitst. We ontdekten dat meer dan 60% van de variatie in kwantitatieve en kwalitatieve jobonzekerheid te wijten is aan individuele verschillen (variantie tussen personen). We gebruikten een random-intercept cross-lagged panelmodel om te controleren voor de variantie tussen personen bij het onderzoeken van de relatie op persoonsniveau. De resultaten gaven aan dat, wanneer gecontroleerd werd voor variantie tussen personen, de intra-individuele autoregressieve paden significant waren (echter zwakker dan in studie 1) voor kwantitatieve jobonzekerheid, maar niet voor kwalitatieve jobonzekerheid. Daarnaast vonden we, in vergelijking met studie 1, een omgekeerde relatie tussen kwantitatieve en kwalitatieve jobonzekerheid. De resultaten gaven aan dat een werknemer die een hoger dan gebruikelijke bedreiging voor baanverlies percipieert (d.w.z. kwantitatieve jobonzekerheid), een grotere kans heeft om zes maanden later een hoger dan gebruikelijke bedreiging voor werkkenmerken te percipiëren (d.w.z. kwalitatieve jobonzekerheid). In studie 3 gebruikten we een persoonsbenadering en voerden we een latente-klassengroeianalyse uit om parallelle trajecten voor kwantitatieve en kwalitatieve jobonzekerheid te onderzoeken. We vonden vijf verschillende klassen van jobonzekerheidstrajecten die varieerden in hun basisniveau en vorm van ervaren jobonzekerheid. Terwijl in vier van de vijf trajecten werknemers vergelijkbare basisniveaus van beide dimensies ervoeren (hoog, gemiddeld, laag), ervoer een vijfde van de steekproef (≈20%) een hoge bedreiging van hun werkkenmerken (d.w.z. hoge kwalitatieve jobonzekerheid), gecombineerd met zekerheid over het behoud van hun baan als geheel (d.w.z. lage kwantitatieve jobonzekerheid).

Kortom, onze resultaten tonen de complexiteit aan van zowel kwantitatieve als kwalitatieve jobonzekerheid als van hun onderlinge afhankelijkheid. Hoewel we geen bewijs vonden voor een

wederkerige relatie, suggereren de resultaten dat de relatie tussen kwantitatieve en kwalitatieve jobonzekerheid zich in beide richtingen voordoet. Al met al bevestigt dit project de relevantie van het gebruik van longitudinale designs, een persoonsgerichte benadering en de binnen-persoonsanalyse in de arbeids- en organisatiepsychologie, gegeven de inzichten die zijn verkregen met betrekking tot de ontwikkeling en onderlinge afhankelijkheid van twee vaak voorkomende psychosociale werkstressoren - kwantitatieve en kwalitatieve jobonzekerheid.

Summary

Svelare la Complessità: Un Approccio Diversificato all'Analisi Longitudinale dell'Intreccio tra Incertezza Quantitativa e Qualitativa sul Lavoro.

Il mercato del lavoro, nel periodo successivo alla pandemia, è entrato in una fase di evoluzione senza precedenti, guidata dagli sforzi globali di ripresa economica. Mentre alcuni settori hanno assistito a una ripresa, altri continuano a confrontarsi con sfide e incertezze in corso. In risposta a circostanze mutevoli, le organizzazioni si adattano abbracciando il lavoro remoto come pratica prevalente. Inoltre, gli sviluppi nella trasformazione digitale e nell'automazione (ad esempio, la diffusione dell'IA) provocano cambiamenti rapidi nei ruoli lavorativi e nei requisiti di competenza. Di conseguenza, il mercato del lavoro è diventato sempre più volatile, portando a percezioni accentuate sia di incertezza quantitativa (cioè la minaccia percepita di perdere il lavoro) che di incertezza qualitativa sul lavoro (cioè la minaccia percepita di perdere caratteristiche lavorative apprezzate). Nonostante la familiarità con l'insicurezza lavorativa, persiste una carenza di ricerca volta a comprendere la relazione tra queste due dimensioni. L'obiettivo di questa tesi è duplice. In primo luogo, applichiamo un quadro teorico per chiarire la relazione tra l'insicurezza quantitativa e qualitativa sul lavoro. In secondo luogo, utilizziamo gli ultimi metodi di analisi dati e tecniche di inferenza statistica per superare le comuni barriere metodologiche nella ricerca in psicologia del lavoro e organizzativa. In particolare, affrontiamo il secondo obiettivo seguendo tre obiettivi: 1) condurre un'analisi longitudinale per esaminare le associazioni tra queste dimensioni nel tempo, 2) distinguere gli effetti intra e interpersonali, e 3) utilizzare approcci sia centrati sulla variabile che centrati sulla persona.

Abbiamo condotto tre studi empirici e utilizzato due set di dati longitudinali raccolti nella popolazione belga. Il primo set di dati, utilizzato negli studi 1 e 3, è un panel di tre onde raccolto tra 2355 dipendenti fiamminghi tra il 2017 e il 2018. Il secondo set di dati, utilizzato nello Studio 2, è un panel di tre onde raccolto tra 4981 dipendenti fiamminghi e valloni tra il 2013 e il 2014. Nel primo studio, abbiamo condotto un modello di pannellaggio cross-lagged per stimare la stabilità temporale e gli effetti ritardati tra l'insicurezza quantitativa e qualitativa sul lavoro. I nostri risultati hanno mostrato significativi e stabili effetti di trasferimento (processo autoregressivo) per l'insicurezza quantitativa e qualitativa sul lavoro, indicando che l'insicurezza sul lavoro è relativamente stabile a livello di popolazione. Inoltre, abbiamo scoperto che l'insicurezza qualitativa sul lavoro era positivamente associata all'insicurezza quantitativa sei mesi dopo. Nel secondo studio, prima di analizzare gli effetti autoregressivi e cross-lagged, abbiamo scomposto gli effetti intra e interpersonali. Abbiamo scoperto che oltre il 60% della variazione nell'insicurezza quantitativa e qualitativa sul lavoro è dovuto a differenze individuali (varianza interpersonale). Abbiamo utilizzato un modello di pannellaggio cross-lagged con effetto casuale per controllare la varianza interpersonale nell'esplorare la relazione a livello intra-individuale. I risultati hanno indicato che, controllando la varianza interpersonale, i percorsi autoregressivi intra-individuali erano significativi (sebbene più deboli rispetto allo studio 1) per l'insicurezza quantitativa ma non per quella qualitativa sul lavoro. Inoltre, rispetto allo Studio 1, abbiamo trovato una relazione inversa tra l'insicurezza quantitativa e quella qualitativa sul lavoro. I risultati hanno indicato che un dipendente che vive una minaccia maggiore del solito di perdere il lavoro (cioè l'insicurezza quantitativa sul lavoro) è più probabile vivere una minaccia maggiore del solito alle caratteristiche lavorative (cioè l'insicurezza qualitativa sul lavoro) sei mesi dopo. Nel terzo studio, abbiamo utilizzato un approccio centrato sulla persona e condotto un'analisi di crescita latente di classe per indagare traiettorie parallele per l'insicurezza quantitativa e qualitativa sul lavoro. Abbiamo identificato cinque classi distinte di traiettorie di insicurezza sul lavoro che variavano nel loro livello base e nella forma dell'insicurezza sul lavoro sperimentata. Mentre in quattro delle cinque traiettorie i dipendenti hanno sperimentato livelli di base simili per entrambe le dimensioni (alti, moderati, bassi), un quinto del campione (≈20%) ha vissuto una minaccia elevata alle caratteristiche lavorative (cioè un'insicurezza qualitativa sul lavoro elevata) e contemporaneamente si sentiva sicuro di conservare il proprio lavoro (cioè un'insicurezza quantitativa sul lavoro bassa).

In sintesi, i nostri risultati dimostrano la complessità sia dell'insicurezza quantitativa che di quella qualitativa sul lavoro e i processi di interdipendenza tra le due dimensioni di insicurezza sul lavoro. Nonostante non abbiamo trovato prove di una relazione reciproca, i risultati suggeriscono che la relazione con l'insicurezza quantitativa sul lavoro avviene in entrambe le direzioni. In definitiva, questo progetto corrobora l'uso di progetti longitudinali, un approccio centrato sulla persona e un'analisi intra-individuale in psicologia del lavoro e organizzativa, considerando gli approfondimenti estesi ottenuti riguardo allo sviluppo e all'interdipendenza dei due preponderanti stress psicosociali sul lavoro: l'insicurezza quantitativa e qualitativa sul lavoro.

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GENERAL INTRODUCTION

The post-pandemic labour market is currently experiencing a unique and evolving state as economies worldwide navigate the recovery phase. While some sectors have rebounded, others continue to grapple with challenges and uncertainties. According to the International Labor Organization (ILO) assessment, the economic turmoil triggered by the COVID-19 pandemic is projected to result in a staggering loss of 25 million jobs globally (International Labor Organization, 2020). This impact surpasses that of the 2008-2009 global financial crisis, indicating the severity of the current crisis. Concurrently, job insecurity is on the rise, whereas working hours and wages are declining (International Labor Organization, 2020). As organizations adapt to new operating methods, remote work has become more prevalent. Additionally, the pandemic has accelerated digital transformation and automation, leading to rapid changes in job roles and skills requirements (Lee et al., 2022a).

These factors underscore the significant and far-reaching consequences of the crisis, posing a considerable threat to job loss (i.e., quantitative job insecurity) and to job features (i.e., qualitative job insecurity). A plethora of research has shown overwhelming consequences of these two kinds of job insecurity both for employees and organizations, including but not limited to deterioration in well-being, health, work attitudes, job performance, and work behaviour (see meta-analyses Cheng and Chan, 2008; De Witte, 2005; Shoss, 2017; Sverke et al., 2019). Although the notion of job insecurity is not new, little is still known about the relationship between the two dimensions of job insecurity and the available research is methodologically limited.

In this dissertation, we offer a comprehensive analysis of the relationship between quantitative and qualitative job insecurity. To account for the complexity and interdependency of both constructs and overcome common methodological barriers in work and organizational psychology research, we

apply advanced data analysis and statistical inference methods. In the following sections, we define the concept of two-dimensional job insecurity and after summarizing the current state-of-the art on the relationship between quantitative and qualitative job insecurity we introduce the research question of this project. We further identify theoretical and methodological aims subdivided into objectives and conclude with a summary of the three empirical studies that were conducted for this dissertation.

Two-dimensional concept of job insecurity

Job insecurity is a prevalent issue in the modern workforce and has gained significant attention from researchers and practitioners alike. Clearly characterising the job insecurity concept is crucial for understanding and addressing its negative consequences. Greenhalgh and Rosenblatt (1984) highlighted the need for conceptual clarity in their pioneering study on job insecurity. Since then, literature has largely agreed on the key characteristics that typify job insecurity: uncertainty and subjective perception.

Uncertainty refers to the lack of predictability and stability in an employee's job situation, which can create anxiety and stress. Employees who are uncertain about the future of their jobs may experience feelings of vulnerability and helplessness as they are unsure about the continuity of their employment (Dekker and Schaufeli, 1995). This uncertainty is considered a threat due to its involuntary and unwanted nature, forming the core of the stressful experience of job insecurity. In fact, the threat to the current job situation has been shown to be equally or even more detrimental than actual job loss (De Witte, 1999; Kim and Von Dem Knesebeck, 2016; Wege et al., 2017).

Furthermore, job insecurity refers to an employee's perception of a potential threat to continuity in their current job (Heaney et al., 1994), highlighting the construct's subjective nature. Perception of job insecurity includes cognitive and affective components, reflecting employee beliefs and emotions related

to their job situation, respectively. Although there is broad consensus that objectively precarious work situations lead to higher job insecurity levels (De Witte and Näswall, 2003; Keim et al., 2014; Klandermans et al., 2010), the individual perception of these conditions is a key defining feature. Notwithstanding the clear link between subjective perceptions and objective precarity, the former captures subtle differences that are impractical to measure and observe (Klandermans et al., 2010). For instance, two employees who work in the same position, in the same team, with the same tenure, education, skillset, etc., might have utterly contrasting perceptions of their job security if one perceives notably lower colleague/supervisor support than the other. In that sense, job insecurity's rise and consequences depend on how individuals perceive and appraise workplace conditions (Shoss, 2017). Borrowing from Lazarus' transactional stress model, the perception of a stressor (in that respect, perceived threat to the current job situation) is a blend of objective stimuli (such as organizational changes, e.g., mergers, downsizing, implementation of new technologies or changing work conditions) and employees' individual characteristics. Thus, the availability or lack of personal resources such as internal locus of control, extraversion, empowerment, self-esteem, and employability lead to either stressful or neutral appraisal of the work environment (Jiang et al., 2021). Even though job insecurity is an omnipresent work stressor, it does not affect everyone uniformly (Sverke and Hellgren, 2002).

Quantitative and qualitative job insecurity are the two types of job insecurity that are typically distinguished (Hellgren et al., 1999). Quantitative job insecurity is defined as the perceived threat of losing one's job as a whole. This type of job insecurity is often associated with organizational downsizing or restructuring, which can result in a general sense of job insecurity among employees (De Witte, 2005). Quantitative job insecurity is typically measured by asking employees to rate the likelihood of losing their job or being laid off in the near future. Research has shown that quantitative job insecurity can have negative effects on employee well-being, including increased stress, anxiety, and depression, as well as decreased job

satisfaction, organizational commitment, and performance (De Witte, 2005). Qualitative job insecurity, on the other hand, refers to the perceived threat of losing valued job features or characteristics, such as job responsibilities, status, or opportunities for career advancement (Hellgren et al., 1999). Unlike quantitative job insecurity, which focuses on the risk of losing the job, qualitative job insecurity relates to concerns about changes in the nature or quality of the job. Qualitative job insecurity can arise from factors such as organizational restructuring, changes in job tasks or responsibilities, or shifts in the organizational culture or work environment. In line with this, several studies have demonstrated that qualitative job insecurity also has adverse consequences for employee well-being, organizational attitudes, and behaviour (Fischmann et al., 2018; Hellgren et al., 1999; Lazauskaite-Zabielske et al., 2019). As both constructs tap into different aspects of insecurity in the continuity of employment, it is essential to address both forms of job insecurity to understand the overall development of job insecurity and the prevalence and salience of its distinct aspects.

Quantitative and qualitative job insecurity are theoretically and empirically distinct constructs. Regardless of the measurement scales in use, configural factor analysis (CFA) invariably finds a better model fit when the items load on two different factors (respective dimensions of quantitative and qualitative job insecurity) rather than on one general job insecurity scale—ultimately denoting that the two dimensions measure a different aspect of job insecurity. This dissertation used two validated and reliable measurement scales to measure quantitative and qualitative job insecurity. Quantitative job insecurity is measured with The Job Insecurity Scale (JIS) (developed by De Witte, 2000, validated by Vander Elst et al., 2014). This four-item scale measures cognitive (e.g., *'Chances are, I will soon lose my job')* and affective *(e.g., 'I feel insecure about the future of my job')* aspects of the construct. *Qualitative Job Insecurity* is measured with a four-item scale (developed by De Witte and De Cuyper; validated by Fischmann et al., 2021). The scale captures cognitive (e.g., '*I think my job will deteriorate in the near future*') and affective (e.g., '*I am worried about how my job will*

look in the future') aspects of employees' insecurities over job characteristics without listing specific job features. Notwithstanding a sometimes-high correlation between the measurements of quantitative and qualitative job insecurity, they are consistently found to be empirically distinct dimensions of job insecurity.

Research question: What is the relationship between quantitative and qualitative job insecurity?

Although the literature on job insecurity has expanded significantly over the last two decades, identifying various predictors and consequences of both types of job insecurity (for reviews and meta-analyses, see Cheng and Chan, 2008; De Witte et al., 2016; Shoss, 2017), there is surprisingly limited knowledge on the link between quantitative and qualitative job insecurity.

The evolution of research on job insecurity can be observed as a response to labour market transformations and their effect on employees' well-being. Research on job insecurity has begun to address the growing precariousness of employment status. Economic crises, globalization, industrialization, etc., have mostly resulted in modifications to the structure of the organization, i.e., mergers, downsizing and increased outsourcing, etc., which primarily affected employees in terms of keeping or losing their current employment (Ashford et al., 1989; Nam, 2019). However, the new wave of technological, societal, and demographic changes, boosted by an unexpected global hit of the COVID-19 pandemic, has led to increasing reorganization of work conditions the way we know them (Kaufman and Taniguchi, 2021; Renard et al., 2021). Hence, new labour transformation addresses how we work (i.e., platform work, teleworking, temporary contracts, satellite offices, use of AI in the workplace, etc.), which does not pose a direct threat to the job as a whole (i.e., quantitative job insecurity) but to the job features (i.e.,

qualitative job insecurity) (Lee et al., 2022b). Consequently, research consistently finds that employees experience increased levels of both quantitative and qualitative job insecurity (De Witte et al., 2016).

Given their prevalence— quantitative and qualitative job insecurity are two well-established and omnipresent work stressors (De Witte, 2005)— the relevance of understanding their relationship is twofold. First, exploring the interdependency between quantitative and qualitative job insecurity might help to understand the backbone of job insecurity. To date, job insecurity is explored either as a single dimension (i.e., quantitative or qualitative job insecurity) or two independent job stressors. Our theoretical model and the empirical research invite scholars to look at job insecurity as a dynamic network of threats towards job conditions that mutually influence one another, which affects their development as both unique dimensions and a global condition of job insecurity. Second, a two-dimensional approach to job insecurity might be useful to practitioners, particularly to improve the effectiveness of programs designed to hamper employees' perceptions of job insecurity. For instance, if the relationship is primarily unidirectional, i.e., the rise in quantitative job insecurity leads to qualitative job insecurity (or vice versa), the programs designed to impede the preceding type of job insecurity would ultimately inhibit both types. In contrast, a reciprocal relationship between quantitative job insecurity might require a more refined solution to obstruct the self-fuelling cycle of the job insecurity experience.

The first scholars who began to explore this relationship were Selenko and Batinic, who found that a perceived threat to job loss (i.e., quantitative job insecurity) was related to a perceived deprivation of the benefits of work (Selenko and Batinic, 2013). In the following study, Vander Elst et al. (2016) showed that a threat to work's manifest and latent benefits mediated the relationship between quantitative job insecurity and health complaints. These studies suggested that a threat to job loss (i.e., quantitative job insecurity) leads to a threat to job features (i.e., qualitative job insecurity). In 2017, Chirumbolo and colleagues were the first to test this relationship explicitly.

They proposed— and cross-sectionally confirmed— the Job Insecurity Integrated Model (JIIM), which presumes that qualitative job insecurity mediates the effects of quantitative job insecurity on work attitudes (e.g., job satisfaction, work engagement, turnover intention). Their subsequent cross-sectional studies further confirmed the mediation process, in which qualitative job insecurity mediated the effects of quantitative job insecurity on distinct outcomes (Callea et al., 2019; Chirumbolo et al., 2020).

To date, the research on the relationship between quantitative and qualitative job insecurity concordantly builds on Jahoda's deprivation theory to argue for quantitative job insecurity preceding and impacting qualitative job insecurity. In line with Jahoda's deprivation theory, employment can be translated into six functions of employment. Besides the financial income, which is a direct function of employment, it grants access to five latent benefits such as an opportunity for peer interaction (social contact), daily schedule and purpose (time structure), social recognition and status (status/identity), engagement in specific job-related tasks (enforced activity) and lastly, an opportunity for a meaningful contribution to society (collective purpose) (Jahoda, 1982). Jahoda's theory has been fundamental in understanding unemployment. She argued that job loss is an important cause of distress among the unemployed, primarily due to losing access to these job functions. In the context of job insecurity, Jahoda's deprivation theory has been used to argue that employees who perceive a threat to employment (quantitative job insecurity) ultimately translate these threats into a direct threat to the functions of the job that this employment provides (qualitative job insecurity).

Although quantitative and qualitative job insecurity are undeniably interrelated, the current state-of-the-art is theoretically narrow and methodologically limited. First, the theoretical underpinning overlooks the plausible reverse and reciprocal effects. To the best of our knowledge, no previous study has proposed a theoretical framework to test how the intensification of qualitative job insecurity affects quantitative job insecurity.

However, we find it reasonable to assume that a persistent threat to job features might eventually overrun employees' overall job security. Second, the predominance of cross-sectional designs greatly restrains any inference on this relation. Given that quantitative and qualitative job insecurity are two complex psychological constructs, their multifaceted relationship needs to be analysed from different angles, which cross-sectional design renders impossible.

In this doctoral project, we pursue two aims, which are translated into four key objectives. First, we aim to build a theoretical research model that elucidates various facets of the connection between quantitative and qualitative job insecurity. While Jahoda's theory effectively explains the progression from quantitative to qualitative job insecurity, it fails to address instances where this relationship is reversed. Therefore, our initial aim is to employ the Conservation of Resources (COR) theory as the foundational framework for our investigation. This theory, widely recognized in organizational psychology and behaviour, guides our exploration of how individuals respond to stressful events. It posits that a perceived threat to closely related resources (such as employment and work conditions) is a complex and dynamic process. As such, it accommodates the "traditional" path proposed by Chirumbolo and colleagues in JIIM (2017) (i.e., quantitative job insecurity leading to qualitative job insecurity), as well as the possibility of a reversed and reciprocal relationship. By adopting this theoretical approach, we can comprehensively explore the intricate dynamics of the relationship between quantitative and qualitative job insecurity.

Second, we aim to bridge the gap between the theory and methodology in the field of work and organizational psychology— particularly when exploring the relationship between psychosocial constructs. For that purpose, we formulate three main objectives: a) longitudinal analysis of the relationship between quantitative and qualitative job insecurity, b) disaggregation of within-person and between-person effects, and c) implementation of variable-centered and person-centered approaches.

Aim 1: Theoretical framework to explain the relationship between quantitative and qualitative job insecurity.

This aim expands a theoretical research model suggested by Chirumbolo and colleagues (2017) to explain three plausible forms of the relationship between quantitative and qualitative job insecurity. Building on the conservation of resources (COR) theory, the Job Insecurity Integrated Model (JIIM) proposed by Chirumbolo (2017) has exclusively argued for quantitative job insecurity to precede and impact qualitative job insecurity. This project expands the COR theory application to propose further and explain the reverse and reciprocal relationship between quantitative and qualitative job insecurity.

Objective 1: A reciprocal relationship between quantitative and qualitative job insecurity through the lens of conservation of resources (COR) theory

COR theory defines stress as a reaction to the environment in which there is (1) a threat of resource loss, (2) an actual resource loss or (3) a lack of resource gain after resource investment (Hobfoll, 1989). According to COR theory, stable employment and job features such as income and benefits, social support, and career opportunities are job resources (Hobfoll et al., 2018), and quantitative and qualitative job insecurity are viewed as a perceived threat to losing these resources. Under conservation of resources theory (COR), resources that share common environmental and developmental conditions— such as in a work context — develop and exist in aggregates called *resource caravans,* i.e., common environmental and developmental conditions, which is why they all appear to relate to one another, rather than being isolated entities (Hobfoll et al., 2018). In that

context, stress that originates from a threat to job resources, whether the job as a whole or specific job features, changes the environmental conditions surrounding the resources within work-related resources caravan and downgrades the individuals' perception regarding the sustainability of these resources. Furthermore, as loss begets future loss, quantitative and qualitative job insecurity might be linked through a loss cycle (Westman et al., 2004). Thus, the increase in quantitative job insecurity deteriorates the conditions in the work-related resources caravan and is linked with an increase in the threat to job features (i.e., qualitative job insecurity), which, in turn, is related to an increase in quantitative job insecurity.

Throughout this dissertation project, in line with COR theory, we built a research model that tests three directions of the relationship between quantitative and qualitative job insecurity. First, we examine the path that was argued in past research, where quantitative job insecurity is said to precede and lead to qualitative job insecurity. Next, we check for the reverse relationship in which qualitative job insecurity affects quantitative job insecurity. Finally, we combine the two processes and test for a reciprocal relationship.

Aim 2: Advanced methodology and statistical inference in work and organizational psychology

The progress in work and organizational psychology is predicated upon the interplay between theoretical frameworks and empirical inquiry. In this paradigm, theories serve as a foundation for formulating hypotheses, which are subsequently subjected to empirical scrutiny and testing. Intending to answer the research question on the relationship between quantitative and qualitative job insecurity, three key challenges for empirical research need to be first acknowledged and directly addressed. In this doctoral dissertation,

we apply advanced longitudinal methodology and a versatile approach to statistical inference in work and organizational psychology research. Although our focus is on the relationship between quantitative and qualitative job insecurity, the approach and methods discussed here are applicable and strongly recommended for all fields of work and organizational psychology. In the following section, we comprehensively depict the methodological novelties that we formulate as the respective methodological objectives of this doctoral project.

Objective 2: Longitudinal analysis of the relationship between quantitative and qualitative job insecurity

Quantitative and qualitative job insecurity are both dynamic psychological constructs, meaning that time is an important factor when attempting to understand how they relate. The relationship between quantitative and qualitative job insecurity can be considered in terms of their synchronous and long-term effect (Wunsch et al., 2010). Synchronous or cross-sectional effects signify the degree to which the level of quantitative job insecurity is associated with the level of qualitative job insecurity at the same point in time. In other words, the concurrent effects estimate to what extent an increase in a threat to job loss (quantitative job insecurity) coincides with a rise in a threat to job features (qualitative job insecurity). Past research consistently confirms that both dimensions are highly related, which means that employees who, on average, score high on quantitative job insecurity are likely to score high on qualitative job insecurity (Callea et al., 2019; Chirumbolo et al., 2017, 2020)

The problem with cross-sectional effects is that the estimated effect tells us that the two concepts coexist without any information regarding if and how one affects the other. Cross-sectional effects simply say, “Yes, these two events go hand-in-hand”, without an explanation of what might be the cause

(Taris et al., 2021). Nevertheless, these findings are an important first step to determine whether the two variables are related.

Since cross-sectional effects confirm a relationship between the two variables, the next step is to check for long-term effects. Long-term effects are estimated in longitudinal studies in which data is collected from the same group of participants over time, typically over a few months or years. Although longitudinal data are more difficult to collect (they require more time, effort, and funding to gather a sufficient sample that is willing to respond to multiple surveys spread across time), there are certain advantages to longitudinal analysis in comparison to cross-sectional analysis (Taris et al., 2021). In fact, a longitudinal framework warrants access to information that is otherwise unavailable via a cross-sectional framework. To be exact, a longitudinal design is well-suited to measure the stability and change of the psychological constructs and test the temporal precedence in their relationship, which are the corresponding sub-objectives of the longitudinal analysis.

2.1 Measurement of stability and change

Measuring stability and change in a longitudinal research design is essential for understanding how individuals develop and change over time. Measuring stability involves assessing whether a trait or behaviour remains relatively consistent or whether it changes over time (Kenny and Campbell, 1989). When estimating the relationship between quantitative and qualitative job insecurity, assessing the stability and change of each dimension is important for two reasons. First, it clarifies the nature of the two dimensions of job insecurity. For instance, high stability could indicate that employees' perception of job insecurity might be strongly influenced by their personality traits and relatively stable contextual factors. On the other hand, low stability could suggest that employees' perception of job insecurity is rather situational, i.e., conflict with colleagues or a supervisor, poor performance feedback, implementation of new ways of working, etc. Furthermore,

stability rates of quantitative and qualitative job insecurity might differ, indicating the importance of stable vs time-varying factors on their development and thus determining the nature and strength of their relationship. There are different methods to measure stability and change (Haehner et al., 2022). In this dissertation, we implement three different approaches: rank-order stability, mean-level change and intraclass correlation. To estimate rank-order stability, we use an autoregressive model, which indicates how many individuals changed in their experience from Time 1 to Time 2 relative to their position within a sample. Mean-level stability is measured with a latent growth model, which estimates the extent to which an experience has changed averaged over the total sample (Haehner et al., 2022). Finally, with intraclass correlation, we estimate how much of the total variance can be attributed to between-person differences and within-person changes.

Autoregressive model. In the autoregressive model, the past measurement of a variable is used to predict future measurements of the same variable. This method is used to measure the stability of a variable over time. The basic form of an autoregressive model is:

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \varepsilon_t$$

where Y_t represents the value of the variable of interest at time *t*, Y_{t-1} represents the value of the variable at the previous time point, β_0 and β_1 are coefficients to be estimated, and ε_t is the error term. The autoregressive model estimates the coefficients β_0 and β_1, which represent the intercept and slope of the regression line, respectively. The coefficient β_1 represents the strength of the relationship between the variable at time *t* and its value at the previous time point (Ryan et al., 2018). If β_1 is positive and significant, it suggests that the variable is positively correlated with its past values and tends to increase over time. If β_1 is negative and significant, it suggests that the variable is negatively correlated with its past values and tends to decrease

over time. If β_1 is not significant, it suggests no significant relationship between the variable and its past values.

Latent growth model. In LGMs, the latent variable of interest is measured at multiple time points, and the model estimates the mean and variance of the change in the variable over time. The basic form of an LGM is:

$$Y_{it} = \beta_{0i} + \beta_{1i}T_i + \varepsilon_{it}$$

where Y_{it} is the observed score of the latent variable at time *t* for individual *i*, β_{0i} is the intercept, β_{1i} is the slope or rate of change, T_i is time (centered at 0 for interpretation purposes), and ε_{it} is the error term. The LGM estimates the parameters β_{0i} and β_{1i} for each individual *i* in the sample, which represent the initial level of the variable at time *t* and the rate of change in the variable over time, respectively (Grimm and Ram, 2018). The LGM also estimates the variance of the initial level, the variance of the rate of change and the covariance between the intercept and slope. These estimates can provide insights into the overall shape of the trajectory of change and individual differences in the variable's level and rate of change.

Intraclass correlation. The intraclass correlation (ICC) is a statistical measure that quantifies the proportion of variance that is attributable to between-person differences relative to the total variance (Wilms et al., 2020). The mathematical formula for calculating the ICC depends on the specific context or statistical model. We used the reliability-adjusted intraclass correlation coefficient ICC(1), which utilizes the corrected within-variance to calculate the ratio between the between-variance and within-variance (Wilms et al., 2021). It is defined as follows:

$$\text{ICC}(1) = \frac{\widehat{\sigma_b^2}}{\widehat{\sigma_b^2} + \hat{\alpha}\widehat{\sigma_w^{*2}}}$$

In this formula, the $\widehat{\sigma_b^2}$ represents the estimated between-person variance, $\widehat{\sigma_w^{*2}}$ denotes within-person variance and $\hat{\alpha}$ term in the formula represents the

measurement error or unreliability in the within-group variance. By incorporating this correction, the reliability-adjusted ICC(1) accounts for the influence of measurement error and provides a more accurate estimate of the proportion of variance attributable to between-group differences relative to the total variance (Wilms et al., 2020, 2021).

2.2. Temporal precedence

The predominant weakness of a cross-sectional design is that it is impossible to demonstrate the temporal ordering in one variable's effects on another (Taris and Kompier, 2014). Temporal precedence refers to the idea that a change in one variable precedes and is associated with a change in the other variable. By measuring the variables at multiple points over time, longitudinal designs allow researchers to establish the temporal order between variables and make inferences about their relationship. We used two methods to estimate the temporal precedence in the relationship between quantitative and qualitative job insecurity: the traditional cross-lagged panel model (CLPM) and the recent extended version, the random-intercept cross-lagged panel model (RI-CLPM) (Hamaker et al., 2015; Mulder and Hamaker, 2021; Schuurman et al., 2016). Given that RI-CLPM, next to temporal precedence, also controls for individual differences, it is presented in the section below (see Objective 3).

An important thing to keep in mind is that cross-lagged coefficients may vary when different time-lags are used (Dormann and Griffin, 2015). Ideally, employing optimal time lags is fundamental to finding true estimates of the lagged associations between quantitative and qualitative job insecurity. However, as optimal time lags are yet to be estimated, in this dissertation, we conduct three empirical studies based on two longitudinal datasets, each with three measurements, six months apart. The rationale for the chosen time lag is twofold. First, the six-month time lag has been successfully used in previous research to observe stability and change in quantitative and qualitative job insecurity (Van Hootegem et al., 2021). Second, a six-month

time lag might be optimal for observing this relationship as it is a relatively short period of time in a workplace context, yet long enough for weak effects to unfold (Dormann and Griffin, 2015).

Cross-lagged panel model. The CLPM is a standard model to examine the autoregressive (see above) and time-lagged effects between constructs that were measured over time. In the cross-lagged panel model, we assume and formally test whether the time-lagged effects vary at different time points or remain stable across time (Hamaker et al., 2015). The following formula represents CLPM:

$$Y_{1t} = \beta_{10} + \beta_{11}Y_{1t-1} + \beta_{12}Y_{2t-1} + \varepsilon_{1t}$$
$$Y_{2t} = \beta_{20} + \beta_{21}Y_{2t-1} + \beta_{22}Y_{1t-1} + \varepsilon_{2t}$$

where Y_{1t} and Y_{2t} are the observed scores of the two variables at time *t*, β_{10} and β_{20} are the intercepts. When t=1, β_{10} and β_{20} are equal to the group means at t_1. β_{11} and β_{21} represent the autoregressive effects (see above), commonly interpreted as indicators of the stability or carry-over of the construct from time *t* to time *t+1*. β_{12} and β_{22} are the time-lagged effects, which are the effects of each variable on the other variable over time (cross-lagged paths), and ε_{1t} and ε_{2t} are the error terms. For example, β_{12} represents the effect of Y_2 at time *t-1* on Y_1 at time *t* while controlling for the effect of Y_1 at time *t-1* on Y_1 at time *t*.

Objective 3: Disaggregation of within-person and between-person effects

Most psychological constructs can be reasonably assumed to vary over time. This variation could be disaggregated and estimated at both the between-person and within-person levels. The variation at the between-person level depicts how individuals differ on average from others (Hoffman and Stawski,

2009). For instance, in research on job insecurity, we consistently observe that some employees, on average, perceive quantitative or qualitative job insecurity as higher or lower than others. The variation at the within-person level characterizes how an individual differs over time compared to themselves. Contingent upon internal or environmental predictors of job insecurity, an employee's perception of quantitative or qualitative job insecurity varies between individuals and over time (De Cuyper et al., 2022; Smet et al., 2016).

As the main objective of this dissertation is to examine the relationship between two psychological constructs, it is of particular importance to employ a model that accounts for both between- and within-person variance and allows the measurement of the relationship between the constructs separately at those two levels of (Mulder and Hamaker, 2021). Thus, next to CLPM, which is a common approach that delineates temporal ordering between quantitative and qualitative job insecurity, we employ an alternative model to disaggregate between-person and within-person variation and explicitly measure the relationship between these two constructs at the within-person level.

Random intercept cross-lagged panel model. RI-CLPM is an extension of the cross-lagged panel model (CLPM) that accounts for individual differences in the studied variables' intercepts (i.e., the baseline levels). In the RI-CLPM, each variable is regressed on its own lagged values and the lagged values of the other variables in the model. The model allows for estimating both within-person and between-person effects and considers that individuals may differ in their baseline levels of the variables being studied (Mulder and Hamaker, 2021). The formula for the random intercept cross-lagged panel model (RI-CLPM) is as follows:

Level 1: $$Y_{ij} = \pi_{0j} + \pi_{1j}Y_{i(j-1)} + \gamma_{01}X_j + \gamma_{11}X_jY_{i(j-1)} + \varepsilon_{ij}$$

Level 2: $$\pi_{0j} = \beta_{00} + U_{0j}$$

$$\pi_{1j} = \beta_{10} + U_{1j}$$

Where:

Y_{ij} represents the score of variable Y for individual *i* at time *j*.
$X_{i(j-1)}$ represents the score of variable X for individual *i* at the previous time point (*j*-1).
π_{0j} represents the intercept (baseline level) of variable Y for individual *j*.
π_{1j} represents the autoregressive effect of variable Y for individual *j*.
γ_{01} represents the between-person effect of variable X on the intercept of variable Y.
γ_{11} represents the cross-lagged effect of variable X on the autoregressive effect of variable Y.
ε_{ij} represents the within-person error term.
U_{0j} represents the between-person random intercept (i.e., individual differences in baseline levels) of variable Y.
U_{1j} represents variable Y's between-person random slope (i.e., individual differences in autoregressive effects).
β_{00} represents the average intercept of variable Y.
β_{10} represents the average autoregressive effect of variable Y.

Objective 4: Implementation of person-centered approach and variable-centered approach

In research focused on psychological constructs two main analytical techniques can be differentiated that answer two different types of research questions. A variable-centered approach is used to describe associations among variables. These types of analyses identify processes that can be generalized for the whole population. In other words, a variable-centered approach is built on the assumption that the population is homogeneous with respect to how variables relate to one another. This type of analytical technique is well suited for analysing the importance of a predictor in relation to the outcome. In contrast, a person-centered approach is used to identify groups of individuals who share comparable characteristics of measured constructs. These types of analyses identify differences among individuals and distinguish groups or types of individuals who exhibit resembling qualities (Laursen and Hoff, 2006; Morin et al., 2018). Thus, a person-centered approach is built on the assumption that the population is heterogeneous with respect to how variables relate to one another.

Given the subjective perception of job insecurity, it is unlikely that the development of and, consequently, the relationship between quantitative and qualitative job insecurity is uniform across the same. In fact, recent studies indicate that employees largely differ in terms of the strength of these perceptions (insecure vs secure patterns) and their evolution (stable/increasing/decreasing trajectories). (Kinnunen et al., 2014; Van Hootegem et al., 2021). Accordingly, next to the common variable-centered approach, we implement a method to put "the person in the centre" (Woo et al., 2018) to identify subgroups of individuals who experience distinctive patterns of job insecurity in terms of how they usually feel and the longitudinal trajectories of these perceptions.

Latent class growth model. The latent class growth model (LCGM) is a statistical model used to identify subgroups of individuals who exhibit similar patterns of change in a variable over time. It is a mixture model that assumes that the population is composed of multiple latent classes or subgroups with distinct growth trajectories. In the LCGM, everyone is assigned to one of the latent classes based on their pattern of scores on the variable being studied over time. The model estimates the probability of belonging to each latent class, the growth trajectory for each class, and the variance in the growth trajectory within each class. The latent class growth model (LCGM) can be represented mathematically as follows:

Level 1: $Y_{ij} = \pi_{0k} + \pi_{1k} \times t_{ij} + \varepsilon_{ij}$

Level 2: $Prob(k) = \phi_k$

$\pi_{0k} = \gamma_{00} + \gamma_{01} \times Z_k + u_{0k}$

$\pi_{1k} = \gamma_{10} + \gamma_{11} \times Z_k + u_{1k}$

Where:

Y_{ij} represents the observed score of the variable Y for individual *i* at time *j*.

π_{0k} represents the initial value or intercept of the growth trajectory for latent class *k*.

π_{1k} represents the slope or rate of change over time for latent class *k*.
t_{ij} represents the time of measurement for individual *i* at time *j*.
ε_{ij} represents the within-person error term.
Prob(k) represents the probability of belonging to latent class *k*.
ϕ_k represents the prior probability of latent class *k* in the population.
Z_k represents the vector of observed covariates that predict latent class membership.
u_{0k} represents the random intercept for latent class *k*.
u_{1k} represents the random slope for latent class *k*.
γ_{00} represents the mean intercept across all latent classes.
γ_{01} represents the effect of covariates Z_k on the initial value of the growth trajectory.
γ_{10} represents the effect of covariates Z_k on the slope of the growth trajectory.
γ_{11} represents the interaction effect of covariates Z_k with time on the slope of the growth trajectory.

Overview of the chapters

This doctoral project aims to initiate innovative research on the relationship between quantitative and qualitative job insecurity. Based on an overview of the job insecurity literature and methodological novelty in work and organizational psychology research, we propose a versatile approach and apply new methods to explore the development of quantitative and qualitative job insecurity and their relationship. For this dissertation, we conducted three empirical studies, which are presented in the following chapters. In the following section, I will summarise each chapter and the study samples. An overview of how each chapter addresses the aims and objectives is provided in Table 1.

In Chapter 1, we present a study published in 2021 titled: “On the reciprocal relationship between quantitative and qualitative job insecurity and outcomes. Testing a cross-lagged longitudinal mediation model”. In this study, we build upon the conservation of resources theory (COR) and Jahoda’s deprivation theory to propose a research model to test a reciprocal relationship between quantitative and qualitative job insecurity. We use a cross-lagged panel model to estimate the cross-lagged effects between the

two types of job insecurity. Moreover, we test lagged effects of quantitative and qualitative job insecurity on different job strains (i.e., exhaustion, emotional impairment, cognitive impairment), attitudinal coping reactions (i.e., job satisfaction, work engagement, turnover intention) and behavioural coping reactions (i.e., in-role performance, extra-role performance, counterproductive behaviour).

Sample. The study is based on a longitudinal dataset collected from Flemish employees (i.e., the Dutch-speaking region of Belgium) between September 2017 and September 2018 (three measurements, 6-month time lag). The data were collected as part of a larger study[1]. The call for participation was published in an online HR magazine (vacature.com). A total of 2355 participants responded to the ad and filled out the questionnaire at T1. All interviewees were invited to participate in the subsequent two waves; 1494 employees completed the questionnaire at T2 (63.4% response rate) and 1114 at T3 (47.3% response rate). To obtain a homogeneous sample for this study and to control contextual bias, we excluded people who, throughout the observation period, had experienced job transition or who had stopped working altogether (n=352). The final sample included 2003 employees, out of which 859 (43%) participated in all three waves (T1T2T3); 580 (29%) responded only in the first wave (T1); 326 (16%) completed the survey during the first two consecutive waves (T1T2); and 238 (12%) employees filled in the survey during the first and the last wave (T1T3).

In Chapter 2, we present a study published in 2023 titled: “Person-Centered Approach to Job Insecurity: Is There a Reciprocal Relationship between the Quantitative and Qualitative Dimensions of Job Insecurity?”. In line with COR, we propose a research model to test a reciprocal relationship between quantitative and qualitative job insecurity. This study questions the legitimacy of using a between-person approach in studying within-person

[1] The Authors would like to thank Steffie Desart and Anahí Van Hootegem from KU Leuven for sharing their dataset and providing me with all the information about the data collection.

processes. We employ a random-intercept cross-lagged panel model (RI-CLPM) to control for individual differences and to examine the autoregressive and cross-lagged effects at the within-person level.

Sample. The study is based on a longitudinal, three-wave dataset collected from Belgian employees (the questionnaire was available in Dutch and French to collect data from both Flemish and Walloon employees) between January 2013 and May 2014 (a 6-month time lag between each measurement wave). Formerly, the data were collected for the research project on employability (Nelissen, 2016) and shared by the authors for this study[23]. Fifteen organizations were contacted, of which thirteen agreed to participate in a survey. A total of 4981 employees were invited to participate in the study, of which 3694 participated in the first wave (response rate 74%). From the employees who participated in the first wave, we gathered 2045 employees who returned a questionnaire in the second wave (41% response rate) and 1698 employees who completed the survey in the third wave (34% response rate). We excluded employees who did not fill in the questionnaire in the first wave (n=1287), leaving us with the final sample of 3694 participants.

In Chapter 3, we present a manuscript titled: "Trajectories of perceived quantitative and qualitative job insecurity in relation to Karasek's job demand-control model". This study employs a person-centered perspective to explore a joint development of quantitative and qualitative job insecurity. The aim of this study is to identify subgroups of individuals who experience distinctive patterns of job insecurity in terms of how they usually feel and the longitudinal trajectories of these perceptions. We use a latent growth model (LGM) to identify quantitative and qualitative job insecurity trajectories and

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[2] The authors would like to thank Dr Jill Nelissen and Dr Ellen Peeters from KU Leuven for sharing their dataset and providing us with all the information about the data collection process.

[3] At the time of data collection there was no legal obligation to have the study approved by an independent ethical review board.

continue with parallel-process latent class growth analysis (LCGA) to group employees into distinct job insecurity trajectory classes. In addition, we test how these trajectories relate to the two key aspects of the work environment as depicted in Karasek's Job Demand-Control Model, namely workload and job autonomy.

Sample. In this study, we used the same sample as in the study presented in Chapter 1. To control for contextual bias, the final sample was limited to participants who explicitly avowed to remain at the same organization and the same position throughout the observation period. Thus, the final sample included 784 employees who participated in all three waves, worked for the same organization and were in the same position throughout the observation period.

Table 1 Overview of the aims and objectives addressed in the corresponding chapters.

The research aims and objectives	Chapter I	Chapter II	Chapter III
A1. A theoretical framework to explain the quantitative-qualitative job insecurity relationship.			
O1. A reciprocal relationship between quantitative and qualitative job insecurity through the lens of conservation of resources (COR) theory	✓	✓	
A2. Advanced methodology and statistical inference in work and organizational psychology research			
O2. Longitudinal analysis of the relationship between quantitative and qualitative job insecurity			
O2.1. Measurement of stability and change	✓	✓	✓
O2.2. Temporal precedence	✓	✓	
O3. Disaggregation of within-person and between-person effects		✓	
O4. Implementing variable-centered and person-centered approach	VC	VC	PV

Note: VC— variable-centered approach; PC— person-centered approach;

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CHAPTER 1: THE RECIPROCAL RELATIONSHIP BETWEEN QUANTITATIVE AND QUALITATIVE JOB INSECURITY AND THE OUTCOMES*

Abstract: Prior cross-sectional research indicates that the negative effects of quantitative (i.e., a threat to job loss) on employees' well-being are fully mediated by qualitative job insecurity (i.e., a threat to job characteristics). In the current longitudinal study, we replicate and further extend this view to include a direct effect of qualitative job insecurity on quantitative job insecurity. We explore these reciprocal relations in the context of their concurrent effects on work-related outcomes by means of dual mediation modelling. We identify a wide range of the outcomes, classified as job strains (i.e., exhaustion, emotional and cognitive impairment), psychological coping reactions (i.e., job satisfaction, work engagement, turnover intention) and behavioural coping reactions (i.e., in-role and extra-role performance, counterproductive behaviour. We employed a three-wave panel design and surveyed 2003 Belgian employees. The results showed that the dual-mediation model had the best fit for the data. However, whereas qualitative job insecurity predicts an increase in quantitative job insecurity and the outcome variables six months later, quantitative job insecurity did not affect qualitative job insecurity, nor the outcomes over time. The study demonstrates the importance of qualitative job insecurity not only as a severe work stressor but also as an antecedent of quantitative job insecurity. Herewith, we stress the need for further research on the causal relations between both dimensions of job insecurity.

Keywords: quantitative job insecurity, qualitative job insecurity, cross-lagged panel model, conservation of resources theory, burnout, work attitudes, job performance

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Introduction

The literature on organizational change links the volatility of the labour market with ongoing economic, societal, and technological changes (Rifkin, 1995). In addition, constant demands to adapt to the dynamic and competitive global markets require organisations to implement a wide range of restructuring strategies. These changes directly impact employees' work and the context in which their job is performed. Consequently, employees might experience elevated threats over their work-related future (Greenhalgh and Rosenblatt, 1984). This has sparked an interest among scholars and practitioners in exploring the nature and consequences of an employee's perceived threat of losing a job, defined as quantitative job insecurity (Hellgren et al., 1999a). To date, an overwhelming amount of evidence has identified quantitative job insecurity as a severe work stressor detrimental to employees' well-being (De Witte et al., 2016). In the last decades, as workplace changes became a natural part of organisational life (Tsoukas and Chia, 2002), researchers directed their attention towards a less studied qualitative aspect of job insecurity, defined as a perceived threat of loss or negative change to valued job characteristics (De Witte et al., 2010). A growing number of research stresses the importance of the qualitative dimension of job insecurity as a common work stressor with negative consequences on employees' health (Boya et al., 2008), work attitudes (Lazauskaite-Zabielske et al., 2019) and performance (Callea et al., 2016). Subsequently, the current literature on job insecurity conceptualises job insecurity as a two-dimensional concept, with each dimension emphasising distinct aspects of work-related precariousness (De Witte et al., 2015).

Despite the comprehensive knowledge of the nature of both quantitative and qualitative job insecurity, more is needed regarding the comparative strength of their effects on work-related outcomes. From a handful of studies that simultaneously analysed the effects of quantitative and qualitative job insecurity on outcomes, three opposing perspectives have emerged. Initially,

when considering the severity of these threats (i.e., a threat to employment vs a threat to job characteristics), quantitative job insecurity has been perceived as more threatening with stronger consequences to employees' health and work attitudes (De Witte, 1999; Greenhalgh and Rosenblatt, 1984). In contrast with that view, recent studies that analysed quantitative and qualitative job insecurity together suggest that the strength of these effects is either similar (De Witte et al., 2010) or varies depending on the measured outcome variables (Fischmann et al., 2015; Hellgren et al., 1999b; Tu et al., 2019). Furthermore, when we look at the reports of the bivariate correlations, the association between qualitative job insecurity and the outcomes seems to be stronger than the one between quantitative job insecurity and the outcomes (Urbanavičiūtė et al., 2015; Van Den Broeck et al., 2019). To address these inconsistencies, the current study simultaneously examines the longitudinal effects of quantitative and qualitative job insecurity, including a wide range of outcome variables classified as job strains and psychological and behavioural coping reactions.

Taking a step further, we look closer at the causal order between these two dimensions of job insecurity. Although both quantitative and qualitative job insecurity have been linked with organisational and workplace changes, no previous research examined which dimension of job insecurity is experienced first or how they influence each other over time. A good understanding of the onset and the relationship between the dimensions of job insecurity could facilitate the early recognition of job insecurity among employees and improve the organisational strategies that aim to reduce the consequences of these stressors for employees and organisations. In the current study, we directly address these issues by exploring the temporal order between both dimensions of job insecurity in the broader context of the job insecurity-outcomes relationship. We implement two theoretical streams to explain the associations between quantitative and qualitative job insecurity. First, we consider the Job Insecurity Integrated Model (JIIM) proposed by Chirumbolo et al. (2017), as it suggests that the effects of quantitative job insecurity on the outcomes are fully mediated by qualitative job insecurity. Building on

Jahoda's deprivation theory, the JIIM argues that the threat to job loss directly implies a threat to the characteristics of that job, which raises psychological distress and results in job strain and withdrawal reactions (Chirumbolo et al., 2017). Second, we further extend the JIIM, and on the grounds of COR theory, we propose an alternative mediational path (Hobfoll, 1989). Specifically, we argue that chronic threats to valued job features deplete employees from their resources, which leaves them more vulnerable to threats of job loss. This suggests that the qualitative job insecurity-outcomes relationship is mediated by quantitative job insecurity. We integrate these two frameworks and suggest a reciprocal relationship between quantitative and qualitative job insecurity. In addition, we simultaneously test both mediation mechanisms (dual-mediation model) to examine the relative importance of each mediator.

Our study contributes to the literature in three ways. First, we examine the simultaneous effects of quantitative and qualitative job insecurity on a wide range of outcomes, which adds to the understanding of the relative importance of each dimension of job insecurity. By implementing the outcomes classified as job strains and psychological and behavioural coping reactions, we provide valuable information on whether the importance of a particular dimension of job insecurity relates to the specific outcome under consideration. Furthermore, we control the effects of one dimension of job insecurity while estimating the effect of the other dimension; thus, we obtain a more robust estimation of the effects of each dimension of job insecurity. Second, while maintaining the "job insecurity outcomes" context, we assess the relationship between quantitative and qualitative job insecurity. We propose a theoretical research model to account for the reciprocal relationship between the two dimensions of job insecurity. We simultaneously reanalyse Chirumbolo's JII model and test for an equally plausible opposing mediation process. We further explore the complexity of the relationship between the two dimensions of job insecurity and contrast the strength of two possible mediation processes in explaining the job insecurity-outcomes relationship. Third, we address the limitations of the

previous cross-sectional research by implementing a three-wave longitudinal research design, which allows us to control the previous levels of the outcome variables and examine the temporal order in the mediation processes.

Job insecurity and its association with job strains and coping reactions

Job insecurity is defined as an individually perceived threat to the continuity of one's job in the future (Greenhalgh and Rosenblatt, 1984). Currently, the most widely adopted definition distinguishes two dimensions of job insecurity. First, *quantitative job insecurity* refers to a perceived threat to the job as such: employees fear they might lose their jobs. Second, *qualitative job insecurity* defines employees' perceived threat to the loss or negative change to valuable job features, such as career opportunities, optimal working conditions or income development (Hellgren et al., 1999b). The threat may be appraised cognitively, as a likelihood of loss or negative change, or affectively as fear or worry. Job insecurity is, therefore, a *subjective* experience that arises from an individual evaluation of the workplace environment (De Witte et al., 2015). Some employees may experience high levels of job insecurity within a stable and secure work environment. At the same time, others might feel secure while confronted with an actual threat to the continuity of their job. As a result, employees from the same work environment may, to a certain degree, experience different levels of job insecurity (Sverke and Hellgren, 2002). A fundamental characteristic of job insecurity is *uncertainty* about the future (Wang et al., 2015). Employees who feel insecure are not informed about the future of their work; hence, they only suspect that changes might occur. Anticipating negative changes or losses has been shown to be equally or even more detrimental than actual job loss (De Witte, 1999; Kim and Von Dem Knesebeck, 2016; Wege et al., 2017).

In line with the stressor-strain perspective, prolonged uncertainty regarding one's job situation is identified as a prominent work stressor causing detrimental effects on individual and organisational well-being (for extensive overviews and meta-analyses see De Witte et al., 2016; Lee et al., 2018; Shoss, 2017). The distinction between quantitative and qualitative job insecurity raises the question of the relative salience of the effect of each dimension on the negative outcomes. At first, research on job insecurity has mostly focused on the detrimental effects of quantitative job insecurity since the dimension has been perceived to be more problematic than qualitative job insecurity (Greenhalgh and Rosenblatt, 1984). A plethora of cross-sectional and longitudinal research has found quantitative job insecurity to be associated with health complaints, negative work attitudes, and a decrease in job performance. At the same time, a growing field of research on qualitative job insecurity has found it to be linked with a deterioration in employees' well-being (Fischmann et al., 2018; Lazauskaite-Zabielske et al., 2019; Vander Elst, Richter, et al., 2014). These results conclusively present quantitative and qualitative job insecurity as severe work stressors with detrimental effects on employees and organisations. In line with this, in the current study, we expect to observe a direct negative association between both dimensions of job insecurity and the measured outcomes.

Despite strong evidence for the severity of the effects of quantitative and qualitative job insecurity, results from comparative studies are inconclusive. On the one hand, De Witte et al. (2010) found no important differences in the strength of the effect of quantitative and qualitative job insecurity on well-being and health-related outcomes. Both dimensions, with almost equal strength, were positively related to job dissatisfaction, burnout, psychological distress, and psychosomatic complaints. On the other hand, several studies have argued that the strength of the relationship is conditional upon the specific outcome. Given the severity of the threat, quantitative job insecurity might evoke stronger stress reactions and, consequently, more detrimental health outcomes. At the same time, qualitative job insecurity, which is a threat of loss or negative change to job characteristics, could be linked with

negative attitudes towards the job and the organisation itself. Indeed, Hellgren et al. (1999b) found that quantitative job insecurity had stronger associations with physical and mental health outcomes, while qualitative job insecurity primarily affected work attitudes such as job satisfaction and turnover intention. Furthermore, Tu et al. (2019) found that quantitative job insecurity was more related to employees' stress-related responses, whereas qualitative job insecurity was more predictive of lower work engagement. In line with the current knowledge, we expect that both quantitative and qualitative job insecurity have a negative effect on the outcomes. However, no specific hypothesis regarding the comparative strength and importance of these relationships is formulated in the current study.

Job insecurity has been shown to broadly affect varying aspects of employees' mental and physical health, work attitudes, and performance. To ease the interpretation of our results, we follow the dual classification of these outcomes (Taris et al., 2001; Vander Elst et al., 2016). First, physical and mental health outcomes— which are reactions to stressful situations— are identified as strain. Secondly, work-related attitudes and behaviours that are directed at dealing with a stressful situation are labelled as coping reactions (also, in the job insecurity literature, typically known as withdrawal reactions). In the present study, we identify exhaustion, emotional impairment, and cognitive impairment as work-related strain reactions. All three indicate an employee's inability to perform and constitute core symptoms of burnout (Schaufeli et al., 2020). Secondly, psychological coping reactions can be manifested by low job satisfaction and work engagement, and increased turnover intention. These variables reflect employees' evaluation of the job and reactions aimed at reducing the impact of work stressors, such as job insecurity (Vander Elst et al., 2016). Additionally, we include self-rated performance identified as a behavioural coping reaction. Following Campbell's model of job performance, we classify three types of behaviours: in-role performance (job tasks that are part of the job description), extra-role performance (behaviours that are out of the scope of the job description, which help reach organisational goals) and

counterproductive behaviour (Campbell, 1990). In sum, we predict lagged associations between both dimensions of job insecurity, strains and coping reactions as follows:

Hypothesis 1: On the relationship between job insecurity and work-related strain: Quantitative and qualitative job insecurity have a positive lagged effect on exhaustion (*H1a*), emotional impairment (*H1b*) and cognitive impairment (*H1c*).

Hypothesis 2: On the relationship between job insecurity and attitudinal coping reactions: Quantitative and qualitative job insecurity have a negative lagged effect on job satisfaction (H2a), work engagement (H2b) and positive lagged effect on turnover intention (*H2c*).

Hypothesis 3: On the relationship between job insecurity and behavioural coping reactions: Quantitative and qualitative job insecurity have a negative lagged effect on in-role performance (*H3a*), extra-role performance (*H3b*) and positive lagged effect on counterproductive behaviour (*H3c*).

On the interrelationship between quantitative and qualitative job insecurity

Along with the question of the relative importance of each dimension of job insecurity, a debate has arisen over how those two components are interrelated. Up to date, research on that issue is almost non-existent. Studies that included quantitative and qualitative job insecurity in the same analysis provide indirect evidence that both dimensions are positively related (Chirumbolo et al., 2017, 2020; De Witte et al., 2010; Låstad et al., 2014; Tu et al., 2019). However, no previous research has examined the lagged associations between these two dimensions. Disentangling the order, direction and strength of those relations might provide insights into the development of job insecurity and help shed light on their compound effects on the outcomes. In line with theory and previous empirical findings, we

propose that quantitative and qualitative job insecurity form a complex reciprocal relationship, including direct causation (from quantitative job insecurity to qualitative job insecurity) and reverse causation (from qualitative job insecurity to quantitative job insecurity).

Quantitative job insecurity to predict qualitative job insecurity

According to Jahoda's latent deprivation theory, employment provides access to unique resources (Jahoda, 1982). Apart from financial stability, being employed grants diverse latent benefits such as an opportunity for peer interaction (*social contact*), daily schedule and purpose (*time structure*), social recognition and status (*status/identity*), engagement in specific job-related tasks (*enforced activity*) and lastly, an opportunity for a meaningful contribution to society (*collective purpose*) (Jahoda, 1982). As such, losing a job means losing all the benefits of the job. In the context of job insecurity, employees who perceive a threat to their employment (quantitative job insecurity) will also experience a threat to all the benefits that come along with the job (qualitative job insecurity). Stress reactions caused by the threat of losing highly valued work features might, in turn, explain the negative effects on employees' health and work attitudes (Selenko and Batinic, 2013; Vander Elst et al., 2016).

In 2017, Chirumbolo and colleagues proposed a Job Insecurity Integrated Model (JIIM), which directly addressed the relationship between quantitative and qualitative job insecurity. In line with Jahoda's deprivation model, they theorised that quantitative job insecurity cognitively precedes qualitative job insecurity. Furthermore, they argued that in relation to the outcomes, qualitative job insecurity mediates the effects of quantitative job insecurity. Indeed, their results suggested that qualitative job insecurity fully mediated the effects of quantitative job insecurity on mental health and work attitudes. Similar findings were reported by Callea et al. (2019), who extended the outcomes with emotional exhaustion and psychological symptoms.

In line with this theoretical framework and previous research, we propose that qualitative job insecurity mediates the association between quantitative job insecurity and the outcomes. More specifically, we hypothesise:

Hypothesis 4: Based on Jahoda's deprivation theory, we expect quantitative job insecurity (QN_{t-1}) to positively affect qualitative job insecurity (QL_t) over time.

Hypothesis 5: Qualitative job insecurity mediates (T_2) the indirect effects of quantitative job insecurity (T_1) on the outcomes (T_3): work-related strains (*H5a*), psychological coping reactions (*H5b*), and behavioural coping reactions (*H5c*).

Qualitative job insecurity to predict quantitative job insecurity

At the same time, the inverse relationship between both dimensions of job insecurity is equally plausible. In accordance with the organisational stress literature, stress among employees usually develops as a complicated sequence of unfavourable events rather than a one-time incident (Westman et al., 2004). That said, the threat of losing a job could potentially grow due to chronic threats to job characteristics spread over time.

According to the conservation of resources (COR) theory, "individuals strive to obtain, retain, foster, and protect those things they centrally value" (Hobfoll et al., 2018) (pp.103-104), and stress occurs when these resources are either lost or threatened with loss. In the work context, resources include objects (e.g., tools for work), personal characteristics (e.g., self-efficacy), energy resources (e.g., money, knowledge) and conditions (e.g., tenure, type of contract, position on the company). A stable employment with all its characteristics is a set of valuable resources, and a threat to their continuity leads to strains. At the same time, individuals whose resources are threatened are more vulnerable to resource loss and less capable of resource gain

(Hobfoll, 2001). Hence, employees who perceive a threat to valued job characteristics might interpret signals regarding organisational changes as more threatening, leading to negative reappraisals (Hobfoll, 2001). Consequently, they may perceive neutral or even positive change regarding their job and its aspects as negative, causing further job insecurity. In line with COR, we formulate the following hypothesis:

Hypothesis 6: Based on the conservation of resources theory, we expect qualitative job insecurity (QL_{t-1}) to) to positively affect quantitative job insecurity (QN_t) over time.

Hypothesis 7: Quantitative job insecurity mediates (T2) the indirect effects of qualitative job insecurity (T1) on the outcomes (T3): work-related strains (*H7a*), psychological coping reactions (*H7b*), and behavioural coping reactions (*H7c*).

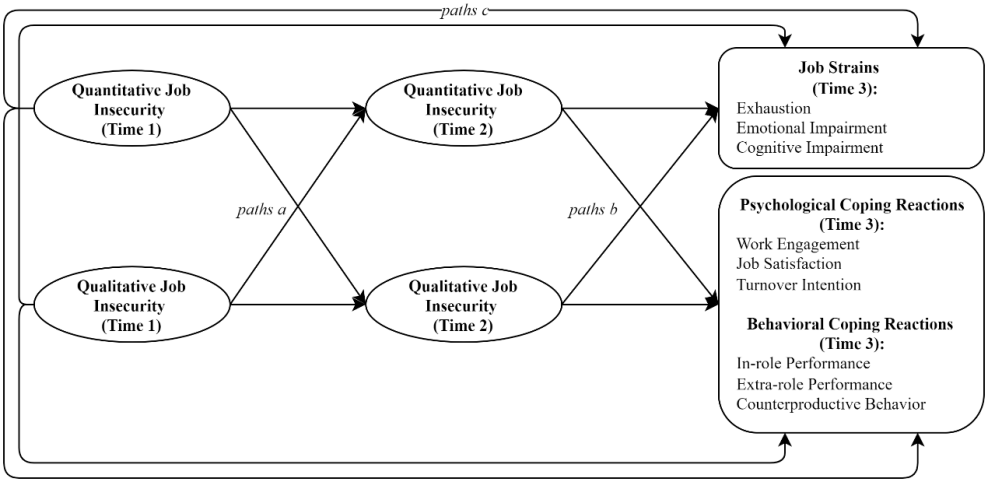
Present study

In the present study, we propose a theoretically well-grounded research model to address the relationship between quantitative and qualitative job insecurity and its compound effect on the outcomes. Although the two mediation mechanisms proposed in the previous section relate to different theoretical streams, we will continue with the conservation of resources theory to join both mechanisms in one model (see Figure 1). A unique feature of the conservation of resources theory is that it underlines the possibility of reciprocal relationships. First, according to Hobfoll et al. (2018), resources do not develop individually but rather in packs or caravans. More specifically, work-related resources (e.g., career opportunities) are usually linked with complementary resources (such as access to life-long learning platforms). Through environmental conditions, defined as caravans' passageways, the growth and development of these resources are either fostered and protected or undermined and obstructed (Doane et al., 2012). Employment and job features are closely related resources. It is expected

then that the threat to one of them, whether it is employment (quantitative job insecurity) or a specific threat to job characteristics, such as task significance or career opportunities (qualitative job insecurity), may, over time, affect the other type of job insecurity. Second, resource loss has a spiralling nature, meaning that resource loss engenders future loss. In fact, employees with fewer resources are more vulnerable to further resource loss. A threat to or lack of particular resources may thus lead to a threat of loss to other, closely related resources, which further intensify the negative effects on employees' well-being in the long run. In accordance with this, a change in resources—especially in terms of threat— may provoke a threat to other work-related resources, resulting in the complex reciprocal relationship advocated in this study.

Hereby, we propose a dual mediation model that accounts for the bidirectional relationship between quantitative and qualitative job insecurity. More specifically, we suggest that both dimensions of job insecurity, in addition to the direct effect on the outcomes over time, affect these outcomes indirectly through the other dimension. Thus, we simultaneously re-examine the previously suggested mediation role of qualitative job insecurity and contrast it with an alternative process where quantitative job insecurity mediates the indirect effects of qualitative job insecurity on the outcomes.

Figure 1 Representation of the theoretical model.



Note: Paths a, b, and c represent the causal effects implied by the mediation processes, indirect effects— a×b; total effects— c+(a×b).

Materials and methods

Sample and procedure

Data for the present longitudinal study were collected from Flemish employees (i.e., the Dutch-speaking region of Belgium). The data were collected as part of a larger study[1]. Researchers published an ad on the website of an online HR magazine (vacature.com) calling for people to participate in a survey on occupational health and well-being. Data were collected by means of an online survey using a non-probability sampling method. Respondents were asked to access the questionnaire via a link to an online tool provided in the ad. In the introduction to the survey, researchers clearly stated the purpose of the study and assured voluntary participation and anonymous processing of the data. A total of 2355 participants filled out the questionnaire during the first wave, collected in September 2017 (T1).

[1] The Authors would like to thank Steffie Desart and Anahí Van Hootegem from KU Leuven for sharing their dataset and providing me with all the information about the data collection n process.

All interviewees were invited to participate in the subsequent two waves, which took place in March 2018 (T2) and September 2018 (T3), hence a 6-month time lag between each wave. Overall, 1494 employees filled in the questionnaire at T2 (63.4% response rate) and 1114 at T3 (47.3% response rate). To obtain a homogeneous sample for this study and to control contextual bias, we excluded people who, throughout the observation period, had experienced job transition or who had stopped working altogether (n=352). The final sample included 2003 employees, out of which 859 (43%) participated in all three waves (T1T2T3); 580 (29%) responded only in the first wave (T1); 326 (16%) completed the survey during the first two consecutive waves (T1T2); 238 (12%) employees filled in the survey during the first and the last wave (T1T3). Multinomial logistic regression was performed to test for attrition bias (see Appendix A). The results indicated that respondents with higher turnover intention had 30% higher odds of dropping out after the first wave (T1 respondents) and 26% higher odds of not responding in the second wave (T1T3 respondents). Furthermore, we observed that respondents with lower qualitative job insecurity had almost 13% higher odds of leaving the survey after the first wave (T1 respondents). Due to drop out, these results indicate that our sample may underrepresent employees' turnover intention and overrepresent employees with higher levels of qualitative job insecurity.

The final sample consisted of 58.4% women (*n=1170*). The age of participants varied between 20 and 60 years old (*M=40.93*; *SD=10.55*). Less than 5% of the participants had a lower secondary education degree, 62.5% had obtained higher secondary or non-university education, and 33% of participants had a university degree (high education, including bachelor, master and doctorate degree). Respectively, 6% were blue-collar workers, 61% were white-collar workers, and 33% were in managerial positions. Most respondents worked in the private sector (80.3%) with a permanent contract (97.2%). Approximately 80% of the interviewees worked full-time. On average, respondents had 10.66 years of positional tenure (*SD=9.43*).

Regarding these sociodemographic variables, the sample is a good representation of the Flemish population (see Appendix B).

Measurements

All variables were measured three consecutive times using a selection of internationally validated scales. The reliability of the measurement scales was examined with Cronbach alpha for the multi-item scales and test-retest reliability for single-item scales. Means, standard deviations and Cronbach's alpha are presented in Table 1.

Job insecurity

The Job Insecurity Scale (JIS) (developed by De Witte, 2000 and validated by Vander Elst et al., 2014) was used to measure *quantitative job insecurity.* This four-item scale measures cognitive (e.g., *'Chances are, I will soon lose my job')* and affective *(e.g., 'I feel insecure about the future of my job')* aspects of the construct. The items were rated on a five-point Likert scale from 1 (*totally disagree*) to 5 (*totally agree*).

Qualitative Job Insecurity is measured with a four-item scale (developed by De Witte and De Cuyper; used in previous studies: Niesen et al., 2018; Urbanavičiūtė et al., 2015). The scale captures cognitive (e.g., '*I think my job will deteriorate in the near future*') and affective (e.g., '*I am worried about how my job will look in the future*') aspects of employees' insecurities over job characteristics without listing specific job features. The items are rated on a five-point Likert scale from 1 (*totally disagree*) to 5 (*totally agree*).

Job strains

Job strains were identified as the core symptoms of burnout and were measured using a Burnout Assessment Tool (BAT) (Schaufeli et al., 2020). The first dimension, *exhaustion,* is measured with three items that refer to a severe energy loss resulting in physical and mental exhaustion (e.g., *'At*

work, I feel mentally exhausted'). The second dimension, *emotional impairment,* is a three-item measure of intense emotional reactions and overwhelming feelings at work (e.g., *'At work, I feel unable to control my emotions'*). Finally, *cognitive impairment* is a three-item measure of subjectively assessed memory problems, attention/concentration deficits and poor cognitive performance (e.g., *'At work, I have trouble staying focused'*). Respondents rated these items on a five-point Likert scale from 1 (*never*) to 5 (*always*).

Psychological coping reactions

The three-item UWES-3 scale is used to measure the three dimensions of work engagement: vigour (*'At my work, I feel bursting with energy'),* dedication *('I am enthusiastic about my job')* and absorption (*'I am immersed in my work')* (Schaufeli et al., 2019). The items are rated on a five-point Likert scale from 1 (*never*) to 5 (*always*).

Turnover intention is measured with one item derived from the online questionnaire *Energy Compass* (Schaufeli, 2015). The item is designed to measure the extent to which an employee plans to change jobs in the following year. Respondents are asked to rate this statement on a 5-point Likert scale from 1 (*totally disagree*) to 5 (*totally agree*). The test-retest reliability of the measurement is examined with the intraclass correlation coefficient (ICC), whose values between 0.5 and 0.75 and 0.75 and 0.9 indicate moderate and good reliability, respectively (Koo and Li, 2016). The average measure ICC is .817 with a 95% confidence interval from .817 to .854 ($F(1030,2060)= 6.228$, $p<.001$). Hence, the measurement of turnover intention presents good test-retest reliability.

Job satisfaction is assessed by means of a single-item measure (Curry et al., 1986). Respondents are asked to rate their overall job satisfaction on a scale from 1 (*very unsatisfied*) to 10 (*very satisfied*). The average measure ICC was .743 with a 95% confidence interval from .715 to .768 ($F(1101,2202)=$

3.918, p<.001). Test-retest reliability of the measurement shows a moderate reliability of job satisfaction.

Behavioural coping reactions

Employees' performance is assessed using the online questionnaire *Energy Compass* (Schaufeli, 2015). Two constructs are measured: in-role and extra-role performance**.** First, *in-role performance* is measured with three items that assess the extent to which employees fulfil the duties required by the job (e.g., *'I meet all the requirements that my position places on me'*). The three-item measure of *extra-role performance* examined the frequency of positive behaviours which do not fit a formal job description (e.g., *'I help my colleagues with their work when they return from a period of absence').* Respondents are asked to rate these items on a 5-point Likert scale from 1 (*never*) to 5 (*always*).

Counterproductive behaviour, defined as an employee's intentional behaviour that harms or intends to harm the organisation, is measured with a four-item scale (Bennett and Robinson, 2000). Participants are asked to evaluate, on a scale from 1 (*never*) to 5 (*always*), how often in the last six months they have shown specific behaviour, like taking longer breaks or not following the boss's instruction (e.g., *'Taking material from the work home without permission for personal use'*).

Control variables

According to job dependence theory, male employees experience higher economic insecurity (Greenhalgh and Rosenblatt, 1984). This translates into higher perceived job insecurity, as they feel more responsible for providing financial stability for the family (De Witte, 1999; Rosenblatt et al., 1999). Furthermore, in line with human capital theory, educational level and tenure positively correlate with work attitudes and behaviours. Empirical evidence shows that higher education and longer tenure grants access to better jobs

with higher salaries and additional resources, which results in higher job satisfaction and task performance and gives more incentives to remain in an organisation (McCarthy et al., 2020; Ng and Feldman, 2009; Theodossiou and Zangelidis, 2009). Following the recommendations by Bernerth et al. (2016) to consider covariates that might inflate observed relationships, three variables were included as control variables: gender (*0=male; 1=female*), position tenure (*years*), and educational level (*1=primary education; 2=lower secondary education; 3=higher secondary education; 4=non-university higher education; 5=university higher education; 6=doctorate*), treated as a continuous variable that represents a range going from less educated to highly educated.

Analysis

We conducted structural equation modelling to address the research questions using the Lavaan package in R software (Rosseel, 2012). We followed the stepwise procedure outlined by Cole and Maxwell (2003) and Little et al. (2007) (for a similar methodology see Fischmann et al., 2018; Van Hootegem and De Witte, 2019; Vander Elst, Richter, et al., 2014). Preliminary data analysis on multicollinearity (i.e., bivariate correlations higher than r=.85) and nonnormality (i.e., extreme values, above 3.0 for skewness and 10.0 for kurtosis) indicated no violations (Weston and Gore, 2006). To address substantial attrition throughout the study, we implemented the Full Information Maximum Likelihood (FIML) estimator, which has been shown to be a superior method in dealing with missing data to produce unbiased parameter estimates (Enders, 2001; Enders and Bandalos, 2001).

Model fit was evaluated using several goodness-of-fit indices, specifically Chi-square ($\chi 2$), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) (Brown, 2015; Weston and Gore, 2006). Considering a sensitivity of $\chi 2$ to sample size, we followed Hu and Bentler's (1999) recommendations and considered the following

criteria for a good model fit: values higher than 0.95 for CFI and TLI and lower than 0.06 and 0.08 for RMSEA and SRMR, respectively. Furthermore, alternative models were compared based on ΔCFI and ΔRMSEA, where a change of ≤ -.01 and ≤ .015 indicates a better model fit (Lai, 2020; Marcoulides and Yuan, 2017).

First, we conducted a confirmatory factor analysis (CFA) to evaluate the measurement model fit of the hypothesised 33-factor model (M1), in which quantitative job insecurity, qualitative job insecurity and nine items measuring the outcomes loaded on their respective latent factors at every time point. We allowed the measurement errors for each item to covary across time. Next, we compared that model with three alternative models: a 15-factor model (M2), in which we merged the outcome variables into three large factors: job strains, psychological coping reactions and behavioural coping reactions; a 12-factor model (M3), in which the quantitative and qualitative job insecurity items loaded on one general job insecurity factor; and a 3-factor model (M4), in which all items loaded on one factor at every time point.

In the following step, we evaluated longitudinal measurement invariance to test whether the respective items represent the same underlying constructs over time (Little et al., 2007). The best-fitting measurement model chosen from a previous sequence has been used as the initial configural invariance model (equal factor structure across time). Next, we fitted a sequence of more restricted (and nested) models to test the validity of the imposed constraints. The baseline model was compared with a metric invariance model (M5), which has equality constraints placed on factor loadings of the corresponding indicators across time. The latter was then compared to a strong invariance model (M6), in which, in addition to the loadings, the intercepts of the corresponding items were constrained to be equal across time. In the final step, we evaluated if strict measurement invariance holds (M7), in which the residual variances of the corresponding items are equated across time. Research indicates that metric invariance is a minimum

requirement to evaluate the structural paths of direct and mediated effects among latent factors (Xu et al., 2020).

Subsequently, we estimated and compared the model fit of four structural models in order to select the best model to test the hypothesised mediation effects. Firstly, we estimated a structural model with autoregressive paths (M8). Building on that model, we estimated a longitudinally extended Chirumbolo's JII model with qualitative job insecurity as a mediator (M9). Then, we analysed the reversed mediation model with a mediating role of quantitative job insecurity (M10). Lastly, we fitted the hypothesised dual mediation model (M11) that integrates the reciprocal relationships between quantitative and qualitative job insecurity.

In the final step, following the recommendations of Cole and Maxwell (2003), we tested whether the best-fitting structural model is invariant across time. First, we fixed the autoregressive paths to be equal across time (M12) and compared them with the baseline model. Next, we added equality constraints on cross-lagged paths from predictor to mediator (*paths a*) (M13), followed by a model with constrained cross-lagged paths from a mediator to the outcome variables (*paths b*) (M14). The model with the best fit was then used to estimate the statistical significance of mediation effects. We used a bootstrapping method (5000 resamples) to calculate the 95% confidence intervals for the indirect effects.

Results

Descriptive statistics

Table 1 shows the means, standard deviations, correlations, and reliability of all variables. The mean values for the job insecurity dimensions and outcomes were relatively stable over time. Low standard deviations indicate small variations between the participants. We also observed that participants, on average, experienced higher qualitative than quantitative job insecurity.

As expected, quantitative and qualitative job insecurity were significantly related to the outcome variables. Qualitative job insecurity correlated strongly with the outcome variables across all observation points. Among the dependent variables, positive correlations were found between job strains, turnover intentions and counterproductive behaviour, and work attitudes with job performance; Negative correlations were found between job strains with work attitudes and job performance and work attitudes with turnover intentions and counterproductive behaviour. We found no significant correlations between education and gender, while positional tenure was positively correlated with qualitative job insecurity and negatively correlated with cognitive impairment, turnover intention, and counterproductive behaviour. Thus, we excluded education and gender as covariates from further analysis.

Measurement model and measurement invariance

Table 2 presents fit indices for the models with a competing factorial structure of the measurement model. The hypothesized 33-factor model (M1) showed a good fit to the data ($\chi^2(3852) = 7246.195$, CFI = .967, TLI = .961, RMSEA = .021, SRMR = .043). As indicated by the $\Delta\chi^2$ difference test, the alternative 15-, 12- and 3-factor models presented significantly worse fit to the data ($\Delta\chi^2(417) = 17027.69$, $p < .001$; $\Delta\chi^2(456) = 24317.11$, $p < .001$; $\Delta\chi^2(519) = 41809.21$, $p < .001$, respectively). Therefore, the hypothesised 33-factor model was preferred for further analysis.

Next, we investigated longitudinal measurement model invariance. A chi-square difference test indicated that all constrained models show a significantly worse fit than the configural model, which suggested non-invariance. However, the large sample size (N = 2003) might have biased $\Delta\chi^2$ results against invariance. Therefore, following Chen (2007), we applied ΔCFI < .01 and ΔRMSEA < .015 thresholds as a criterion for measurement invariance. Subsequent models— with gradually added constraints— met the measurement invariance criterion and did not decrease the model fit (see

Table 2). The strict invariance model (M7; the model with equality constraints on the factor loadings, intercepts, and error variances) showed a good model fit ($\chi^2(4014) = 7838.118$, CFI = .963, TLI = .958, RMSEA = .022, SRMR = .043) and met the criterion for measurement invariance (ΔCFI = .003; ΔRMSEA = .001). Hence, we conclude that the measurement model is invariant across time and proceed with analysing the structural model.

Structural model and stability of the model

To select the best model to test the hypothesised cross-lagged relationships, we compared four structural models. We added positional tenure as a covariate to all competing models and controlled for its effect on the modelled variables at the second measurement time (Little et al., 2007). Table 3 presents the overview of the results. The mediation model proposed by Chirumbolo et al. (2017) with qualitative job insecurity in the role of mediator (M9) fits the data significantly better than the autoregressive model ($\Delta\chi^2(29) = 132.45$, $p < 0.001$). Similarly, the reversed mediation model (M10) showed a significant model fit improvement ($\Delta\chi^2(29) = 60.72$, $p < 0.001$). Path analysis showed that both models include significant and complementary pathways. The final model combined Chirumbolo's JII model and the alternative reverse mediation model. The hypothesised dual-mediation model (M11) showed acceptable model fit ($\chi^2(4522) = 11606.381$, CFI = .931, TLI = .928, RMSEA = .028, SRMR = .072) and significantly better fit than Chirumbolo's JII model ($\Delta\chi^2(29) = 58.928$, $p < 0.001$). Therefore, the dual mediation model, with the hypothesised reciprocal relationships between quantitative and qualitative job insecurity, was chosen for the subsequent series of analyses.

Accordingly, we examined the stability of the model. To estimate longitudinal measurement model invariance, we employed the 0.01 and 0.015 thresholds for ΔCFA and ΔRMSEA, respectively. First, we put equality constraints on the autoregressive paths (M12), which did not significantly decrease model fit (ΔCFA = .001; ΔRMSEA = 0). Additional equality

constraints on the paths from the predictors to the mediators (M13) did not worsen the model fit (ΔCFA = 0; ΔRMSEA = 0). The final model, with additional equality constraints on the paths from the mediators to the outcome variables (M14), presented a good fit to the data (χ^2(4553) = 11663.687, CFI = .931, TLI = .928, RMSEA = .028, SRMR = .072) and not significantly worse than the partially constrained model (ΔCFA = 0; ΔRMSEA = 0). Thus, the lagged associations between the constructs were invariant across time, and we proceeded with that model to examine the hypothesised effects.

Table 1 Means, standard deviations, reliabilities' (Cronbach's alpha in parentheses) and correlation.

	M	SD	Quan.1	Quan.2	Quan.3	Qual.1	Qual.2	Qual.3	EX.1	EX.2	EX.3	CC.1	CC.2	CC.3	EC.1	EC.2	EC.3	TI.1	TI.2
Quan.1	2.45	1.01	(0.93)																
Quan.2	2.38	1.01	**0.68**	(0.94)															
Quan.3	2.37	0.99	**0.63**	**0.69**	(0.93)														
Qual.1	3.17	0.95	**0.51**	**0.37**	**0.37**	(0.9)													
Qual.2	3.08	0.97	**0.34**	**0.54**	**0.41**	**0.63**	(0.92)												
Qual.3	3.13	0.94	**0.30**	**0.38**	**0.52**	**0.54**	**0.63**	(0.91)											
EX.1	2.97	0.94	**0.25**	**0.17**	**0.16**	**0.45**	**0.37**	**0.31**	(0.9)										
EX.2	2.83	0.9	**0.21**	**0.25**	**0.17**	**0.40**	**0.44**	**0.36**	**0.74**	(0.9)									
EX.3	2.84	0.89	**0.17**	**0.19**	**0.23**	**0.33**	**0.37**	**0.42**	**0.66**	**0.73**	(0.89))								
CC.1	2.46	0.81	**0.18**	**0.15**	**0.13**	**0.31**	**0.25**	**0.20**	**0.45**	**0.36**	**0.31**	(0.91))							
CC.2	2.32	0.74	**0.13**	**0.21**	**0.16**	**0.24**	**0.31**	**0.22**	**0.4**	**0.48**	**0.36**	**0.64**	(0.9)						
CC.3	2.35	0.74	**0.09**	**0.14**	**0.18**	**0.21**	**0.24**	**0.29**	**0.34**	**0.37**	**0.43**	**0.62**	**0.70**	(0.91))					
EC.1	1.94	0.82	**0.27**	**0.22**	**0.19**	**0.37**	**0.28**	**0.24**	**0.51**	**0.4**	**0.38**	**0.49**	**0.37**	**0.34**	(0.88))				
EC.2	1.84	0.76	**0.22**	**0.27**	**0.19**	**0.32**	**0.36**	**0.25**	**0.41**	**0.51**	**0.41**	**0.35**	**0.45**	**0.36**	**0.62**	(0.89))			
EC.3	1.85	0.75	**0.20**	**0.23**	**0.26**	**0.31**	**0.28**	**0.35**	**0.35**	**0.39**	**0.49**	**0.30**	**0.34**	**0.43**	**0.56**	**0.65**	(0.87))		
TI.1	2.81	1.27	**0.36**	**0.22**	**0.23**	**0.42**	**0.24**	**0.19**	**0.37**	**0.27**	**0.24**	**0.36**	**0.22**	**0.20**	**0.35**	**0.23**	**0.20**	na	
TI.2	2.6	1.17	**0.21**	**0.33**	**0.26**	**0.27**	**0.38**	**0.35**	**0.26**	**0.31**	**0.28**	**0.25**	**0.30**	**0.29**	**0.25**	**0.34**	**0.26**	**0.60**	na
TI.3	2.64	1.18	**0.21**	**0.24**	**0.36**	**0.25**	**0.29**	**0.41**	**0.23**	**0.24**	**0.31**	**0.20**	**0.21**	**0.28**	**0.22**	**0.19**	**0.32**	**0.51**	**0.66**
JS.1	5.49	2.51	**-0.35**	**-0.24**	**-0.25**	**-0.53**	**-0.42**	**-0.34**	**-0.54**	**-0.45**	**-0.36**	**-0.49**	**-0.38**	**-0.32**	**-0.5**	**-0.38**	**-0.29**	**-0.65**	**-0.44**
JS.2	6.03	2.3	**-0.26**	**-0.36**	**-0.26**	**-0.45**	**-0.56**	**-0.47**	**-0.42**	**-0.51**	**-0.44**	**-0.39**	**-0.45**	**-0.39**	**-0.39**	**-0.49**	**-0.37**	**-0.44**	**-0.59**
JS.3	5.99	2.23	**-0.19**	**-0.26**	**-0.35**	**-0.39**	**-0.46**	**-0.55**	**-0.38**	**-0.42**	**-0.48**	**-0.36**	**-0.38**	**-0.42**	**-0.35**	**-0.35**	**-0.44**	**-0.38**	**-0.47**
WE.1	3.1	0.9	**-0.26**	**-0.19**	**-0.18**	**-0.42**	**-0.35**	**-0.28**	**-0.44**	**-0.34**	**-0.29**	**-0.57**	**-0.45**	**-0.41**	**-0.43**	**-0.33**	**-0.26**	**-0.50**	**-0.36**
WE.2	3.26	0.83	**-0.17**	**-0.23**	**-0.20**	**-0.35**	**-0.42**	**-0.35**	**-0.36**	**-0.39**	**-0.30**	**-0.46**	**-0.5**	**-0.46**	**-0.36**	**-0.37**	**-0.28**	**-0.37**	**-0.44**
WE.3	3.25	0.83	**-0.11**	**-0.19**	**-0.24**	**-0.31**	**-0.37**	**-0.43**	**-0.32**	**-0.32**	**-0.41**	**-0.44**	**-0.44**	**-0.53**	**-0.3**	**-0.28**	**-0.36**	**-0.31**	**-0.37**
IP.1	4.06	0.63	**-0.21**	**-0.11**	**-0.16**	**-0.14**	**-0.08**	**-0.11**	**-0.15**	**-0.14**	**-0.14**	**-0.25**	**-0.2**	**-0.22**	**-0.22**	**-0.21**	**-0.19**	**-0.06**	0.01
IP.2	4.11	0.6	**-0.12**	**-0.14**	**-0.15**	**-0.10**	**-0.12**	-0.07	**-0.12**	**-0.16**	**-0.16**	**-0.17**	**-0.23**	**-0.19**	**-0.17**	**-0.23**	**-0.19**	-0.02	-0.05
IP.3	4.08	0.59	**-0.16**	**-0.13**	**-0.22**	**-0.12**	**-0.10**	**-0.10**	**-0.11**	**-0.16**	**-0.18**	**-0.19**	**-0.2**	**-0.26**	**-0.14**	**-0.19**	**-0.23**	-0.03	-0.02
EP.1	3.74	0.76	**-0.09**	**-0.07**	-0.04	**-0.07**	**-0.07**	-0.05	**-0.08**	-0.05	-0.05	**-0.19**	**-0.16**	**-0.18**	**-0.08**	**-0.12**	**-0.09**	**-0.08**	0.01
EP.2	3.78	0.75	-0.03	-0.04	-0.03	-0.04	**-0.06**	**-0.09**	-0.03	-0.04	-0.06	**-0.11**	**-0.12**	**-0.15**	**-0.04**	**-0.1**	**-0.11**	-0.02	-0.03
EP.3	3.75	0.73	-0.05	**-0.07**	-0.05	-0.06	-0.06	**-0.05**	-0.05	**-0.07**	**-0.07**	**-0.16**	**-0.16**	**-0.19**	**-0.07**	**-0.14**	**-0.12**	**-0.07**	-0.07
CP.1	1.8	0.67	**0.05**	0.03	0.02	**0.15**	**0.13**	**0.08**	**0.14**	**0.08**	0.05	**0.47**	**0.34**	**0.36**	**0.27**	**0.20**	**0.17**	**0.24**	**0.16**
CP.2	1.69	0.59	0.04	**0.09**	**0.09**	**0.13**	**0.19**	**0.13**	**0.15**	**0.12**	**0.08**	**0.36**	**0.41**	**0.39**	**0.22**	**0.23**	**0.22**	**0.15**	**0.20**
CP.3	1.7	0.6	0	0.03	0.04	**0.12**	**0.15**	**0.17**	**0.12**	**0.10**	**0.11**	**0.36**	**0.38**	**0.43**	**0.18**	**0.19**	**0.23**	**0.11**	**0.17**
Gender	1.58	0.49	0	0.04	-0.01	**0.05**	**0.07**	**0.08**	**0.06**	**0.07**	0.04	0.03	**0.08**	0.03	**0.14**	**0.14**	**0.14**	**0.05**	0.04
Education	4.05	0.88	**-0.08**	-0.03	-0.06	**-0.05**	0.01	-0.01	**-0.09**	-0.03	-0.05	**0.08**	**0.09**	**0.13**	**-0.05**	-0.02	-0.03	-0.02	0
EXP	10.66	9.43	0.04	0.02	0.05	**0.12**	**0.12**	**0.13**	0.01	0	-0.04	**-0.12**	**-0.14**	**-0.17**	0.02	**0.06**	0.02	**-0.13**	**-0.14**

	TI.3	**JS.1**	**JS.2**	**JS.3**	**WE.1**	**WE.2**	**WE.3**	**IP.1**	**IP.2**	**IP.3**	**EP.1**	**EP.2**	**EP.3**	**CP.1**	**CP.2**	**CP.3**	**SEX**	**EDU**	**EXP**
Quan.1																			
Quan.2																			
Quan.3																			
Qual.1																			
Qual.2																			
Qual.3																			
EX.1																			
EX.2																			
EX.3																			
CC.1																			
CC.2																			
CC.3																			
EC.1																			
EC.2																			
EC.3																			
TI.1																			
TI.2																			
TI.3	na																		
JS.1	**-0.32**	na																	
JS.2	**-0.41**	**0.74**	na																
JS.3	**-0.57**	**0.64**	**0.79**	na															
WE.1	**-0.25**	**0.74**	**0.61**	**0.55**	(0.86)														
WE.2	**-0.31**	**0.64**	**0.71**	**0.65**	**0.79**	(0.84)													
WE.3	**-0.40**	**0.54**	**0.63**	**0.72**	**0.71**	**0.79**	(0.85)												
IP.1	0	**0.16**	**0.15**	**0.14**	**0.18**	**0.16**	**0.15**	(0.86)											
IP.2	0	**0.11**	**0.17**	**0.15**	**0.11**	**0.17**	**0.13**	**0.59**	(0.88)										
IP.3	-0.02	**0.09**	**0.15**	**0.15**	**0.12**	**0.14**	**0.17**	**0.56**	**0.63**	(0.85)									
EP.1	-0.01	**0.16**	**0.14**	**0.11**	**0.24**	**0.20**	**0.18**	**0.24**	**0.21**	**0.18**	(0.78)								
EP.2	-0.03	**0.11**	**0.14**	**0.12**	**0.20**	**0.22**	**0.17**	**0.20**	**0.28**	**0.26**	**0.60**	(0.77)							
EP.3	**-0.07**	**0.13**	**0.16**	**0.17**	**0.22**	**0.22**	**0.24**	**0.15**	**0.20**	**0.20**	**0.58**	**0.66**	(0.75)						
CP.1	**0.13**	**-0.31**	**-0.23**	**-0.23**	**-0.41**	**-0.32**	**-0.32**	**-0.13**	**-0.08**	**-0.07**	**-0.16**	**-0.09**	**-0.16**	(0.66)					
CP.2	**0.14**	**-0.25**	**-0.27**	**-0.29**	**-0.33**	**-0.37**	**-0.37**	**-0.08**	**-0.12**	**-0.09**	**-0.13**	**-0.11**	**-0.16**	**0.68**	(0.63)				
CP.3	**0.18**	**-0.19**	**-0.26**	**-0.30**	**-0.31**	**-0.33**	**-0.38**	-0.05	-0.06	**-0.09**	**-0.14**	**-0.11**	**-0.15**	**0.66**	**0.71**	(0.64)			
Gender	0.04	-0.03	-0.03	-0.01	-0.04	-0.05	0	0.04	-0.02	0.03	**0.07**	0.05	**0.06**	**-0.06**	0	-0.02	na		
Education	0.04	**0.08**	-0.01	0	0.04	0.02	-0.01	-0.01	-0.05	-0.04	**-0.04**	-0.03	-0.03	0.04	**0.07**	**0.09**	0.03	na	
EXP	**-0.12**	-0.01	**-0.08**	-0.05	**0.07**	0.02	0	0.01	0	0.03	-0.01	-0.01	-0.01	**-0.11**	**-0.09**	**-0.07**	**-0.11**	**-0.19**	na

Note: N=2003; Bold numbers indicate statistically significant correlation at the 5% level; QN— quantitative job insecurity; QL— qualitative job insecurity; EX— exhaustion; CC— cognitive impairment; EC— emotional impairment; TI— turnover intention; JS— job satisfaction; WE— work engagement; IP— in-role performance; EP— extra-role performance; CP— counterproductive behaviour;

Table 2 Fit indices of competing nested factor models and standardized maximum likelihood estimates.

Factorial Structure of the Measurement Model													
Model No.	Model	$\chi2$	*df*	CFI	TLI	RMSEA	SRMR	Model comparison No.	$\Delta\chi2$	Δdf	*p*	ΔCFI	ΔRMSEA
M1	Hypothesized: 33-factor Model	7246.195	3852	0.967	0.961	0.021	0.043						
M2	Alternative: 15-factor Model	24273.882	4269	0.805	0.792	0.048	0.094	M1	17027.6	417	<.001	0.162	0.027
M3	Alternative: 12-factor Model	31563.306	4308	0.734	0.719	0.056	0.109	M1	24317.1	456	<.001	0.233	0.035
M4	Alternative: 3-factor Model	49055.402	4371	0.564	0.545	0.071	0.112	M1	41809.2	519	<.001	0.403	0.05
Longitudinal Measurement Invariance of the Hypothesized 33-factor Model													
M5	Metric Invariance	7305.662	3894	0.967	0.961	0.021	0.043	M1	59.467*	42	0.039	0	0
M6	Strong Invariance	7481.112	3954	0.966	0.96	0.021	0.043	M5	175.450	60	<0.00	0.001	0
M7	Strict Invariance	7838.118	4014	0.963	0.958	0.022	0.043	M6	357.006	60	<0.00	0.003	0.001

Note: N = 2003; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual

Table 3 Test of alternative structural and time invariance.

Analysis of the Alternative Structural Models													
Model No.	Model	$\chi2$	*df*	CFI	TLI	RMSEA	SRMR	Model comparison No.	$\Delta\chi2$	Δdf	*p*	ΔCFI	ΔRMSEA
M8	Autoregressive with covariates	11797.757	4580	0.930	0.927	0.028	0.086						
M9	Chirumbolo's Longitudinal JIIM	11665.309	4551	0.931	0.928	0.028	0.076	M8	132.45*	29	<0.00	0.001	0
M10	Alternative Mediation Model	11737.036	4551	0.930	0.927	0.028	0.078	M8	60.721*	29	<0.00	0	0
M11	Hypothesized: Dual Mediation	11606.381	4522	0.931	0.928	0.028	0.072	M9	58.928*	29	<0.00	0	0
Stability of the Hypothesized Dual Mediation Model													
M12	M11 + Equal autoregressive paths	11630.851	4533	0.931	0.928	0.028	0.072	M11	24.47*	11	0.011	0.001	0
M13	M12 + Equal paths "a"	11630.988	4535	0.931	0.928	0.028	0.072	M12	0.14	2	0.934	0	0
M14	M13 + Equal paths "b"	11663.687	4553	0.931	0.928	0.028	0.072	M13	32.7*	18	0.018	0	0

Note: N = 2003; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual

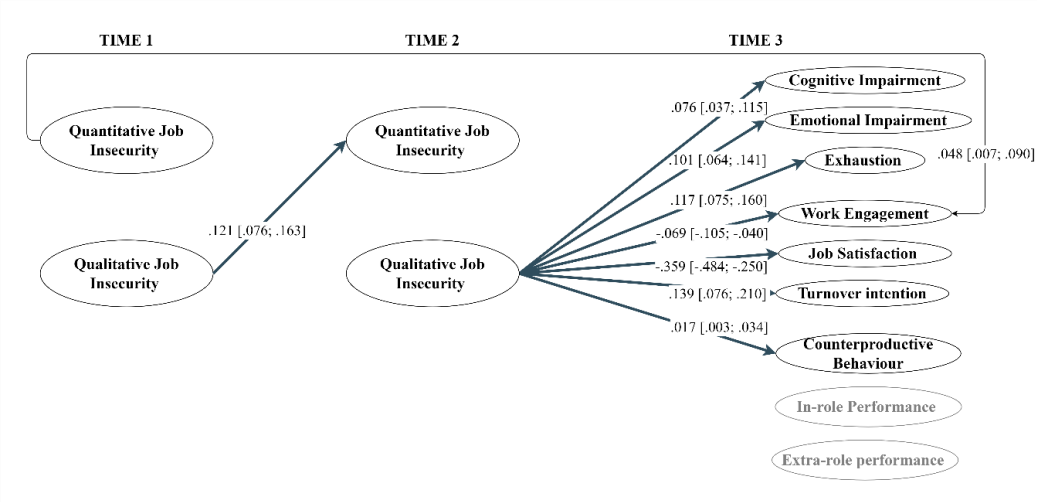
Test of the hypotheses

The final model and the hypothesised effects are summarised in Figure 2. The results showed that qualitative job insecurity has a direct positive effect on the symptoms of burnout: exhaustion, emotional impairment, and cognitive impairment six months later while controlling for the effects of quantitative job insecurity and previous levels of the outcome variables. The direct effect of quantitative job insecurity on burnout symptoms was not statistically significant. Thus, Hypotheses 1a, 1b and 1c, which assumed positive direct lagged effects of job insecurity on job strains, were only partially supported. As expected, we found qualitative job insecurity to have a direct negative effect on job satisfaction and work engagement and a positive effect on turnover intention. In contrast, the effects of quantitative job insecurity were not statistically significant. These results partially support Hypotheses 2a, 2b and 2c, which proposed negative lagged associations between quantitative and qualitative job insecurity with psychological coping reactions. In contrast to Hypotheses 3a and 3b, the results did not support a significant lagged association between job insecurity and job performance. Quantitative and qualitative job insecurity had no direct effect on in-role performance and extra-role performance six months later. Finally, qualitative job insecurity was associated with increased counterproductive behaviour six months later; therefore, we found partial support for Hypothesis 3c.

The analysis of the relationship between quantitative and qualitative job insecurity showed that, in contrast with Chirumbolo's JII model (2017), we found no direct effect of quantitative job insecurity on qualitative job insecurity six months later. Thus, Hypothesis 4 is rejected. These findings result in the rejection of Hypothesis 5, which assumes that the lagged effects of quantitative job insecurity (T_1) on the outcomes (T_3) are mediated through qualitative job insecurity (T_2). On the other hand, we found qualitative job insecurity to have a positive direct effect on quantitative job insecurity six

months later while controlling for the previous levels of quantitative job insecurity. Thus, the results support Hypothesis 6. However, since quantitative job insecurity was found to have no effect on the outcomes over time, Hypothesis 7, in which quantitative job insecurity acts as a mediator between qualitative job insecurity and the outcomes, is rejected.

Figure 2 Autoregressive cross-lagged panel model with unstandardized path coefficients.



Note: T1/T2/T3- indicate measurement wave, respectively; Control variables, autoregressive and insignificant pathways are omitted for clarity; Coefficients were fixed to be equal across time.

Discussion

In the current study, we analysed the longitudinal associations between quantitative job insecurity and qualitative job insecurity and their negative outcomes. First, we aimed to replicate and extend previous research by investigating the joint, over time effect of quantitative and qualitative job insecurity on a range of outcomes. Contrary to expectations, we found that once analysed together, only qualitative job insecurity had a detrimental effect on employee's well-being by intensifying job strains (exhaustion, emotional impairment, cognitive impairment), negative work attitudes and behaviours (job dissatisfaction, work disengagement, turnover intention, and counterproductive behaviour). In contrast, quantitative job insecurity did not

affect any outcome variable after a six-month period. Thus, we only partially confirmed our hypotheses on the job insecurity-outcomes relationship.

Secondly, we aimed to investigate the nature of the relationship between both dimensions of job insecurity over time. We argued that quantitative and qualitative job insecurity form a complex bidirectional relationship. In addition to the direct effects on the outcomes, we also expected to find indirect effects of each dimension of job insecurity. That is, we expected that the relationship between one dimension of job insecurity (either quantitative or qualitative job insecurity) and the outcomes is partially mediated by the other dimension. However, the results only revealed a stable unidirectional relationship between qualitative job insecurity and quantitative job insecurity six months later. We did not find mediation processes when predicting outcomes over time.

Theoretical implications

The first contribution of this study is the simultaneous examination of both quantitative and qualitative job insecurity as work stressors, which allows us to compare the strength of their effects on various outcomes. To date, comparative research on the concurrent effects of quantitative and qualitative job insecurity has been inconclusive. While at first, scholars concluded quantitative job insecurity be a more severe work stressor (De Witte, 1999; Greenhalgh and Rosenblatt, 1984), further research found that either both dimensions pose similar threats (De Witte et al., 2010) or strength of the effects of each dimension of job insecurity depends on the measured outcomes (Fischmann et al., 2015; Hellgren et al., 1999b; Tu et al., 2019). Amid those contrasting findings, we expected to find negative effects of both dimensions without specifying differences in the strength of the associations. Interestingly, the results only partially supported our hypotheses and, more importantly, did not align with any of the earlier-mentioned conclusions. Specifically, we found that qualitative job insecurity was associated with most of the measured outcomes: core burnout syndromes (exhaustion,

emotional and cognitive impairment), work attitudes (work engagement, job satisfaction, turnover intention) and counterproductive behaviour. At the same time, lagged associations between quantitative job insecurity and all of the measured outcomes were nonsignificant. In other words, when analysed together, only the threat to job characteristics predicted a negative change to employees' mental health, work attitudes and job performance six months later. Thus, our results add to the ongoing debate and suggest a fourth possibility: the impact of qualitative job insecurity on employees and organisations is more severe than the impact of quantitative job insecurity.

It is possible that when analysed together, qualitative job insecurity explains the variance in the measured outcomes, which in a separate analysis would be concluded as a result of a direct effect of quantitative job insecurity. We find two reasons for that explanation. First, qualitative job insecurity defines a perceived threat to future work conditions without specifying the exact work features. In comparison with quantitative job insecurity, which is a specific measurement of the perceived threat to job loss, this dimension captures a broad scope of job-related insecurities that employees might experience, which ultimately makes the qualitative dimension of job insecurity explain more variance in change in the outcome variables. Second, as previous research suggests, the threat of job loss is an ultimate threat to the work conditions, but not the other way round (Selenko and Batinic, 2013; Vander Elst, Richter, et al., 2014). Hence, when analysed together, the threat of job loss could be partially captured as a threat of change to future work conditions. This could explain why qualitative job insecurity was found to have a stronger impact on the measured outcomes. Considering that the current study is the first to simultaneously estimate the longitudinal effects of quantitative and qualitative job insecurity on the outcomes while controlling for the effects of the other dimension of job insecurity, the conclusions must be taken cautiously. Further research is needed to support these findings and to provide more insight into the nature of these joint effects.

Furthermore, we acknowledge that the response to quantitative and qualitative job insecurity could be affected by the cultural values of our sample. Considering two dimensions of culture, uncertainty avoidance and performance orientation, we find plausible that Belgian employees can deal particularly well with quantitative job insecurity while being more vulnerable to the impact of qualitative job insecurity.

Uncertainty avoidance defines the extent to which members of a particular culture feel threatened by unknown future situations (Hofstede et al., 2005). To avoid or reduce negative outcomes of these unpredictable or unforeseen situations, cultures high on uncertainty avoidance develop sets of social norms and well-organized procedures to deal with uncertainty. More specifically, Belgium, which scores high on the Uncertainty Avoidance Index (UAI), has developed well-established institutions and policies to decrease the unpredictability of job loss (e.g., dominant permanent contracts; see Appendix B) and to tackle the negative outcomes of job loss (e.g., social safety net) (König et al., 2011). Thus, employees who lose their jobs can rely on governmental help to maintain financial liquidity while looking for a new job. Although research on the effect of cultural dimensions on the consequences of experienced quantitative and qualitative job insecurity is scarce, an interesting study by Sender et al. (2017) examined the moderating role of cultural dimensions in different regions of Switzerland on the associations between the two dimensions of job insecurity and negative outcomes. Interestingly, they found that the link between quantitative job insecurity and turnover intention was stronger among employees from the French-speaking region of Switzerland, which are lower on uncertainty avoidance than in the German-speaking region of Switzerland. It is possible that, although Belgian employees do experience threats of job loss, the simultaneous awareness that the government protects their citizens from the consequences of job loss reduces the negative effects of this work stressor on employees' health and work attitudes.

Whereas a high score on uncertainty avoidance could lead Belgian society to organise in a way which reduces the negative effects of quantitative job insecurity, a performance orientation might explain particularly long-lasting reactions to the threat to job characteristics. The cultural dimension of performance orientation defines cultures which value lifelong training and education as essential for a successful work-life. Individuals from such cultures believe they control their career paths, take initiative and are rewarded for their achievements (House et al., 2004). Thus, workplace changes that threaten those pursuits might be particularly damaging for employees within performance-oriented cultures. Indeed, in the same analysis, Sender et al. (2017) found that in the German-speaking region, which scored higher on the performance-oriented dimension than the French-speaking region, the link between qualitative job insecurity and job satisfaction was stronger. To our knowledge, Belgian society is yet to be measured on the performance orientation dimension. However, based on the other cultural dimensions, such as a high score on individualism and an intermediate score on masculinity (Spector et al., 2001), we can assume that Belgium scores moderate-to-high regarding a performance-oriented culture, which might explain the significant importance of qualitative job insecurity in predicting the change in outcome variables. In line with this reasoning, we emphasise the importance of the link between cultural dimensions and the response to quantitative and qualitative job insecurity. Future research could contribute to the literature with a cross-cultural study to examine the effect of Hofstede's cultural dimensions on the relationship between job insecurity and various outcomes.

The second contribution of this study is the examination of the associations and the temporal order of quantitative and qualitative job insecurity in the context of the job insecurity-outcomes relationship. As such, the current study is the first to answer the call for a longitudinal examination of Chirumbolo et al.'s JII model (JIIM), which proposed qualitative job insecurity as a mediator of the relationship between quantitative job insecurity and outcomes (Chirumbolo et al., 2017). We further expanded on

that model and proposed an equally plausible alternative mediating process. In line with COR theory, we argued that quantitative job insecurity is preceded and directly affected by the alleviated threats to job characteristics. Subsequently, we expected to find a reciprocal relationship between quantitative and qualitative job insecurity. Our results only partially supported the proposed model. In contrast with previous research, we found no significant effect of quantitative job insecurity on qualitative job insecurity, over time. Hence, we did not confirm the mediating role of qualitative job insecurity, as proposed in the JIIM. On the other hand, qualitative job insecurity was associated with an increase in quantitative job insecurity six months later. Overall, our results suggest an opposing view to the one proposed in Chirumbolo, et al.'s model: when examined longitudinally, qualitative job insecurity precedes and leads to quantitative job insecurity. These results are in line with the conservation of resources theory. First, a threat to resources is a cyclic process in which initial threats engender future threats. Furthermore, closely related resources travel in caravans, meaning that threats to a particular job resource might elicit the threat to others. In line with these corollaries, we conclude that employees who experience alleviated threats to their job characteristics interpret all information regarding anticipated workplace changes as threatening, which further intensifies their perception of insecurity. Over time, these threats spread to other work resources. Employees might then begin to question the security of their overall employment, which invokes perceived quantitative job insecurity (Westman et al., 2004).

Additionally, various reasons might account for some unexpected findings. First, the failure to longitudinally confirm JIIM could be due to the difference in the operationalisation of qualitative job insecurity (Lee et al., 2018). The growing amount of research on qualitative job insecurity resulted in a plurality of instruments which cover different aspects of the construct (Blotenberg and Richter, 2020; Brondino et al., 2020; Hellgren et al., 1999b). Whereas Chirumbolo's JII model used the Hellgren et al. (Hellgren et al., 1999a) scale to measure a threat of loss regarding four pre-specified job

features: career and wage development, prospects, and task stimulation, we used a short and context-independent scale, specifically developed to examine the extent of employee's perceived insecurity without reference to specific job characteristics. By implementing such a generic scale, we covered more aspects of qualitative job insecurity, which might have altered the relationship between the dimensions. To control for these differences, future research could longitudinally reexamine JIIM with the exact measurement scales for quantitative and qualitative job insecurity that were used in the original study.

In addition, it is possible that the relationship between quantitative and qualitative job insecurity is still reciprocal but that the effects of each dimension on the other occur at different time lags. In other words, whereas we observe that the threat to job characteristics is associated with increased threats to job loss six months later, the lagged effect of threat to job loss on threats to job characteristics might only be observed once a shorter time lag is applied. When analysed longitudinally, the time lag between the measurement waves must be properly estimated to observe the underlying temporal order (Taris and Kompier, 2014). In the current study, the time lag of six months might have been too long to observe the effects of quantitative job insecurity on qualitative job insecurity. In line with Jahoda's deprivation model, we can expect that an increase/decrease in the threat to job loss almost synchronously increases/decreases the threat to valued job features. Hence, it is possible that this immediate reaction can be observed only cross-sectionally or with relatively short time lags of a few hours or days (Ford et al., 2014).

Practical implications

The current results offer several practical implications. This study particularly emphasises the importance of qualitative job insecurity. The longitudinal effect of qualitative job insecurity has been found to be significantly more severe than quantitative job insecurity, not only to work

attitudes and behaviours but also to health outcomes. Additionally, qualitative job insecurity was found to increase the experience of quantitative job insecurity, over time. Thus, the threat to negative changes to employees' jobs may result in high costs. To prevent these situations, employers should implement HRM practices, which aim to reduce the experience of qualitative job insecurity among the employees or to buffer its relationship with outcomes. This could be achieved by increasing investments in career development, which elicits engagement in the organisation and sends a clear signal about a secure future role in the organisation. Furthermore, organisations should establish clear formal communication channels to address prospective workplace changes, which have been shown to reduce employees' feelings of job insecurity (Smet et al., 2016). Finally, negative outcomes of qualitative job insecurity might be reduced if organisations create opportunities for employees to participate in a decision-making process regarding workplace changes that directly affect the future characteristics of their jobs (Probst, 2005).

Limitations and future research

The current study comes with several limitations that should be acknowledged. First, data were collected via a non-probability sampling procedure, which might have resulted in sampling bias. More specifically, access to the survey was restricted solely to the readers of the HR online magazine vacature.com; hence, certain categories of the Flemish working population might be overrepresented. To test for this, we compared the sample demographics with those of the Flemish-employed population (see Appendix B). Our sample is roughly representative of the employed Flemish population based on gender, age, education, type of contract (permanent vs temporary), work timeframe (full-time vs part-time) and sector (public vs private). However, the distribution of other characteristics of the employed population in Flanders, for example, job position, specific work sector or the size of the company, could not be compared. These characteristics are

commonly identified as antecedents of job insecurity. Therefore, generalising the results to the Belgian population (or other countries) should be taken cautiously.

Second, due to the subjective nature of the constructs, the data was collected with a self-report questionnaire. This could increase the risk of common method bias and response bias, such as social desirability. Following the suggestions by Podsakoff et al. (2012) to minimise socially desirable response bias, the anonymity and confidentiality of the participants were emphasised prior to the participation in the survey. Furthermore, we implemented time lags as an objective separation between the predictor and criterion variables, which controls for common method bias (Podsakoff et al., 2012).

Third, the study implements a six-month time lag between each measurement wave. Up to date, the literature on job insecurity has not specified the time frame over which our variables may influence each other. As mentioned earlier, this time lag might not have been optimal for observing the lagged associations between the variables in the model. Due to the severity of the threat, quantitative job insecurity might affect the negative outcomes quicker than qualitative job insecurity. Similarly, a bidirectional relationship between quantitative and qualitative job insecurity cannot be ruled out unless properly analysed with a diversified time lag between the various measurement waves (Kuiper and Ryan, 2018). To the best of our knowledge, this is the first study to answer the call for a longitudinal analysis of the relationship between quantitative and qualitative job insecurity and their concurrent effects on a wide range of outcomes. Future research may want to apply diversified time lags to establish the optimal time frame to examine longitudinal relationship between the variables of interest.

Furthermore, future research could add to the current literature by exploring the relationship between quantitative and qualitative job insecurity at the within-person level. Because job insecurity is a psychological construct,

research on the relationship between its dimensions should ideally address two components of this dynamic relation: between-person and within-person effects. In the current study, we solely applied a variable-centred approach and focused on the overall lagged associations between the levels of quantitative and qualitative job insecurity, job strains, and coping reactions (between-person effects). Hence, we estimated the relationship between the two dimensions of job insecurity to be the same for each individual in the sample. At the same time, it is expected that individuals will differ based on the underlying initial levels and trajectory of change of both quantitative and qualitative job insecurity. Indeed, recent studies have identified up to five job insecurity profiles that vary regarding how insecure employees feel and which type (quantitative vs qualitative job insecurity) is dominant (De Cuyper et al., 2019). Subsequent research could reexamine the time-specific relationship between quantitative and qualitative job insecurity while accounting for these individual differences.

Conclusions

The results of the current study highlight the relevance of qualitative job insecurity, not only as an important work stressor but also as an antecedent of quantitative job insecurity. When analysed together, only qualitative job insecurity predicted increased job strains and withdrawal coping reactions. In contrast to previous claims, the impact of qualitative job insecurity on employees and organisations seems more severe when compared with quantitative job insecurity. Our results also show that high qualitative job insecurity is associated with increased quantitative job insecurity six months later, which should be considered when planning interventions at the organisational level.

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Appendix A

Table 4 Multinomial logistic regression of dropout.

	T1T3 vs T1T2T3			T1T2 vs T1T2T3			T1 vs T1T2T3		
	b	SE	OR [95%CI]	b	SE	OR [95%CI]	b	SE	OR [95%CI]
Intercept	-1.667	1.242	0.189 [0.017; 2.151]	-2.352*	1.138	0.095 [0.010; 0.886]	0.921	0.921	2.512 [0.413; 15.290]
Age (*Years*)	-0.005	0.011	0.995 [0.975; 1.016]	-0.003	0.009	0.997 [0.979; 1.015]	-0.028***	0.008	0.973 [0.957; 0.988]
Gender (*0= Male; 1=*	-0.162	0.184	0.851 [0.593; 1.219]	0.150	0.168	1.161 [0.835; 1.614]	0.084	0.139	1.088 [0.828; 1.429]
Middle Education[1]	0.001	0.404	1.001 [0.453; 2.209]	0.104	0.372	1.109 [0.535; 2.301]	-0.287	0.288	0.75 [0.427; 1.319]
High Education[1]	-0.083	0.431	0.92 [0.395; 2.142]	0.15	0.398	1.161 [0.532; 2.533]	-0.337	0.310	0.714 [0.388; 1.311]
Professional Level (*0=Low; 1=High*)	0.369	0.205	1.446 [0.968; 2.160]	-0.021	0.175	0.98 [0.695; 1.380]	0.101	0.148	1.107 [0.828; 1.479]
Contract *(0=Permanent;*	0.9**	0.486	2.46 [0.950; 6.372]	0.661*	0.466	1.937 [0.776; 4.833]	0.756	0.409	2.131 [0.957; 4.745]
Employment (*0=Full-time;*	-0.024	0.231	0.976 [0.620; 1.535]	0.284	0.192	1.328 [0.913; 1.934]	-0.129	0.174	0.879 [0.625; 1.236]
Positional Tenure (*Years*)	-0.004	0.011	0.996 [0.975; 1.019]	-0.008	0.010	0.992 [0.973; 1.012]	0.003	0.009	1.003 [0.986; 1.021]
Quan.1	0.056	0.104	1.057 [0.863; 1.296]	-0.029	0.094	0.971 [0.808; 1.167]	0.144	0.078	1.155 [0.991; 1.346]
Qual.1	-0.22	0.122	0.803 [0.632; 1.020]	-0.057	0.108	0.945 [0.764; 1.168]	-0.19*	0.093	0.827 [0.689; 0.993]
TI.1	0.26**	0.091	1.296 [1.085; 1.549]	0.133	0.082	1.142 [0.973; 1.341]	0.268***	0.069	1.307 [1.140; 1.497]
JS.1	0.02	0.061	1.02 [0.905; 1.150]	-0.016	0.056	0.984 [0.883; 1.097]	-0.029	0.046	0.971 [0.887; 1.063]
WE.1	-0.158	0.151	0.854 [0.635; 1.149]	0.056	0.136	1.057 [0.810; 1.380]	-0.157	0.114	0.855 [0.684; 1.068]
EX.1	0.222	0.117	1.248 [0.992; 1.570]	0.091	0.105	1.096 [0.893; 1.345]	-0.010	0.087	0.99 [0.835; 1.174]
CC.1	0.085	0.142	1.089 [0.824; 1.439]	-0.051	0.130	0.95 [0.736; 1.227]	0.005	0.108	1.005 [0.813; 1.241]
EC.1	0.076	0.127	1.079 [0.840; 1.385]	0.200	0.116	1.221 [0.972; 1.534]	0.081	0.096	1.085 [0.898; 1.310]
IP.1	-0.048	0.139	0.953 [0.725; 1.252]	0.179	0.130	1.196 [0.927; 1.542]	-0.063	0.105	0.939 [0.764; 1.154]
EP.1	0.052	0.117	1.054 [0.838; 1.325]	0.014	0.105	1.014 [0.826; 1.245]	0.021	0.088	1.021 [0.860; 1.214]
CP.1	-0.16	0.145	0.852 [0.641; 1.131]	-0.079	0.132	0.924 [0.713; 1.198]	0.09	0.107	1.095 [0.888; 1.350]

Note: N=2003; Bold numbers indicate a statistically significant correlation at the 5% level. T1T2T3— respondents who participated in all three waves; T1T3— participants who did not respond in the second wave; T1T2— participants who dropped out after the second wave; T1— participants who dropped out after the first wave; All variables are measured at Time 1. Quan.1— quantitative job insecurity; Qual.1— qualitative job insecurity; TI.1— turnover intention; JS.1— job satisfaction; WE.1— work engagement; EX.1— exhaustion, CC.1— cognitive impairment; EC.1— emotional impairment; IP.1— in-role performance; EP.1— extra-role performance; CP.1— counterproductive behaviour.

[1]*Middle* and *High Education* are compared with low education (*0= Low Education*)

Appendix B

Table 5 Sample vs Flemish population; Source: Statistics Belgium: www.statbel.fgov.be

Variables		Sample	Percentages	Population (K)	Percentages
Gender	Male	833	42%	1,501	53%
	Female	1170	58%	1,300	46%
Age	15-24 years	74	4%	180	6%
	25-54 years	1701	85%	2,179	77%
	55-65 years	228	11%	411	15%
Education Level	Low	90	4%	383	14%
	Middle	1252	63%	1,137	40%
	High	661	33%	1,249	44%
Contract	Permanent	1525	76%	2,199	78%
	Temporary	83	4%	219	8%
Time frame	Full-time	1607	80%	1,740	61%
	Part-time	396	20%	678	24%
Sector	Private	1608	80%	2,271	80%
	Public	395	20%	559	20%
Total		2003	100%	2,830	100%

Note: Data on the Flemish population were taken from the first quarter of 2017.

CHAPTER 2: A WITHIN-INDIVIDUAL INVESTIGATION OF THE RELATIONSHIP BETWEEN QUANTITATIVE AND QUALITATIVE JOB INSECURITY*

Abstract: Radical transformations in the current work model induce *qualitative job insecurity* (i.e., a threat to job characteristics) and strengthen *quantitative job insecurity* (i.e., a threat to job loss). Both dimensions are separate yet interdependent work stressors. Although organisational changes are often the core source of both types of job insecurity, it is predominantly a subjective experience − individual perception ultimately determines the risk and the consequences of these threats. So far, the between-person analysis suggests that the relationship between the two dimensions is in both directions. However, it is not clear whether these associations also reflect the within-person processes. This study proposes and tests the reciprocal relationship between quantitative and qualitative job insecurity at the within-person level. We employed a multiple indicator random-intercept cross-lagged panel model (RI-CLPM) to test these associations within-person while controlling for between-person differences. We used three-wave longitudinal data (6-month time lag) collected among a Belgian working population (N=3694). The results suggest a unidirectional relationship (from quantitative to qualitative job insecurity). Furthermore, the results reveal significant within-person carry-over effects of quantitative job insecurity but not for qualitative job insecurity. Overall, these results suggest that a change in the experience of threat to job loss (i.e., higher-than-usual quantitative job insecurity) anticipates not only a higher-than-usual threat to job loss (autoregressive paths) but also a higher-than-usual threat to job characteristics (i.e., qualitative job insecurity), six months later. This study contributes to the ongoing discussion on how job insecurity dimensions influence each other. Given these results and the continuous changes to how we work, we call for further research to better understand the within-person processes of job insecurity development.

Keywords: quantitative job insecurity, qualitative job insecurity, within-person, random-intercept cross-lagged panel model, reciprocity

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Introduction

In the progressively volatile labour market, increasing numbers of employees report worrying about the future of their work situation (Probst, 2005). In addition, longitudinal research suggests that feelings of job insecurity persist over time, which indicates a continuous process in which the initial feelings of worry are sustained over time (Donnelly, 2022; Wu et al., 2020). Accordingly, job insecurity is considered an omnipresent work stressor, with the European Union calling it a "main psychological hazard" (Guarinoni et al., 2013). This is not surprising since an overwhelming amount of evidence linked job insecurity with adverse consequences for employees' and organisations' well-being (Lee et al., 2018; Shoss, 2017). Given the prevalence and the severity of the consequences, it is urgent to understand how the continuous process of experiencing job insecurity is maintained.

The most prominent definition of job insecurity originates from Greenhalgh and Rosenblatt's seminal article, which described job insecurity as an individual perception of a "potential loss of continuity in a job situation" (Greenhalgh and Rosenblatt, 1984). That definition characterised job insecurity in broad terms that could be further classified as either a worry of losing the current employment or a worry of losing valued characteristics of that employment (Hellgren et al., 1999). Therefore, in the recent literature, job insecurity is predominantly defined as a two-dimensional construct, identifying quantitative and qualitative aspects of job insecurity, respectively. Although quantitative and qualitative job insecurity are two aspects of the same construct, they are theoretically and empirically distinct. To date, research that explicitly compared the quantitative and qualitative dimensions of job insecurity consistently finds them to fit as separate dimensions (i.e., CFA model comparisons show that both constructs are empirically distinct) (Jiang, Bazzoli, et al., 2021). Furthermore, quantitative and qualitative job insecurity have a distinct relationship with theoretical predictors and outcomes (De Witte et al., 2010; Jiang et al., 2022; Jiang,

Wang, et al., 2021; Tu et al., 2019). That said, they are considered to be separate yet closely related psychological stressors (Shoss, 2017).

In the current study, we examine the relationship between quantitative and qualitative job insecurity, as that relationship could partly explain the process of experiencing job insecurity over time. Particularly, this study attempts to bridge a gap in our knowledge by understanding the role that the experience of one dimension of job insecurity (i.e., quantitative job insecurity) might have in the process of experiencing the other aspect of job insecurity (i.e., qualitative job insecurity), and vice versa.

Job insecurity, either quantitative or qualitative, can be understood from a perspective of a perceived threat to work-related job resources, i.e., employment in general or a set of resources that being employed grants, respectively. Under the conservation of resources (COR) theory, these resources do not develop independently but rather form a collective (Hobfoll et al., 2018). That said, job resources expand or downgrade in the aggregate, which may suggest that the two types of threat to job resources (i.e., quantitative and qualitative job insecurity) do not develop in isolation but rather relate to one another. In line with COR, we postulate that quantitative and qualitative job insecurity might be reciprocally related. Specifically, we consider resource caravan passageways as a set of conditions within which the rise of insecurities towards a particular job resource changes the environmental conditions for that employee and, ultimately, leads him/her to the perception of a threat to other job resources (Hobfoll, 2012).

Let us illustrate how the relationship between quantitative and qualitative job insecurity might affect the continuous process of experiencing job insecurity with the following example. Let us picture two employees; employee “A” for some reason (the causes of the initial feeling of job insecurity are beyond the scope of this article), anticipates a higher-than-usual threat to job loss (i.e., quantitative job insecurity), whereas employee “B” anticipates a higher-than-usual threat to valued job features (i.e., qualitative job insecurity). Suppose

we follow these people over a specified period. In that case, we might observe that although objectively nothing has changed, employee "A" now also worries about the job characteristics while employee "B" feels more worried about job loss too. How is that possible? Well, the employee's "A" first thought was: "I might lose my job". However, after some reflection (maybe a dinner conversation with a partner), they realise: "If I lose my job, I lose my salary, colleagues, social status, company car, etc., which are the goods that my job provides". Thus, the initial threat to job loss led to worries about the job features— qualitative job insecurity. In contrast, Employee "B" initially worried about keeping the job features. Maybe their company was going through changes (i.e., budget cuts), which led them to believe: "I won't get a bonus this year". After a conversation with colleagues, they started generalising their worries: "They might take my company car", "Cut the salaries", or "Downgrade my position". The budget cuts can even be perceived as signs of an upcoming dismissal of part of the workforce. Over time, employee "B" gets exhausted with these worries— the negative thoughts and worries intensify, spread across, and finally, a worry about job loss takes over. Thus, in the instance of employee "B", the initial threat to job characteristics led to a threat to job loss— quantitative job insecurity.

The example above is undoubtedly a simplified version of the complex process of experiencing job insecurity. For one, employees usually feel, to some extent, both quantitative and qualitative job insecurity (De Cuyper et al., 2019; Urbanaviciute et al., 2021). Thus, the two processes are most likely concurrent and interwoven. However, the example might help to envision the process that might occur within individual employees. Specifically, we argue that regardless of the initial cause, the sole appearance of either of these threats might begin a process of circular influence between one dimension of job insecurity (i.e., quantitative job insecurity) and the other (i.e., qualitative job insecurity), thus commencing a continuing process of experiencing job insecurity.

Although scholars agree that quantitative and qualitative job insecurity are related, the salience and the direction of that relationship have not been extensively studied yet. Theretofore, research has cautiously suggested an underlying causal process; however, there is no sufficient evidence. For instance, a cluster of cross-sectional studies consistently suggests that employment— a key job resource— provides access to all other job resources (such as salary, career opportunities, healthcare, social status, etc.). Thus, quantitative job insecurity creates conditions in which employees experience qualitative job insecurity (i.e., a threat to job loss poses a direct risk to all job resources) (Callea et al., 2019; Chirumbolo et al., 2017, 2020). In contrast to these findings, a recent longitudinal study has found a reverse relationship, which suggested that over time, a threat to important job features can be generalised towards a threat to the job as a whole (Nawrocka et al., 2021). Thus, the conclusions regarding that relationship strongly diverge so far, and more research is utterly needed.

The contribution of this study is three-fold. First, we propose and empirically test a set of theory-driven hypotheses regarding the relationship between quantitative and qualitative job insecurity. We implement the conservation of resources (COR) theory to substantiate a research model that proposes a reciprocal relationship. In doing so, we perform a stepwise procedure to separately examine three viable ways in which quantitative and qualitative job insecurity might be related to one another. We begin with the most prevailing premise that experiencing a threat to job loss (i.e., quantitative job insecurity) leads to experiencing a threat to job characteristics (i.e., qualitative job insecurity). Next, we test the reverse relationship and explore whether qualitative job insecurity leads to quantitative job insecurity. Finally, we test the joint process in which quantitative and qualitative job insecurity are reciprocally related. Second, we use a three-wave longitudinal design, which allows us to test the hypothesised effects using a repeated assessment of each participant (i.e., track individual changes). The results using longitudinal data tell us more about the time ordering of the variables and consequently suggest the directionality of the associations (Wunsch et al.,

2010). Furthermore, in the current study, we chose the time interval between the observations to last 6 months. Although the optimal time lag for these associations is still unknown, past research has shown that the effects of both aspects of job insecurity are observable within 6 months (Griep et al., 2021; S. Hu et al., 2022; Låstad et al., 2016; Nawrocka et al., 2021; van Hootegem et al., 2022). Thus, a six-month time lag might be adequate to observe a rather instant effect that a threat to job loss has on a threat to the loss of job characteristics and long enough for the reverse effects to develop (Dormann and Griffin, 2015).

Finally, in response to criticism that within-person processes are being wrongly estimated at the between-person level (Hoffman, 2015), we employ a person-centered approach. To date, the entire literature on the relationship between quantitative and qualitative job insecurity is based on research that used a variable approach, which assessed how a sample mean of quantitative job insecurity is associated with a sample mean of qualitative job insecurity. Accordingly, pasted research failed to control for individual differences (Morin et al., 2018). In other words, in the variable-centered approach, the results from employees who might be highly insecure and those who feel little to no insecurity are averaged into one value, which has been proven to give biased estimates and distort the judgement of the within-person processes (Hoffman and Stawski, 2009). Indeed, recent studies using a person-centered approach have indicated that the lion's share of job insecurity variance (both quantitative and qualitative) is at the between-people level, i.e., employees significantly vary in their average experience of job insecurity (De Cuyper et al., 2019; de Cuyper et al., 2022; Smet et al., 2016). Thereupon, to correctly estimate how the change in the experience of quantitative job insecurity relates to the change in qualitative job insecurity, we need to control for individual differences. In the current study, we apply a statistical technique that acknowledges and properly distinguishes the between-person differences from the within-person variation. Specifically, we use a multi-indicator random intercept cross-lagged panel model (RI-CLPM), which is an extension of the traditional cross-lagged panel model

(CLPM). In contrast to the traditional CLPM, RI-CLPM controls for the stability of the between-person differences by including a random intercept. The random intercepts account for the between-person variance in quantitative and qualitative job insecurity so that the lagged relationships pertain to the within-person temporal changes in these two dimensions.

Job insecurity

Job insecurity defines an individually perceived threat to the continuity of the current job situation (Greenhalgh and Rosenblatt, 1984). As these perceptions can pertain to any change in employment, job insecurity is typically considered a two-dimensional construct. The first dimension, defined as quantitative job insecurity, refers to "the perceived threat of job loss and the worries related to that threat" (De Witte, 2005). In that respect, quantitative job insecurity encompasses the likelihood and worry of job loss in the near future (De Witte, 2005). The second dimension, defined as qualitative job insecurity, relates to a perceived threat to the continuity of important job features. Thus, qualitative job insecurity encompasses the likelihood and worry of loss to valued job characteristics such as career prospects, wage stimulation, or type of tasks embedded in the job description (Hellgren et al., 1999).

Undeniably, these two types of job insecurity share core characteristics. Firstly, both aspects are characterised by the perceived *uncertainty* about future employment; individuals do not know whether, and if so, how their job will continue or change. This experience comprises the perceived likelihood of a change to the current job situation and worries related to that threat (Vander Elst, Richter, et al., 2014). Second, quantitative and qualitative job insecurity are related to anticipated *involuntary* changes to the job. Thus, the level of perceived job insecurity (either quantitative or qualitative) that is being reported is considered a discrepancy between the preferred level of job security (Ashford et al., 1989; Shoss, 2017), i.e., some employees might choose volatile work conditions and experience little or no insecurities.

Consequently, the third characteristic is the personalised experience, which means that the employee's *subjective* experience of threat is a key defining feature. In other words, the rise and the consequences of job insecurity depend on how job security, via the anticipated workplace changes, is being perceived and appraised by individuals (Shoss, 2017). The working population is heterogenous, i.e., individuals are characterized by diverse demographics (i.e., age, gender, education level) and personality traits (i.e., self-esteem, negative affectivity, neuroticism, introversion, locus of control), which are common sources of job insecurity (Jiang, Wang, et al., 2021; Keim et al., 2014). That said, the saliency of experience of perceived job insecurity has been shown to differ even among employees whose workplace context is objectively comparable (Sverke and Hellgren, 2002).

Bearing that in mind, it is to be expected that both dimensions are related. Indeed, research that includes both aspects invariably finds a significant positive correlation between quantitative and qualitative job insecurity (Callea et al., 2019; Chirumbolo et al., 2017, 2020; Chirumbolo and Areni, 2010; De Witte et al., 2010; Fischmann et al., 2015; Urbanaviciute et al., 2021; Van Hootegem et al., 2021). Furthermore, comprehensive, person-centered analysis finds that both dimensions occur conjointly, even when controlling for sample heterogeneity. So far, three distinct profiles have been identified: 1) high job insecurity, for which both quantitative and qualitative job insecurity indicate elevated feelings of worry about the job situation; 2) low job insecurity, for which both quantitative and qualitative job insecurity indicate little or no worries; 3) moderate job insecurity, for which the employees experience some level of both, but with distinguishably more prominent feelings of a threat to job characteristics (De Cuyper et al., 2019; Urbanaviciute et al., 2021).

Despite this clear alikeness, quantitative and qualitative job insecurity are conceptually different. Greenhalgh and Rosenblatt (1984), in their seminal article, defined job insecurity in broad terms as "a potential loss of continuity in a job situation" (Greenhalgh and Rosenblatt, 1984). That definition

inspired the conceptualisation of job insecurity as a two-dimensional construct with two distinct aspects that separately measure a perceived threat to job loss as a whole and a perceived threat to valued job characteristics (Ashford et al., 1989). Two separate scales were constructed and validated to measure quantitative and qualitative job insecurity (De Witte et al., 2010; Fischmann et al., 2021; Vander Elst, et al., 2014). Confirmatory factor analysis (CFA) from past studies corroborates this conceptualisation, indicating that quantitative and qualitative dimensions of job insecurity are separate variables (Fischmann et al., 2021; Jiang, et al., 2021).

Given that they are independent work stressors, the consequences of each dimension vary as well. Although both dimensions of job insecurity are linked with worsening health (Hoffman, 2015; Morin, et al., 2018), work attitudes (Hoffman and Stawski, 2009; De Cuyper, et al., 2022), performance (Smet, et al., 2016), or behaviour (De Witte, 2005), comparative research shows that the magnitude of these effects varies between the outcomes. For example, some studies have found that quantitative job insecurity was linked with mental and physical health, whilst qualitative job insecurity correlated strongly with work attitudes (Hellgren et al., 1999; Nawrocka et al., 2021). Furthermore, quantitative job insecurity was associated with avoidance, whereas qualitative job insecurity affected learning goal orientations (Vander Elst, et al., 2014). Therefore, employees' well-being might differ when experiencing a threat to job loss compared to when they experience a high threat to job features. In addition, predictors of job insecurity might be different depending on the type of job insecurity. For instance, a permanent contract might protect from experiencing a threat to job loss but not from a threat to job characteristics. In contrast, organisational practices and job conditions were more strongly associated with qualitative job insecurity than quantitative job insecurity. Consequently, employees with greater access to organisational resources (i.e., participation in the decision-making process, colleague/leader support, fairness, job autonomy) and lesser organisational demands (i.e., workload, role conflict, role ambiguity) are better protected

from qualitative job insecurity but not necessarily from quantitative job insecurity (Jiang, et al., 2021; Keim et al., 2014).

Understanding the relationship between quantitative and qualitative job insecurity

In line with the above, we consider quantitative and qualitative job insecurity as separate yet related psychosocial work stressors. This raises the question of whether and how quantitative and qualitative job insecurity react to one another. In the following, we elaborate on the plausible relationship between quantitative and qualitative job insecurity. Drawing on the conservation of resources (COR) theory, we explain the interrelationship between the two and conclusively substantiate a research model that proposes a reciprocal relationship.

On the one hand, the experience of high quantitative job insecurity could lead to an increase in the experience of qualitative job insecurity. Specifically, employees who worry about job loss are expected to experience a rise in the threat to valued characteristics of that job (De Witte et al., 2015; Selenko and Batinic, 2013). Under the conservation of resources theory (COR), resources develop and exist in aggregates called *resource caravans*. In other words, resources (for example, in the work context) tend to emerge from common environmental and developmental conditions, which is why they relate to one another rather than being isolated entities (Hobfoll et al., 2018). In line with this, employment and specific work-related resources can be viewed as co-travelling resources aggregated in one job-specific resource caravan (Sarandopoulos and Bordia, 2022). Employment grants access to a broad set of work-related resources. In that context, stress that originates from a threat to job loss (i.e., quantitative job insecurity) changes the environmental conditions surrounding the job resources and downgrades the individuals' perception regarding the sustainability of these resources. In other words, an employee who perceives that they might lose their job might feel that the job

features, such as salary, job position, social status, career development etc., are exposed to the same threat. Consequently, quantitative job insecurity, which is a threat to employment, can be perceived as a direct risk to a threat to job characteristics and augment qualitative job insecurity.

Prior studies corroborate this view. First, in a longitudinal study, Selenko and Batinic (2013) found that a threat to job loss is related to reduced financial benefits six months later. Expanding on these results, Vander Elst and colleagues (2016) found that quantitative job insecurity is linked with an increase in a threat to manifest and latent work benefits six months later. These studies highlight the possible importance of quantitative job insecurity in shaping the experience of a threat to the conditions of the job. A year later, Chirumbolo and colleagues (2017) integrated these findings and proposed the 'Job Insecurity Integrated Model', in which qualitative job insecurity mediated the effects of quantitative job insecurity on the outcomes. Using Jahoda's deprivation theory, the authors cautiously suggested that since a loss of employment is synonymous with losing all job features, a threat to job loss might lead to the fear of losing job features. Although subsequent studies also found this association, they are all based on cross-sectional data, which is unfit to make statements regarding the ordering of the effects (Callea et al., 2019; Chirumbolo et al., 2020).

Following the theory and previous research, we expect that:

Hypothesis 1: Quantitative job insecurity at t_y is positively associated with qualitative job insecurity at t_{y+1}.

On the other hand, it is plausible that this relationship is reversed. When individuals perceive their highly valued job characteristics to be threatened, over time, they might become more worried about the security of their whole employment. Continuing with the conservation of resources (COR) theory, employees who experience resource loss (or a threat) are more vulnerable to further loss (or a threat) and less capable of resource gain (Hobfoll et al., 2018). In this respect, employees who perceive a threat to the conditions of

their job might be more vulnerable to perceiving their employment as less secure. Prior research showed that unproductive formal channels of communication lead employees to seek information through informal channels (i.e., gossip, rumours, urban legends, casual conversations), which only intensifies feelings of insecurity (Smet et al., 2016). Thereafter, when management fails to address the rising threats towards the conditions in which the job is performed, these insecurities could spill over onto other job features and, overall, the continuity of the employment itself. In times of ongoing organisational changes, in which job characteristics are expected to follow some reforms, employees might wonder whether these changes will affect only the officially communicated conditions of the job or whether they should be generalised— threatening other job resources— and, ultimately, the job itself. Consequently, we expect that over time, a threat to job characteristics (i.e., qualitative job insecurity) generalises toward a possible job loss (i.e., quantitative job insecurity).

Although theoretically plausible, empirical evidence for that relationship is limited. To date, only one study has examined this relationship. The findings suggest that qualitative job insecurity is associated with increased quantitative job insecurity six months later (Nawrocka et al., 2021). We expect this association to prevail at the within-person level. Thus, we propose the following:

Hypothesis 2: Qualitative job insecurity t_y is positively associated with quantitative job insecurity, at t_{y+1}.

This discussion concludes that COR theory supports the relationship between quantitative and qualitative job insecurity in either direction. As mentioned above, job resources aggregate under one job-specific resource caravan, and they all might be related due to common environmental conditions. These common environmental conditions, also called *resource caravan passageways*, either foster and nurture or block and drain the jointed resources. When an employee experiences an initial threat (either to job loss

or job features), it deteriorates the conditions within the caravan passageway, which affects all job resources. Thus, via resource caravan passageways, initial loss (or threat) begets future loss. Accordingly, following Hobfoll's COR theory, we suggest a third possibility that the two aspects of job insecurity affect each other reciprocally (Hobfoll et al., 2018; Westman et al., 2004). To evaluate the joint mechanism, we propose:

Hypothesis 3: Quantitative and qualitative job insecurity are reciprocally related over time.

Intrapersonal approach to job insecurity

In the current study, we apply a person-centered approach to investigate the longitudinal relationship between quantitative and qualitative job insecurity over time. The rationale for choosing this method is twofold.

First, the person-centered approach controls for between-person differences, which is important since the experience of job insecurity differs across individuals rather than being homogeneous (Kinnunen et al., 2014). Past research that used a person-centered approach repeatedly showed that employees do not only differ in the intensity of the job insecurity experience (i.e., level of job insecurity) but also the combination of the two types of job insecurity (i.e., the shape of job insecurity) (De Cuyper et al., 2019). For instance, considering quantitative and qualitative job insecurity, Van Hootegem and colleagues (2021) found five developmental patterns of job insecurity, which diverged between stable (high, moderate, low), decreasing, and increasing trends. Thus, across one sample, we might observe an employee with a relatively stable low or continuously high fear of future job loss next to an employee who, over time, becomes either more or less secure about their job. Furthermore, constellations of the job insecurity dimensions distinguish between secure employees (low quantitative and qualitative job insecurity), employees who predominantly experience a threat to job characteristics (qualitative job insecurity dominant), and employees who feel

generally insecure (high quantitative and qualitative job insecurity) (De Cuyper et al., 2019; Urbanaviciute et al., 2021). Thus, employees differ not only in the strengths and temporal stability of these threats but also in the combinations of the aspects that these threats represent. These findings are not surprising since, as we mentioned earlier, job insecurity is a subjectively perceived psychological stressor. In fact, personal resources have been found as one of the most important predictors of job insecurity (Jiang et al., 2021). Thus, regardless of the objective changes in the work context, employees differ in their experience of job insecurity due to personal characteristics, such as personality traits (i.e., negative affectivity, locus of control, core self-evaluations etc.) and self-assessment of their skills and capabilities in the work domain (i.e., organization-based self-esteem, employability, adaptation etc.), which need to be controlled for when exploring the processes that occur at the person-level (De Cuyper et al., 2012; Debus et al., 2014; Jiang et al., 2021).

To the best of our knowledge, past research has solely examined the relationship between quantitative and qualitative job insecurity at the between-person level, which captures the rank-order position of individuals. In that respect, cross-sectional studies found that employees who usually experience a higher threat of job loss also report a higher threat of job characteristics (Callea et al., 2019; Chirumbolo et al., 2017, 2020), whereas the longitudinal examination observed that employees who experienced higher qualitative job insecurity at one point in time, experience higher threats to job loss six months later (Nawrocka et al., 2021). These are important findings that demonstrate how these two variables are related at the population level. Yet, they do not account for individual differences, which might lead to biased conclusions regarding the associations between the two aspects of job insecurity (Hamaker et al., 2015; Hoffman, 2015).

Second, a person-centered approach explores the relationship between the constructs at the person level (Hoffman and Stawski, 2009). The basic idea is that the observed variance of the construct— here, job insecurity— can be

decomposed into stable differences between the individuals (i.e., *How does this person feel when compared to how others feel?*) and within-person fluctuations (i.e., *How does this person feel when compared to how she/he usually feels?*) (Laursen and Hoff, 2006). In the current study, a core research question is about the associations between two psychological constructs, which are processes that occur within a person (Hoffman and Stawski, 2009; Klug et al., 2020). Specifically, we want to know if a change (i.e., within-person fluctuations) in the experience of one aspect of job insecurity (i.e., quantitative job insecurity) at one point in time is related to a change (i.e., within-person fluctuations) in the experience of the other aspect of job insecurity (i.e., qualitative job insecurity) later on, and vice versa. To answer this research question, we need to deconstruct the variance of job insecurity and, controlling for the between-person variance, analyse these associations at the within-person level. Hence, we need to employ a person-centered approach.

Present study

In congruence with the above, we propose an empirical test of a theory-driven question regarding the relationship between quantitative and qualitative job insecurity. We implement the conservation of resources (COR) theory to substantiate a research model that proposes a reciprocal relationship. Furthermore, we conduct a stepwise procedure to separately examine three viable ways in which quantitative and qualitative job insecurity might be related to one another. We begin with the prevailing premise that experiencing a threat to job loss (quantitative job insecurity) leads to experiencing a threat to job characteristics (qualitative job insecurity). Next, we test the reverse relationship and explore whether qualitative job insecurity leads to quantitative job insecurity. Finally, we test the joint process in which quantitative and qualitative job insecurity are reciprocally related.

To address our research question, we employ a person-centered approach using a three-wave longitudinal dataset. Given the core objective of this study, which is to examine the associations between the change in quantitative and qualitative job insecurity, we follow our participants over one year. An important issue in longitudinal research methodology that warrants attention is the appropriate time interval between the measurement observations. Specifically, a time length should correspond with a "real" time lag it takes for the effect to occur. If the chosen time lag is too short, the predictor had insufficient time to affect the outcome. In contrast, if the chosen time lag is too long, the effect of the predictor on the outcome might already be too weak to detect (Taris and Kompier, 2014). To date, the optimal time lag to observe the associations between quantitative and qualitative job insecurity has not been established. However, past research that examined the outcomes of job insecurity has successfully estimated the significant effects of both quantitative and qualitative job insecurity using a six-month time lag (Griep et al., 2021; S. Hu et al., 2022; Låstad et al., 2016; Nawrocka et al., 2021; Van Hootegem et al., 2021). These findings suggest that a time lag of six months is adequate to observe the effects of one aspect of job insecurity on the other one and reverse. Consequently, we implemented a 6-month time lag. The data were analysed using a multiple indicator random intercept cross-lagged model (CLPM-RI) (Hamaker et al., 2015; Mulder and Hamaker, 2021). This method is superior to a traditional cross-lagged panel model as it controls for stable, trait-like individual differences. This implies that the lagged associations are calculated exclusively based on within-person fluctuations (Mulder and Hamaker, 2021). Specifically, the model splits the variance of each variable into a time-invariant, trait-like part (the individual's average level of experienced quantitative and qualitative job insecurity; a between-person variance for quantitative and qualitative job insecurity— BQN_i and BQL_i, respectively) and a time-varying, a state-like part that captures dynamic, fluctuations around the individual's expected score (a within-person variance for quantitative and qualitative job insecurity— WQN_{it} and WQL_{it}). The latter is

used to estimate the autoregressive and cross-lagged effects, which test the hypotheses formulated above.

Materials and methods

Sample and procedure

The current study used data collected from Belgian employees (the questionnaire was available in Dutch and French to collect data from both Flemish and Walloon employees). The longitudinal design included three waves collected between January 2013 and May 2014 (6-month time lag between each measurement wave). Formerly, the data were collected for the research project on employability (Nelissen, 2016) and shared by the authors for this study[12]. Fifteen organisations were contacted, of which thirteen agreed to participate in a survey. Participants received two reminders for each wave to complete the questionnaire (online or on paper) at work or home. In the introduction to the survey, the researchers stated the purpose of the study and guaranteed voluntary participation and anonymous processing of the data. We sampled 4,981 employees, of whom 3,694 participated in the first wave (response rate 74%). The first data collection (Time 1) took place between January and March 2013. The subsequent two waves occurred between October-November 2013 (Time 2) and April-May 2014 (Time 3). From the employees who participated in the first wave, we gathered 2045 employees who returned a questionnaire in the second wave (41% response rate) and 1698 employees who completed the survey in the third wave (34% response rate).

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1. The authors would like to thank Dr Jill Nelissen and Dr Ellen Peeters from KU Leuven for sharing their dataset and providing us with all the information about the data collection process.
2. At the time of data collection there was no legal obligation to have the study approved by an independent ethical review board.

We excluded employees who did not fill in the questionnaire in the first wave (n=1287), leaving us with the final sample of 3694 participants; 42% were women (n=1539), 52% were men (n=1901), and 6% (n=254) left that question without an answer. The average age was 41.86 years (SD=10.48), and almost half of the participants had a degree of higher education (49%, compared to 21% of participants with a middle level of education and 20% with a low level of education). Employees with a permanent job contract dominated the sample (n=3322, 90%), and 80% (n=2957) worked full-time. On average, employees worked 11.9 years (SD= 10.6) in the same organisation and 7.41 years (SD= 8.25) in the same position. Respectively, 26% (n=951) were blue-collar workers (8% unskilled labourer and 18% skilled worker), 36% (n=1324) were white-collar employees (17% lower-level and administrative clerk; 19% middle-level employee), and 31% (n=1152) had a managerial position (23% low- and middle-level management; 8% senior management). Respondents worked across 13 different organisations; 17% of the sample (n=635) worked in two companies from an industrial sector (secondary sector), 41% (n=1523) worked in six organisations from a service sector (tertiary sector), and 41% (n=1520) worked in five organisations from a public sector (quaternary sector). Finally, the respondents were asked whether they experienced a change in their work context six months before the study. Almost three-quarters of respondents (67.1%; n= 2478) did not experience any change to their job; 10% changed position (n=369); 7.6% (n=280) changed job level; and less than 2.5% experienced a change in the workplace (21 respondents changed their team, 48 respondents changed from employer, and 20 respondents changed a sector). Thus, most respondents stayed at the same job throughout the observation period. We can conclude that the sample was heterogeneous regarding its composition.

Drop-out analysis

We analysed possible attrition bias using multinomial logistic regression. We included study variables at Time 1 (quantitative and qualitative job insecurity) and background variables: work time frame (0-full time, 1-part-time), type of contract (0-permanent contract, 1-temporary contract), work experience (years), tenure (organisational and positional; years), gender (0-women, 1-men), age (years), education (0-low education, 1-middle education, 2-high education) and position (0-blue collar workers, 1-white collar workers, 2-management). The results indicated that the odds of dropping out after the first wave (T1) vs participating in all three waves (T1T2T3) increased by 1.662 when moving from low education to middle education and 1.477 when moving from low education to high. In contrast, the odds of dropping out after the first wave (T1) vs participating in all three waves (T1T2T3) decreased by 0.301 if moving from blue-collar to white-collar and 0.384 if moving from blue-collar to management. In other words, people who dropped out after the first wave were more likely to present middle and high education and work in blue-collar positions. They might represent a group of employees who, despite high education, landed low-skilled jobs. Furthermore, the odds of not participating in the second wave (T1T3) decreased by 0.7 if moving from women to men, which means that women were more likely to drop out during the second wave. To limit the bias associated with a systematic drop-out, we used full information likelihood estimation (FIML), which uses partially incomplete data by estimating the parameters using only those variables that are observed for that individual (Enders and Bandalos, 2001). FIML estimates were found unbiased and more efficient than any other method to handle missing data (listwise deletion, pairwise deletion, imputations) under MAR and MCAR mechanisms (Enders, 2001, 2010).

Measurements

Quantitative job insecurity. Quantitative job insecurity was measured with the four-item scale developed by De Witte (2000) and validated by Vander Elst and colleagues (2014). It measures the perceived likelihood (e.g., "There is a chance that I will soon lose my job") and worries about job loss (e.g., "I feel insecure about the future of my job"). The items were rated on a five-point Likert scale from 1 (totally disagree) to 5 (totally agree). The internal consistency for the current sample was α=0.85 at T1, α=0.86 at T2, and α=0.87 at T3.

Qualitative job insecurity. Qualitative job insecurity was measured with a four-item scale developed by De Witte and De Cuyper and recently validated by Fischmann and colleagues (2021). It measures the perceived likelihood (e.g., "There is a chance that my job will change in a negative way") and worry of loss or negative change in the overall job content and working conditions (e.g., "I worry about what my job will look like in the future"). The items were rated on a five-point Likert scale from 1 (totally disagree) to 5 (totally agree). The internal consistency for the current sample was α= 0.91 at T1, α= 0.92 at T2, and α= 0.92 at T3.

Descriptive variables. Background data were included just to visualise how the development of quantitative and qualitative job insecurity varies across the groups, as the RI-CLPM controls for the stable between-person differences. We included information about participants that is commonly used as control variables: gender (0– female; 1– male), education (0– low education; 1– middle education; 2– high education), contract (0– permanent; 1– temporary), work time frame (0– full-time; 1– part-time), organisational tenure (0– up to 5 years; 1– up to 15 years; 2– above 16 years) and positional tenure (0– below 1 year; 1– up to 5 years; 2– more than 5 years).

Analysis

Table 1 shows the means, standard deviations, and correlations for quantitative and qualitative job insecurity and background variables. Across the sample, the level of qualitative job insecurity was higher than that of quantitative job insecurity, which means that across all three waves, on average, employees experienced a higher threat to job characteristics than a threat to job loss. Furthermore, the means of quantitative and qualitative job insecurity were invariant across the observation period. In other words, on average, the sample experienced a continuous similar level of job insecurity. Although bivariate correlations found no significant differences in quantitative and qualitative job insecurity for various positions (blue-collar, white-collar, management) and time frame (full-time, part-time), there were significant differences between groups with different types of contracts, work experience, tenure, education, age, and gender. Indeed, the graphical representation of the development of quantitative and qualitative job insecurity across the time for each group represents just how much variance there is between the respondents (see Appendix A). For example, employees with a permanent contract experienced, on average, a low and stable threat to job loss. In comparison, employees with a temporary contract experienced a high threat to job loss with a decreasing tendency over time. Similarly, employees with short organisational (up to 5 years) and positional (up to 1 year) tenure experience a sharp increase in a threat to job characteristics, which stabilities for employees with higher tenure.

These results suggest significant variability at the between-person level for both quantitative and qualitative job insecurity. To test this assumption, we explored the amount of variance that could be explained by stable trait-like differences between people (interindividual differences) vs within-person fluctuations (intraindividual change). We used the reliability-adjusted intraclass correlation coefficient ICC(1) to account for the measurement error of quantitative and qualitative job insecurity. Measurement error has been

shown to induce bias in the estimation of the ICC by increasing the within-person variance (Wilms et al., 2020). The reliability-adjusted ICC(1) weights the within-person variance with the construct's reliability, which has been proven to result in robust estimates of ICC(1) (Wilms et al., 2020, 2021). The adjusted ICC(1) for quantitative job insecurity was .67, indicating that 67% of the variance is explained at the between-person level (stable trait, interindividual differences). In comparison, the remaining 33% is a within-person fluctuation (over time, intraindividual change). Similarly, the ICC(1) for qualitative job insecurity indicated that 63% of the variance is explained by the between-person differences (37% by a within-person fluctuation).

For data analysis, we conducted structural equation modelling using the Lavaan package in R software (Rosseel, 2012). We followed the instructions specified by Mulder and Hamaker (2021) (for a similar methodology, see De Cuyper et al., 2022; Erreygers et al., 2018; Masselink et al., 2018). We used full-information maximum likelihood (FIML) to handle the missing data. Model fit was evaluated using several goodness-of-fit indices: a) comparative fit index (CFI), b) the Tucker–Lewis index (TLI), c) the root mean square error of approximation (RMSEA), and d) the standardised root mean square residual (SRMR) (Brown, 2015; Weston and Gore, 2006). Good model fit was indicated with CFI and TLI values equal to 0.95 or higher, RMSEA and SRMR with values of 0.6 and 0.8 or lower, respectively (Hu and Bentler, 1999). Alternative models were compared based on ΔCFI and ΔRMSEA, where a change of ≤-0.01 and ≤0.015 indicated a better model fit (Lai, 2020; Marcoulides and Yuan, 2017).

The analysis consisted of three steps. In the first step, we performed confirmatory factor analysis (CFA) (Brown, 2015). We compared the hypothesised two-factor measurement model M1 to: a) a one-factor (M2), which measured job insecurity as one general latent variable, and b) a four-factor model (M3), in which quantitative and qualitative job insecurity dimensions were further split into a cognitive and an affective subdimension. In each model, the measurement errors were set to covary across time.

In the second step, we assessed longitudinal measurement invariance to test how well the measured items represent the underlying latent constructs across time (Little et al., 2007). We compared a set of nested models, where each model represents a more rigid invariance than the previous model. As our baseline model, we started with the configural invariance model, i.e., an unconstrained model with equal factor structure across time. Next, we estimated the metric invariance model (M4) that placed equality constraints on factor loadings of the corresponding items across time. The strong invariance model (M5) added equality constraints to the items' intercepts. Finally, the strict invariance model (M6) constrained residual variances. Mulder and Hamaker (2021) indicate that metric invariance is a minimum requirement to specify the RI-CLPM and evaluate the structural paths at the within-person level.

In the final step, we estimated the random intercepts cross-lagged panel model (RI-CLPM). We decomposed estimated latent variables to a) random intercepts, which account for the stable differences in the mean levels of quantitative and qualitative job insecurity between the employees, and b) a within-person component, which is the intraindividual variation around the individual's average level, across time. The structural model, which contains autoregressive and lagged paths, was added at the within-person level (M7). Specifically, we estimated the autoregressive paths (i.e., the extent to which a within-person deviation from the expected score at time *t* can be predicted by a within-person deviation from the expected score at time *t-1*) and cross-lagged paths (i.e., the extent to which the within-person fluctuation in qualitative job insecurity at time t is predicted by the within-person fluctuation in quantitative job insecurity at time *t-1*, and reverse). Finally, we examined whether the lagged effect remained stable over time. We compared three models, in which we add equality constraints on the autoregressive paths (M8), the cross-lagged paths from qualitative job insecurity to quantitative job insecurity (paths a; M9), and the cross-lagged paths from quantitative job insecurity to qualitative job insecurity (paths b; M10). The

hypotheses were tested on the model, which ultimately had the best fit for the data.

Table 1 Means, standard deviations, reliability (Cronbach's alpha in parentheses), and correlations.

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Quan T1	2.22	0.87	(0.85)														
2	Quan T2	2.29	0.88	0.65***	(0.86)													
3	Quan T3	2.21	0.86	0.58***	0.66***	(0.87)												
4	Qual T1	2.52	1.03	0.54***	0.40***	0.36***	(0.91)											
5	Qual T2	2.57	1.00	0.41***	0.61***	0.41***	0.61***	(0.92)										
6	Qual T3	2.58	1.03	0.37***	0.41***	0.57***	0.60***	0.63***	(0.92)									
7	Time Frame	1.20	0.40	0.05**	0.03	0.03	0.06***	0.03	0.04	—								
8	Contract	1.10	0.29	0.27***	0.18***	0.20***	0.02	0.02	0.05	0.05**	—							
9	Position	3.59	1.46	-0.01	-0.01	0.00	0.03	0.01	0.02	-0.01	0.07***	—						
10	Work Exp (Years)	18.76	11.15	-0.08***	-0.12***	-0.11***	-0.01	-0.05*	-0.08**	0.10***	-0.23***	-0.05*	—					
11	Org. Tenure (Years)	11.89	10.60	-0.11***	-0.12***	-0.13***	0.06***	0.02	-0.03	0.09***	-0.25***	0.05**	0.71***	—				
12	Pos. Tenure (Years)	7.42	8.25	-0.14***	-0.17***	-0.15***	0.05**	0.02	0.03	0.10***	-0.18***	-0.14***	0.51***	0.63***	—			
13	Gender	1.55	0.50	-0.05**	-0.06**	-0.07**	-0.06***	-0.06**	-0.05	-0.33***	-0.10***	-0.20***	0.20***	0.11***	0.08***	—		
14	Age	41.87	10.47	-0.07***	-0.12***	-0.10***	0.00	-0.04	-0.07**	0.14***	-0.20***	0.02	0.93***	0.68***	0.50***	0.14***	—	
15	Education	7.86	2.85	0.04*	0.07**	0.07**	0.10***	0.10***	0.11***	0.03	0.13***	0.71***	-0.29***	-0.14***	-0.20***	-0.31***	-0.22***	—

Note: N = 3694. Quan T1-T3— score for quantitative job insecurity at Time 1,2 and 3; Qual T1-T3— score for qualitative job insecurity at Time 1,2 and 3; Full vs Part-time: 1— full-time, 2— part-time; Contract: 1— permanent, 2— temporary; Position: 1— unskilled blue-collar, 2— skilled blue-collar, 3— administrative clerk, 4— middle-level employee, 5— lower and middle-level management, 6— senior management; Gender: 1— women, 2— men; Education: 1— no degree, 2— primary education, 3— lower secondary vocational education, 4— lower secondary technical education, 5— lower secondary general education, 6— higher secondary vocational education, 7—higher secondary technical education, 8— higher secondary general education, 9— higher education (professional bachelor), 10— higher education (licentiate/master), 11— university education (master), 12— doctorate; * p<.05; **p<.01; ***p<.001;

Results

Measurement model and longitudinal measurement invariance

Table 2 presents the results of the CFA and subsequent evaluation of the longitudinal measurement invariance. The hypothesised two-factor model (M1), which separately measures quantitative and qualitative job insecurity at each time point, showed a good model fit ($\chi 2$ (213) = 1994.632, CFI = 0.961, TLI = 0.949, RMSEA = 0.048, SRMR = 0.051). We compared that model with two alternative models. The first, one-factor model showed a poor fit to the data ($\chi 2$ (225) = 9382.963, CFI = 0.799, TLI = 0.753, RMSEA = 0.105, SRMR = 0.108), and the hypothesised 2-factor model showed significantly better fit ($\Delta \chi 2(12) = 7388.331$, $p < 0.001$). The second, four-factor model (M3), did not converge, which means that the quantitative and qualitative job insecurity could not be separated into cognitive and affective subdimensions. Therefore, the hypothesised 2-factor model is chosen as the baseline model. Next, we examined the measurement invariance. Gradually added equality constraints did not decrease the model fit. The strict measurement invariant model (M7) showed a satisfactory model fit ($\chi 2$ (257) = 2259.832, CFI = 0.956, TLI = 0.953, RMSEA = 0.046, SRMR = 0.053) and met the measurement invariance criteria (ΔCFI = 0.002, ΔRMSEA = 0). Hence, the measurement model with a strict measurement invariance is used to estimate the RI-CLPM.

Table 2 Fit indices of competing nested factor models and standardised maximum likelihood estimates.

Factorial Structure of the Measurement Model													
Model *No.*	Model	*χ2*	*df*	CFI	TLI	RMSEA	SRMR	Model comparison *No.*	*Δχ2*	*Δdf*	*p*	*Δ*CFI	*Δ*RMSEA
M1	2-factor model	1994.632	213	0.961	0.949	0.048	0.051						
M2	1-factor model	9382.963	225	0.799	0.753	0.105	0.108	M1	7388.331	12	<0.001	0.162	0.196
M3	4-factor model	Non-converged											
Longitudinal Measurement Invariance of the Hypothesized 33-factor Model													
M4	Metric Invariance	2014.547	225	0.961	0.952	0.046	0.051	M1	19.915	6	0.0687	0	0.003
M5	Strong Invariance	2130.083	241	0.958	0.952	0.046	0.053	M4	115.536	16	<0.001	-0.003	0
M6	Strict Invariance	2259.832	257	0.956	0.953	0.046	0.053	M5	129.749	16	<0.001	0.002	0

*Note: N = 3694; p < 0.05 *, p <* 0.01 **, *p <* 0.001 ***; χ2 = chi-square; df— degrees of freedom; CFI— comparative fit index; TLI— Tucker–Lewis's index; RMSEA— root mean squared error of approximation; SRMR— standardized root mean squared residual.

Table 3 Time invariance of the structural paths.

Analysis of the Alternative Structural Models													
Model *No.*	Model	*χ2*	*df*	CFI	TLI	RMSEA	SRMR	Model comparison *No.*	*Δχ2*	*Δdf*	*p*	*Δ*CFI	*Δ*RMSEA
M7	Hypothesized RI-CLPM (unconstrained)	2218.475	254	0.957	0.953	0.046	0.052						
M8	M7 + autoregressive paths constraint equal across time	2219.153	256	0.957	0.953	0.046	0.052	M7	0.678	2	0.713	0.000	0.000
M9	M8 + paths from quantitative JI to qualitative JI constrained across time	2220.55	257	0.957	0.954	0.045	0.052	M8	1.400	1	0.237	0.000	0.001
M10	M9 + paths from qualitative JI to quantitative JI constrained across time	2221.26	258	0.957	0.954	0.045	0.052	M9	0.702	1	0.402	0.000	0.000

Note: N = 3694; *p <* 0.05 *, *p <* 0.01 **, *p <* 0.001 ***; χ2— chi-square; df— degrees of freedom; CFI— comparative fit index; TLI— Tucker–Lewis's index; RMSEA— root mean squared error of approximation; SRMR— standardized root mean squared residual;

Test of the hypotheses: RI-CLPM and stability of the model

The RI-CLPM showed good fit to the data ($\chi 2$ (254) = 2218.475, CFI = 0.957, TLI = 0.953, RMSEA = 0.046, SRMR = 0.052). Accordingly, we examined the stability of the structural model. The model with equality constraints on the autoregressive paths (M8) did not worsen the model fit (ΔCFI = 0, ΔRMSEA = 0). Similarly, the additional constraints on the lagged paths from qualitative job insecurity to quantitative job insecurity (M9) did not compromise the model fit (ΔCFI = 0, ΔRMSEA = 0.001). The final model (M10) with constraints on all structural paths showed a good model fit ($\chi 2$ (258) = 2221.255, CFI = 0.957, TLI = 0.954, RMSEA = 0.045, SRMR = 0.052) and was not significantly worse than the partially constrained model (ΔCFI = 0, ΔRMSEA = 0). Table 3 provides an overview of the results. We conclude that the relationship between the constructs was invariant across time, and we examine the hypotheses based on the final model.

We interpret the results from the RI-CLPM as follows: 1) the results at the between-person level, 2) the cross-sectional covariation at T1 and the residual covariation at T2 and T3, 3) the autoregressive paths and 4) the cross-lagged paths. The standardised coefficients of the final model are graphically depicted in Figure 1. First, at the between-person level, the random intercept for quantitative job insecurity correlated positively with the random intercept for qualitative job insecurity (β= 0.261, p<0.001), which means that employees with a threat to job loss which was higher than the sample average also experienced a higher threat to job characteristics.

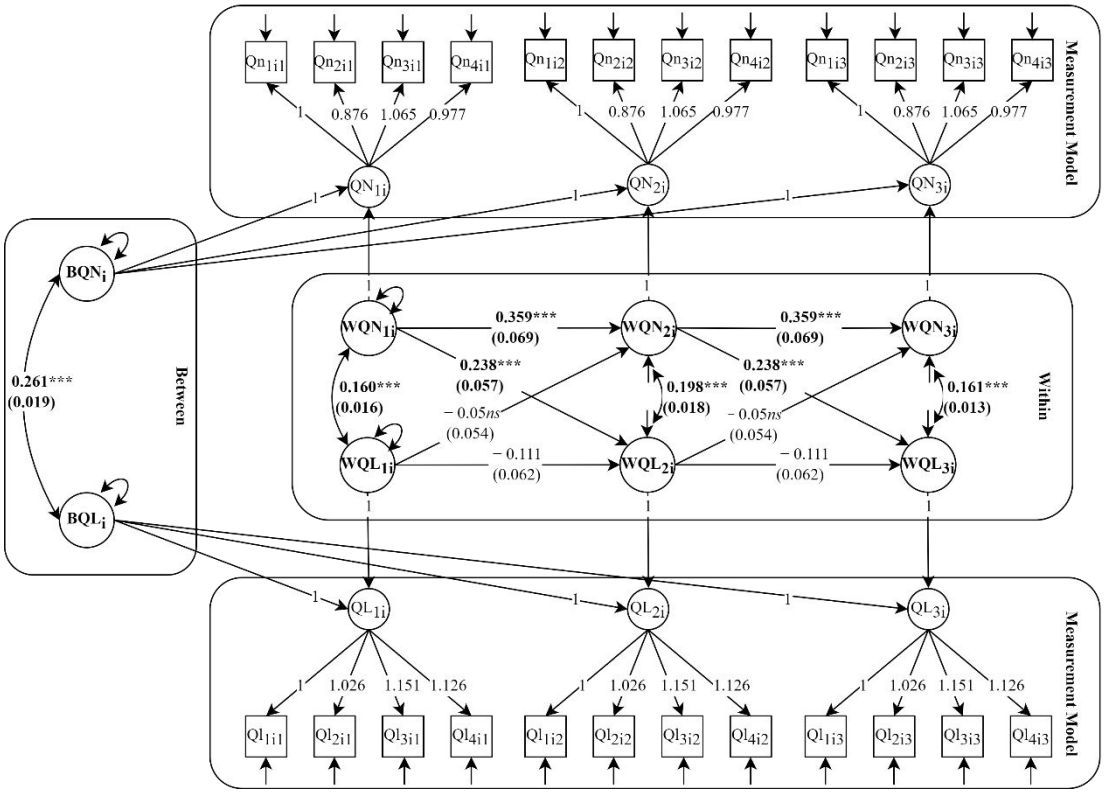
Next, we moved to the estimates at the with-person level. Cross-sectional covariance analysis showed significant T1 covariation (β= 0.160, p<0.001) and T2 and T3 residual covariation (β= 0.198, p<0.001; β= 0.161, p<0.001, respectively). These results indicate that a within-person change (deviation from the individual's expected score) in quantitative job insecurity is

positively associated with a within-person change in qualitative job insecurity. In other words, employees who experienced a higher-than-usual level of quantitative job insecurity at one point also reported a spike in the experience of qualitative job insecurity.

Third, the autoregressive paths were significant for quantitative job insecurity (β=0.359 $p<0.001$) but not for qualitative job insecurity (β=−0.111, p=0.074). These results suggest that employees who at one point in time experienced an increase in a threat to job loss (*t-1*) are more likely to experience an increase in a threat to job loss later in time (*t*).

Finally, we analysed the intraindividual cross-lagged paths between quantitative and qualitative job insecurity. In line with Hypothesis 1, quantitative job insecurity was positively associated with qualitative job insecurity six months later (β= 0.238, $p<0.001$). Employees who experienced a higher-than-usual threat to job loss at one point in time experienced a higher-than-usual threat to job characteristics six months later. In contrast with Hypothesis 2, the results did not support a positive lagged association between qualitative job insecurity and quantitative job insecurity. These findings led to the rejection of Hypothesis 3, which suggested a reciprocal relationship between quantitative and qualitative job insecurity.

Figure 1 The results of the random-intercepts cross-lagged panel model with standardized path coefficients.



Note: $p < 0.05$ *, $p < 0.01$ **, $p < 0.001$ ***; QNti ─ latent quantitative job insecurity; QLti ─ latent qualitative job insecurity; BQNi ─ random intercept for quantitative job insecurity; BQLi ─ random intercept for qualitative job insecurity; WQNti ─ within-person fluctuations in quantitative job insecurity; WQLti ─ within-person fluctuations in qualitative job insecurity. The graphical representation of the research model is based on the article by Mulder and Hamaker (2021).

Discussion

The objective of this project was to identify the relationship between quantitative and qualitative job insecurity. We implement the conservation of resources (COR) theory to propose a reciprocal relationship. Furthermore, we conduct a stepwise procedure to separately examine each direction in which quantitative and qualitative job insecurity might be related to one another. To answer our research question, we performed a multiple indicator random-intercept cross-lagged panel model (RI-CLPM) (Mulder and Hamaker, 2021). We used three-wave longitudinal data collected every 6 months from the Belgian-employed population. The results are consistent with prior research,

as we find a positive and significant correlation between quantitative and qualitative job insecurity at the between-person level. That said, employees who, on average, report a higher level of quantitative job insecurity are more likely on average to report a higher level of qualitative job insecurity. In addition, quantitative and qualitative job insecurity are found to be significantly related at the within-person level, which indicates a positive interaction between an experienced change in quantitative and qualitative job insecurity. In other words, an employee who at t_y experienced a higher-than-usual (or a lower-than-usual) threat to job loss was more likely to simultaneously experience a higher-than-usual (or a lower-than-usual) threat to job features. Lastly, the cross-lagged analysis of the relationship between quantitative and qualitative job insecurity failed to confirm a reciprocal relationship. The results indicate a unidirectional relationship. Specifically, we found that employees who experienced a higher-than-usual threat of job loss were prone to experience a higher-than-usual threat to job characteristics six months later (Laursen and Hoff, 2006).

Theoretical implications

First, we looked at the concurrent interdependence between quantitative and qualitative job insecurity. At the between-person level, the results showed a significant positive association between quantitative and qualitative job insecurity, which means that employees who, on average, experienced a higher threat to job loss than other employees also tend to experience a higher threat to job characteristics. The analogous association was found at each measurement point at the within-person level. Specifically, employees who experienced an increase (or decrease) in quantitative job insecurity (from their average score) simultaneously experienced an increase (or decrease) in qualitative job insecurity. These results indicate that, although both dimensions of job insecurity are independent stressors, they are strongly related to one another at the baseline (average experience of quantitative and qualitative job insecurity) and in the trajectory of their change over time.

These observed interdependencies between quantitative and qualitative job insecurity could be linked with the sources of job insecurity. An abundance of personal and environmental factors has been linked with job insecurity (Shoss, 2017). These variables could be further classified as stable or time-invariant, such as demographics or personality traits, and more dynamic (time-varying) organisational changes. Although it has never been explicitly tested, we use our results to cautiously propose that the link between the quantitative and qualitative job insecurity at the between-person level (i.e., between the intercepts) is due to the stable sources of job insecurity (personal characteristics and demographics). In contrast, the link between the time-dependent discrepancies (over time fluctuations from a mean) is due to more volatile organisational changes.

In a recent meta-analytical study, Jiang and colleagues (2021) synthesised previous studies and concluded that personality characteristics (i.e., positive vs negative affectivity, neuroticism, internal vs external locus of control, extraversion vs introversion, secure vs insecure attachment) are important predictors of felt job insecurity and were found to have a similar effect on how employees experience both, a threat to job loss and a threat to job characteristics. For instance, employees with higher (vs lower) levels of internal locus of control appear to experience lower job insecurity (Debus et al., 2014), and this association seems to be comparable for both dimensions (Xiao et al., 2018). Similarly, demographic variables such as tenure, gender, educational level, union membership, employee contract, and occupational position, often included as control variables, are also associated with experiencing quantitative and qualitative job insecurity (Keim et al., 2014). Looking at the distribution of job insecurity across our sample (see Appendix A), we indeed observe a tendency for quantitative and qualitative dimensions to go hand in hand (higher levels of quantitative and qualitative job insecurity for women vs men, part-time vs full-time, white-collar vs blue-collar, etc.). These variables are stable (time-invariant), which suggests that their effect on quantitative and qualitative job insecurity remains constant for each respondent over time. In that respect, we propose that these variables

(time-invariant antecedents) directly affect quantitative and qualitative job insecurity at the between-person variance rather than at the within-person level.

At the same time, organisational factors are more volatile— hence, they might better explain within-person changes in quantitative and qualitative job insecurity. Organisational factors could be defined as work conditions that either enhance employees' well-being or cause strains (Bakker and Demerouti, 2007). Jiang and colleagues (2021) argue that employees who have greater access to structural resources (i.e., more job autonomy, participation in decision-making, or greater organisational communication) or social resources at their workplace (i.e., peer support, organisational trust, good relationship with the supervisor), are likely to report lower than their usual levels of job insecurity. In contrast, employees who experience higher organisational demands (i.e., work pressure, workload, conflicts, organisational change, or abusive supervision) or decreased availability of resources are expected to report a spike in the experience of threats to job loss and job characteristics. In that respect, as job resources and demands fluctuate, their effect on an individual's perception of job insecurity varies, too. Thus, we propose that organisational changes (time-variant antecedents of job insecurity) are directly linked with quantitative and qualitative job insecurity at the within-person level rather than at the between-person level.

To our knowledge, this is the first study that examines the associations between the two dimensions of job insecurity, separately at the within and between-person levels. Our results align with the previous studies, which suggest that quantitative and qualitative job insecurity are similarly affected by the antecedents (Jiang et al., 2021; Keim et al., 2014). We go a step further and cautiously suggest that the stability of the work-related variables (time-invariant vs time-variant) determines whether they affect the average perception of job insecurity (between-person variance) or its time-depending fluctuations (within-person). It is, however, only an interpretation of the

results and an attempt to link our results with the current knowledge of the antecedents. Future research should evaluate this explicitly.

Next, the intraindividual autoregressive paths were significant for quantitative job insecurity but not for qualitative job insecurity. The carry-over effect of quantitative job insecurity was positive, meaning that an individual who experienced a higher threat to job loss (concerning the individual's average level) was more likely to continue experiencing their job as insecure six months later. On the other hand, the carry-over effect of qualitative job insecurity was nonsignificant, which means that a higher perception of qualitative job insecurity (concerning individuals' average) at one point does not predict an elevated perception of this threat in the future. This aligns with the previous research that found nonsignificant within-person stability effects for qualitative job insecurity (De Cuyper et al., 2022).

One explanation for these results may be how we define and operationalise quantitative versus qualitative job insecurity. Specifically, quantitative job insecurity is a perceived threat to one resource— employment— and, therefore, only measures the worry and likelihood of a job loss (De Witte, 1999). On the other hand, qualitative job insecurity is defined and measured as a threat to many resources (unspecified job characteristics), which aims to cover an abundance of job features (Fischmann et al., 2021). When studied longitudinally, it could be that for the same employee, the measurement of qualitative job insecurity means a perceived threat of decreased salary at one point in time (measurement at time *t*) and decreased career opportunities in the next (for example, here six months or a year later measured at time *t+1* or *t+2*). Consequently, the previous experience measured with a qualitative job insecurity scale is less accurate in predicting the current threat to job characteristics compared with the predictive power of a quantitative job insecurity scale. It is important to remember that this is the first study that does these analyses at the within-person level. Thus, we cautiously suggest that the operationalisation of the tool might play a role in explaining the

results. We further encourage more person-centered studies to understand better the role and the consequences of the within-person carry-over effects.

The core interest of this study was to test how within-person variations of quantitative and qualitative job insecurity predict one another over time. We found that a temporal deviation in quantitative job insecurity is positively associated with a temporal deviation in qualitative job insecurity six months later. These results indicate that an employee who experiences a higher-than-usual threat to job loss is more likely to experience a higher-than-usual threat to job characteristics six months later. This supports our hypothesis that job-related resources travel in aggregates, called resource caravans and that a threat to employment as a key resource poses a direct threat to all job-related resources, which ultimately makes employees worried about losing important job features. Furthermore, these effects can be further supported by Jahoda's deprivation theory. According to Jahoda's deprivation theory, employment grants access to unique work resources, such as financial stability, social status, time structure, life purpose, career goals, and daily activities (Jahoda, 1982). As such, losing a job (or, in this case, the anticipation of job loss) triggers loss (or threat to loss) of all benefits (resources) that the job provides. Our results align with the prediction derived from Chirumbolo's JII model (Chirumbolo et al., 2017). In addition, the current study replicates and expands on the previous cross-sectional studies in this field, giving empirical evidence on the ordering of variables, thus providing evidence for the plausible causality effects (Callea et al., 2019; Chirumbolo et al., 2017, 2020).

In contrast, the reverse relationship was not found. Individuals who experienced a higher-than-usual threat to job characteristics did not experience a higher-than-usual threat to job loss six months later. This outcome contradicts that of Nawrocka and colleagues (2021), who found a positive longitudinal association between qualitative job insecurity and quantitative job insecurity. This inconsistency could be attributed to a different method used in this study. Specifically, a RI-CLPM differentiates

between-person and within-person effects, while the traditional CLPM does not. By controlling for the between-person differences and analysing the relationship between quantitative and qualitative job insecurity at the individual level, RI-CLPM might provide better estimates of these within-person processes. To check whether the method of the analysis affects the actual results in this study, we additionally conducted a traditional CLPM. We compared the results with those of the RI-CLPM. The model fit for RI-CLPM was significantly better than for CLPM ($\Delta \chi 2(8) = 905.217$, $p < 0.001$). The standardised coefficients of the RI-CLPM and traditional CLPM differed in significance levels and effect size for almost all associations. For example, the autoregressive paths for quantitative job insecurity in the CLPM were almost double the size when compared with the results from RI-CLPM ($\beta=0.788$ and $\beta=0.808$ vs $\beta=0.427$ and $\beta=0.470$). Additionally, when measured with CLPM, the autoregressive paths for qualitative job insecurity were positive, whereas the results of the RI-CLPM were nonsignificant. As for the cross-lagged effects, CLPM indicated a stronger effect size from quantitative job insecurity to qualitative job insecurity than RI-CLPM ($\beta=0.355$ and $\beta=0.322$ vs $\beta=0.152$ and $\beta=0.156$). Despite these differences, CLPM, similarly to RI-CLPM, found no significant lagged associations between qualitative job insecurity and quantitative job insecurity ($\beta=-0.017$ vs $\beta=-0.094$ and $\beta=-0.096$). Thus, for this sample, we found that qualitative job insecurity does not predict quantitative job insecurity when tested with RI-CLPM or a traditional CLPM. However, we still call for a cautious interpretation of these results, as this is the first study that examines these associations at the within-person level. To develop a full picture of whether qualitative job insecurity predicts quantitative job insecurity or not, further longitudinal research is needed.

Bringing these results together, we found no evidence for an intraindividual cycle between quantitative and qualitative job insecurity. However, as this is only the second study that examines the reciprocal relationship, the evidence is currently too scarce to make a firm conclusion. It is somewhat surprising that our results were in contrast with the previous study, which found that

qualitative job insecurity predicts quantitative job insecurity six months later (Nawrocka et al., 2021). However, we could argue that these inconsistencies might support our idea that the relationship between quantitative and qualitative job insecurity is, in fact, bidirectional; a 6-months time lag could be a breaking point for that cycle.

It is expected that a threat to job loss has a rather instant effect on a threat to job characteristics (i.e., if I perceive my job as insecure, I will rather quickly perceive my work benefits to be less secure). In contrast, a threat to job characteristics might need to take time to directly affect a threat to job loss (i.e., if I perceive my career opportunities hampered, I will not immediately fear for my job. However, with time, this threat might eventually lead to an increase in a worry for the employment). Considering the 6-month time lag used in both studies, the current study might have caught the last moments of the effects that a threat of job loss has on a threat to job characteristics, whereas in the previous study by Nawrocka and colleagues (2021), this effect might have been already imperceptible, while the effect of the threat to job characteristics on a threat to job loss has gained power and emerged in the analysis.

To date, the optimal time interval to test this relationship remains unclear, as only a 6-month time lag between quantitative and qualitative job insecurity has been analysed. Studies on time lags suggest that effects are more prominent when shorter time lags are applied (Dormann and Van de Ven, 2014). Thus, the reciprocal effect might be observed with a time lag shorter than 6 months. On the other hand, some scholars argue that weak effects need a longer time to unfold (Dormann and Griffin, 2015). This might explain why the effects of qualitative job insecurity on quantitative job insecurity were absent. In other words, quantitative job insecurity, which threatens overall employment, might have a strong and rapid effect on qualitative job insecurity. In contrast, threats to job characteristics as a milder type of threat, might take a longer time to unfold and affect employee's perceived overall job security. One way to estimate an optimal time lag could be through a

"shortitudinal" pilot study, which is conducted with time intervals that are most likely shorter than the optimal time lag and then estimates how various time lags affect the associations between the two dimensions of job insecurity (Dormann and Griffin, 2015).

Limitations and future research

As with any study, a myriad of limitations should be considered. First, we used self-reported measures, which could raise concerns about common method and response biases (i.e., social desirability). We tried to decrease the risk of these biases by 1) highlighting the voluntary and anonymous participation, 2) using internationally validated scales, and 3) separating in time the predictor and the outcomes variables (Podsakoff et al., 2012). Furthermore, the data were collected independently, without any involvement from the companies' management, which decreases the risk of socially desirable answers.

Second, the data were collected via a non-probability sampling procedure, possibly resulting in a sampling bias. More specifically, the data were collected from 14 organisations; hence, certain working groups lack proper representation. In addition, women were slightly underrepresented, while full-time workers were overrepresented compared to the Belgian population (StatBel, 2014). Also, from the dropout analysis, we found that dropout was more likely among higher-educated employees and blue-collar workers. Overall, we deal with a sample that does not correctly represent the population of Belgian employees when considering demographic variables. However, in their meta-analytical study, Jiang and colleagues (Jiang et al., 2021) argue that demographic variables are poor predictors of job insecurity. Furthermore, via RI-CLPM, we controlled for these individual differences. Thus, higher dropout amongst employees with higher education and blue-collar workers and an inaccurate representation of the Belgian working population should not have significantly influenced our results.

Finally, although we controlled for the between-person differences, there might be heterogeneity at the within-person level that we did not account for in the current study. Although RI-CLPM allows us to control for between-person differences, it assumes that individual's responses to the temporal deviations are identical. In other words, we expect that all employees who experienced a higher-than-average threat of job loss report a higher-than-average threat to job characteristics six months later and vice versa. However, the relationship between quantitative and qualitative job insecurity may differ between individuals who differ according to certain characteristics. Accordingly, we used a set of demographic variables (type of contract, work time frame, work experience, organisational and positional tenure, position, education level, and gender) and conducted a multi-group RI-CLPM to test whether within-person processes differ between these groups of individuals (detailed results are available upon the request) (Mulder and Hamaker, 2021). Using chi-square difference testing, we compared a model where lagged regressions were freely estimated for each group (for example, employees with temporary vs permanent contracts) with a model including equality constraints on these parameters across the groups. The results revealed that all models with equality constraints fit the data better, which indicates that the within-person processes are similar regardless of the background characteristics. Nevertheless, the relationship between quantitative and qualitative job insecurity might differ for employees who differ in the variables not measured in this study. Next to demographic variables, unmeasured in the current study, third variables, such as job resources and job demands, were found as strong predictors of job insecurity (Jiang et al., 2021). Thus, future studies could test if and how the relationship between quantitative and qualitative job insecurity differs for groups of employees, conditional on their access to work-related resources and/or the intensity of present job demands.

Conclusions

Overall, our results highlighted the interdependence between quantitative and qualitative job insecurity, separately at the between-person (employees who usually feel insecure about their job also feel insecure about their job characteristics) and the within-person (an employee who experiences an increase in threat to job loss concurrently experience higher than their usual threat to job characteristics). Moreover, with the results that indicate over 60 % of the variance of both quantitative and qualitative job insecurity present at the between-person level, we call for a determined shift towards person-oriented research in the field of job insecurity. Although the empirical evidence did not prove the expected reciprocal relationship, it gave longitudinal support for Chirumbolo's JII model (Chirumbolo et al., 2017). More specifically, our findings suggest that an employee who experiences a higher-than-usual threat to job loss (quantitative job insecurity) is more likely to experience a higher-than-usual threat to job characteristics (qualitative job insecurity) six months later.

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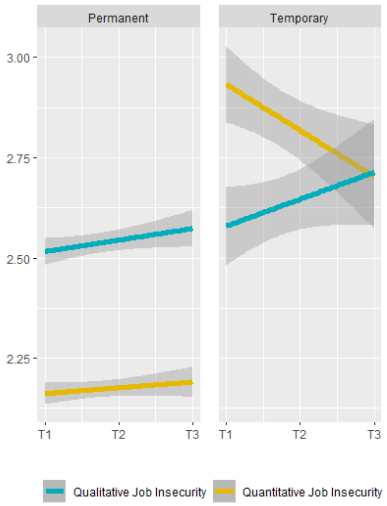
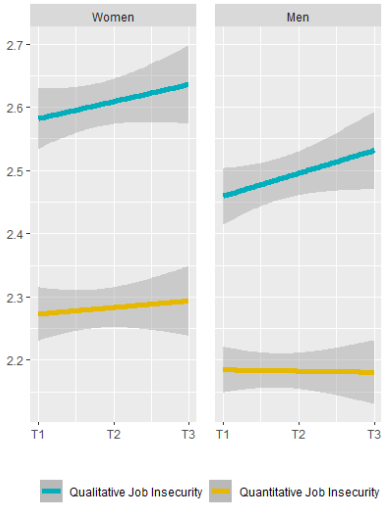
Appendix A Graphical representation of the between-person differences for quantitative and qualitative job insecurity

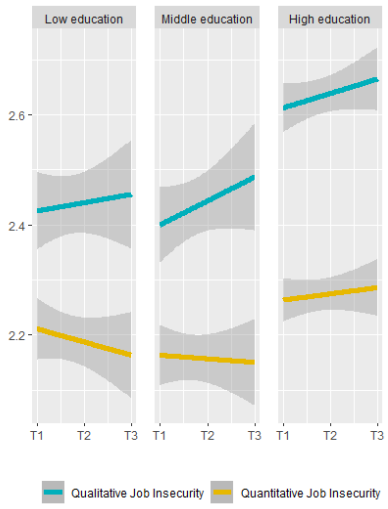
A. Employment Contract



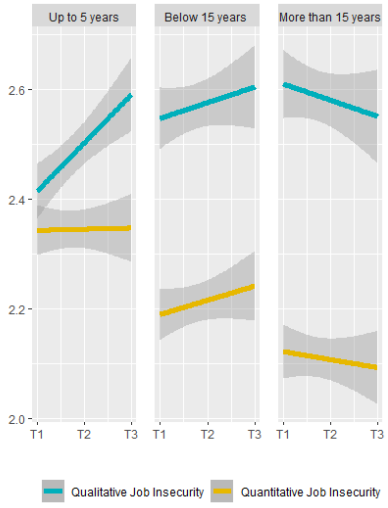
B. Gender



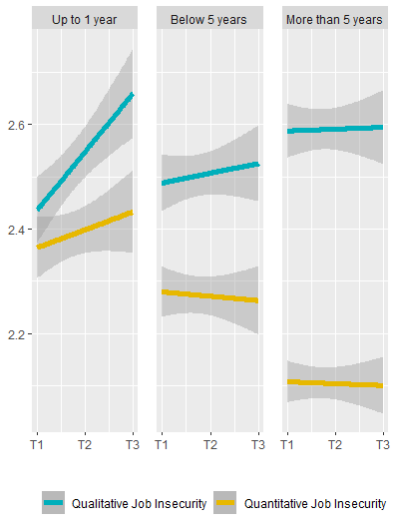
C. Level of education



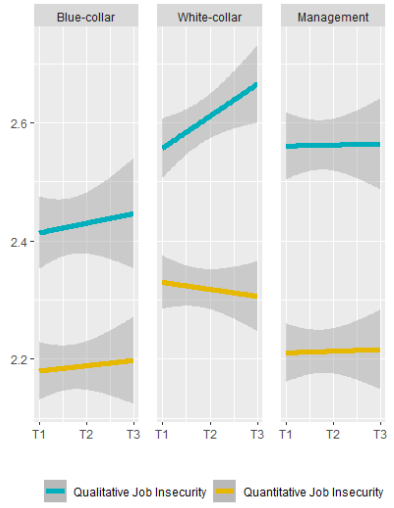
D. Organizational tenure



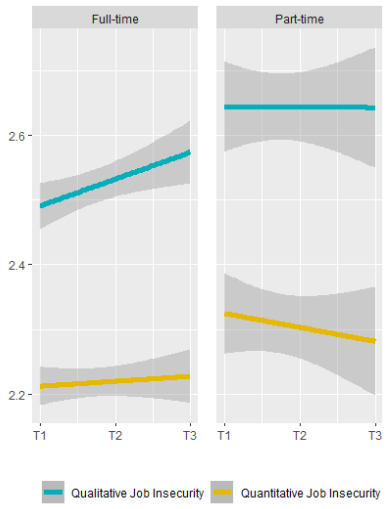
E. Positional tenure



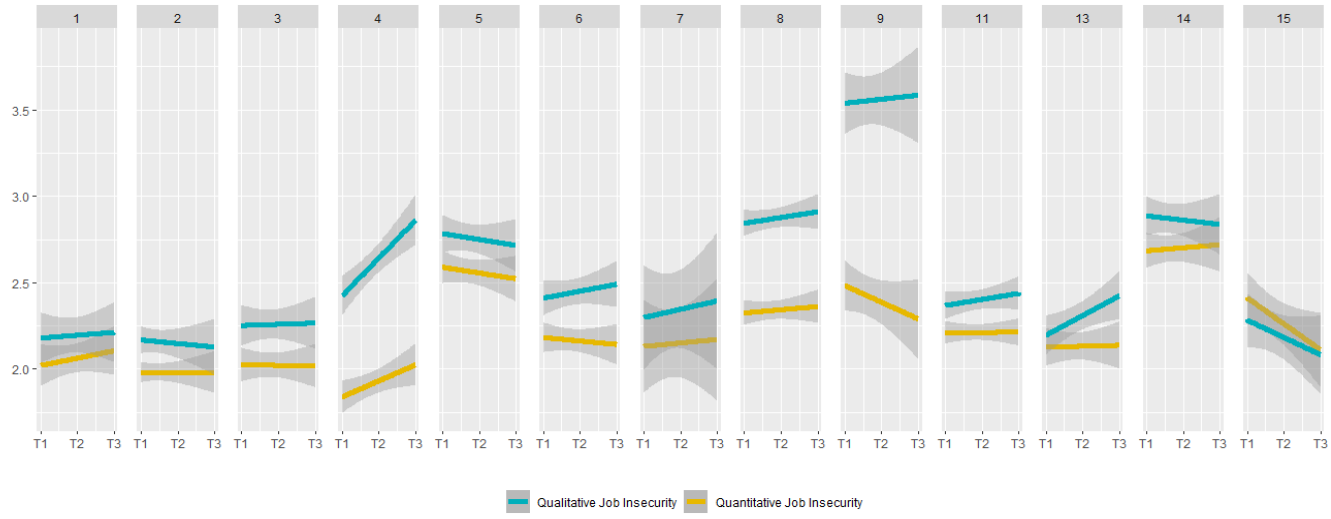
F. Occupational position



G. Part-time vs Full-time



H. Organization



CHAPTER 3: TRAJECTORIES OF PERCEIVED QUANTITATIVE AND QUALITATIVE JOB INSECURITY IN RELATION TO KARASEK'S JOB DEMAND-CONTROL MODEL.

Abstract: The current study aimed to explore the subgroups of employees who differ in their developmental patterns of job insecurity and to examine if these groups differ in the perception of the key job characteristics from Karasek's job demand-control model, namely workload and job autonomy. We investigated the experience of job insecurity by considering both the quantitative and qualitative dimensions. We used three-wave longitudinal data (6-month time lag) collected from the Belgian working population (N=784) and conducted parallel-process latent class growth analysis (LCGA). Five job insecurity patterns were identified: (1) stable high (n = 73), (2) stable moderate-high (n = 216), (3) qualitative JI-dominant (n = 166), (4) stable moderate-low (n = 167) and (5) stable low (n = 161). Apart from one class (i.e., qualitative JI-dominant) where the experience of qualitative job insecurity was high and moderate-low for quantitative job insecurity, the experience of both dimensions was either similarly high or low. Employees in trajectories with high and moderate-high initial levels of job insecurity experienced significantly higher levels of workload and lower levels of job autonomy in comparison with employees in trajectories with low and moderate-low initial levels of job insecurity. Additionally, the qualitative JI-dominant trajectory experienced a similar workload level as groups with moderate and low trajectories of job insecurity; however, they experienced significantly lower job autonomy. The findings indicate large variability in trajectories and combinations of quantitative and qualitative job insecurity and stress the importance of job characteristics in developing these trajectories.

Keywords: qualitative job insecurity, quantitative job insecurity, workload, job autonomy, latent class growth analysis, person-centered approach

Introduction

The post-pandemic labour market has seen a great deal of social, political, and technological transformations. During these turbulent times, organisations' attempts to stay afloat repeatedly lead to workplace changes (i.e., mergers, downsizing, relocation, implementation of new technology, etc.). These reforms create a precarious environment, consequently bringing the issue of insecure working conditions to the fore. The perception of job insecurity might relate to the continuity of the current employment (i.e., quantitative job insecurity) or the work conditions (i.e., qualitative job insecurity). Job insecurity is commonly addressed as a predominant stressor in work life (Lee et al., 2018), consistently associated with adverse consequences to employees' health and well-being (De Witte et al., 2016). Despite these adverse effects, little is known about how a change to basic job characteristics, which are controlled and modifiable by employers and the company's HR departments, affects overall perceptions of job insecurity. For instance, research by Sianoja and colleagues has found that longer lunch breaks, taken outside of the office with the possibility to detach from work, lead to more successful lunch time recovery and less exhaustion one year later (Sianoja et al., 2016). In parallel, the perception of job insecurity might likely be reduced, and its effects managed when one experiences a positive change in basic work conditions. Given that "the devil is in the details", it is thus urgent for academics and practitioners to thoroughly understand how job characteristics affect the job insecurity experience.

To date, scientific literature consistently indicates that the experience of job insecurity is an individual process that varies among employees (see literature reviews De Witte, 2005; Shoss, 2017; Sverke et al., 2002). That said, how a threat to the job is perceived and how it develops over time is unique for each employee rather than being homogeneous across the population (Klug et al., 2020). Despite this, individual differences in the experience of job insecurity have been largely left understudied. Only

recently has research taken an interest in mapping these differences by taking a person-centered approach. A person-centered approach offers a way to identify subgroups of individuals who experience different patterns as well as the long-term development of job insecurity (Laursen and Hoff, 2006). Recent analyses discover subpopulations with distinct profiles in terms of both the average levels of perceived job insecurity (insecure vs secure patterns) (De Cuyper et al., 2019; Urbanaviciute et al., 2021) and its long-term development (stable/increasing/decreasing trajectories) (Klug et al., 2019; Van Hootegem et al., 2021). It is particularly relevant as distinct levels or patterns of job insecurity might have notably distinct predictors and negative outcomes (Vander Elst et al., 2018). For instance, De Cuyper and colleagues found that employees from secure profiles (i.e., low to no experience of job insecurity) reported high employability, presented more networking behaviours, and received more support and development opportunities from their organisations (De Cuyper et al., 2019). In addition, workers who were employed with temporary contracts and who had been previously unemployed were more likely to be identified in the high stable or increasing job insecurity trajectories (Klug et al., 2019). Thus, when it comes to deciphering the link between job characteristics and job insecurity, it is of great importance to identify the subgroups of employees with different longitudinal patterns of job insecurity.

Numerous theories have been developed to explain the relationship between job characteristics and employees' well-being (Bakker and Demerouti, 2007; Hackman and Lawler, 1971). Among these, Karasek's 'Job Demand-Control' model (JDC model), a stress-management model of job strain, is arguably one of the most influential theoretical models in the field of occupational and work-related stress. The model reduces a broad range of potential work stressors to two universal job characteristics. Job demands include a high working pace, overwhelming workload, and time pressure. Control relates to autonomy over decisions relevant to the management of the work activities. In the JDC model, working conditions in which employees experience high job demands and low control result in impaired well-being and health. An

extensive body of research links high job demands and low job control with job insecurity (see meta-analyses Jiang et al., 2021; Keim et al., 2014); however, the link between job characteristics and varying patterns of job insecurity has not been studied. Building on the conservation of resources theory (COR), we argue that workload exhausts employees' resources and heightens their perception of job insecurity. In contrast, employees with more control over their jobs are presented with conditions that help them to attain their goals, build resiliency towards obstacles and accordingly lower susceptibility to perceived job insecurity.

Our study contributes to the literature in three ways. First, we identify subgroups of employees who differ in their usual levels and long-term development of job insecurity, thus considering the time aspect. This is important, as employees seem to endure either stable or changing (increasing and decreasing) trajectories in the experience of job insecurity (Kinnunen et al., 2014). Second, we investigate the experience of job insecurity holistically by considering two dimensions: quantitative and qualitative job insecurity. Both dimensions of job insecurity are independent work stressors with respective consequences on employees' well-being (Shoss, 2017). Although both dimensions are interrelated, they are not mutually inclusive (Urbanaviciute et al., 2021), which means that individuals might experience various combinations of level (high vs low) and shape (increasing vs decreasing vs stable) of both dimensions (Van Hootegem et al., 2021). In addition, we test how these trajectories relate to the job characteristics of the JDC model. Building on Karasek's job demand-control model (Karasek, 1979), we consider a key job demand, i.e., workload, and a key job resource, i.e., job autonomy, as central job characteristics and investigate their role in job insecurity development. To the best of our knowledge, this is the first study to investigate this link with a person-centered approach. Given the exploratory nature of this study, we circumvent the prediction of the number and shape of job insecurity trajectory patterns. Nevertheless, building on COR, we suggest that high workload and low job autonomy are particularly prevalent within high and increasing job insecurity trajectories.

Perceived job insecurity as a work stressor

Job insecurity entails the perceived likelihood and worries about the future existence of the current job (De Witte et al., 2015). This can be further understood as a threat to any characteristics of employment. In that respect, the literature distinguishes between quantitative and qualitative job insecurity. Quantitative job insecurity refers to an individual's perception of the potential loss of the job as such, whereas qualitative job insecurity refers to a threat of loss of highly valued job features, such as salary development or career opportunities (Hellgren et al., 1999). According to the conservation of resources (COR) theory, individuals "strive to obtain, retain, foster, and protect those things they centrally value", such as their employment status or highly valued conditions of the job (i.e., salary, social status, career progress). Loss or threat to these resources leads to stress (Hobfoll, 1989). Accordingly, researchers have conceptualised both dimensions of job insecurity as work stressors (Cheng and Chan, 2008; Keim et al., 2014; Sverke and Hellgren, 2002). Work stressors are demanding aspects of the job with negative consequences for the (somatic) health and (psychological) well-being of individual employees (De Witte, 1999; De Witte et al., 2016; Shoss, 2017)

The definition of perceived job insecurity underscores three core characteristics. First, job insecurity involves uncertainty. As opposed to actual loss, job insecurity pertains to threats that have not yet materialised. Previous research has indicated that the stress induced by the anticipation of an event is equal, if not more destructive, than the actual event (Griep et al., 2016). Second, job insecurity is involuntary; An employees doesn't know whether, and if so, how their job will continue or change, and that level of uncertainty differs from the individuals' preferred level of job security (Lee et al., 2018; Shoss, 2017). Lastly, job insecurity is a subjective experience. In other words, the rise and the consequences of job insecurity depend on how individuals perceive and appraise the workplace (Shoss, 2017). Borrowing

from Lazarus' transactional stress model, the perception of a stressor (in that respect, a perceived threat to the current job situation) is a blend between objective stimuli (such as mergers, downsizing, implementation of new technologies, etc.) and employees' individual characteristics. Individuals who work in the same organisation and who share an "objectively comparable" workplace context can still differ in terms of demographics (age, education, gender, type of contract, etc.), availability of resources (both personal and organisational), and their appraisals of job demands, which altogether shape how individuals perceive the current events around them (Bakker and Demerouti, 2017). Consequently, even though job insecurity is an omnipresent work stressor, it can be perceived differently from person to person (Sverke and Hellgren, 2002).

Job insecurity trajectory patterns

The current study aims to identify different trajectories of quantitative and qualitative job insecurity (Kinnunen et al., 2014). Prior research predominantly overlooked individual differences in the experience of job insecurity among the population. Nonetheless, recent studies give a clear indication that the experience of job insecurity differs in terms of levels (insecure vs secure patterns) and its long-term development (stable/increasing/decreasing trajectories).

To date, there is consistent evidence that most employees experience little or no insecurity regarding their current jobs, whereas the remaining group presents layers of increasingly insecure profiles. For instance, De Cuyper et al. (2019) empirically identified five job insecurity profiles (distribution of covarying quantitative and qualitative job insecurity). Whereas a majority felt relatively secure (profiles 1 and 2 constituted 59.80% in sample 1 and 75.32% in sample 2), the remainder experienced increased job insecurity, with almost 20% of employees in both samples classified in relatively insecure profiles (De Cuyper et al., 2019). These patterns were later confirmed in the study of Urbanaviciute et al. (2021), who identified three

patterns, where over 89% of the sample experienced balanced low job insecurity (both quantitative and qualitative), with the remainder split between the qualitative dominant and the balanced high job insecurity profile (Urbanaviciute et al., 2021). Interestingly, in both studies, the profiles with "moderate" levels of job insecurity were dominated by perceived qualitative job insecurity. As suggested by Urbanaviciute and colleagues, although both dimensions are intrinsically interwoven, quantitative job insecurity may always be accompanied by qualitative job insecurity, while qualitative job insecurity might increase independently (Urbanaviciute et al., 2021).

Although longitudinal research on job insecurity is still limited, some research has looked at its longitudinal trajectories. Whereas for most employees, job insecurity remains relatively stable over time, the remaining group showed either increasing or decreasing trajectories. For example, Kinnunen et al. (2014) identified eight trajectories of quantitative job insecurity across Finnish university employees over two years. Most of the sample (75%) belonged to the stable classes, in which over half of the sample presented a stable low profile (Kinnunen et al., 2014). Klug et al. (2019) identified six distinct trajectories of quantitative job insecurity among young workers who just entered the labour market. Similarly to the previous study, over 73% belonged to stable profiles, and over one-third of the sample barely even worried about job loss (stable low) (Klug et al., 2019). Finally, Van Hootegem et al. (2021) examined the longitudinal patterns of job insecurity, considering both quantitative and qualitative job insecurity. Their results confirm that the development of both dimensions is parallel. Five distinct profiles were identified. The majority of the respondents (66%) belonged to stable classes, and over half experienced little to no job insecurity (Van Hootegem et al., 2021).

Based on past research, we can expect that the majority of our sample will experience rather low job insecurity and will present stable trajectories. However, due to the exploratory nature of the method used to identify distinct trajectory patterns (i.e., latent class growth analysis), we do not

propose hypotheses about the subgroups. Instead, our research question reads as follows:

RQ1: What distinct trajectory patterns of quantitative and qualitative job insecurity can be observed, differing in mean levels and mode of change?

Karasek's Job Demand-Control model in relation to job insecurity trajectory patterns

In 1979, Robert Karasek published a seminal article introducing the Job Demand-Control model (JDC) that outlines the impact of job characteristics on health and well-being. In the model, he postulated that mental strains result from a joint effect of the current demands of the work situation and the extent of "decision-making freedom". These two features cover key aspects of the perception of the work environment (Karasek, 1979). Job demands typically refer to psychological demands such as workload. Workload principally defines how employees experience working pace and time pressure (De Witte et al., 2007). A high workload is an undesirable work stressor linked with job strains and negative responses such as anxiety, depression, and burnout (Bowling et al., 2015).

A second key aspect of the work environment in the JDC model is job control, also referred to as decision latitude or job autonomy (Karasek, 1979). Job control/autonomy refers to the perceived freedom to determine task elements, including work goals, methods to achieve them, and the order, amount, and pace of work (De Jonge, 1995). In contrast to workload, job autonomy is part of the "organisational aspects of the job that are functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, or stimulate personal growth, learning, and development" (Bakker and Demerouti, 2017, p. 274). Job autonomy helps to cope with job demands, improves work engagement, and protects from the development of job strains (Bakker and Demerouti, 2017).

Through the lens of conservation of resource (COR) theory, workload can be viewed as a work condition that overstrains employees' resources. Resources can include objects (e.g., car, laptop, tools for work), conditions (i.e., tenure, work environment), personal resources (i.e., skills, personal traits, employability) and energy resources (i.e., money, time) (Hobfoll et al., 2018). According to the conservation of resources theory, individuals strive to obtain and maintain important resources. Employees who are increasingly overwhelmed with work tasks and time pressure, i.e., those who perceive a high workload, overuse their resources to meet the demands of their job, which could lead to strain. Indeed, a high workload has been linked with the experience of exhaustion, withdrawal, and lower commitment (Bowling et al., 2015). In line with COR principles, employees with fewer resources are more vulnerable to experiencing resource loss or threats to resources (Hobfoll et al., 2018). Accordingly, a high workload might exacerbate the perception of job insecurity.

On the other hand, job autonomy is a prominent job resource (Baillien et al., 2011; De Jonge, 1995; De Spiegelaere et al., 2014). Employees who are more in control of their work perceive their environment and themselves as more resourceful and capable of dealing with job demands. Organisations that allow employees to be autonomous encourage employees to dedicate effort and abilities to work tasks (Bakker and Demerouti, 2007). Given that resources travel in packs or 'resource caravans', high or increasing job autonomy might uplift personal resources such as self-esteem, self-efficacy, employability, and empowerment (Hobfoll et al., 2018). Consequently, employees are more likely to complete their work successfully, feel more engaged, and feel resourceful enough to regulate their response to work changes and act upon any change that might induce feelings of insecurity. Furthermore, employees who enjoy more autonomy feel they are performing important work that is necessary for the organisation's success, thus perceiving a lower likelihood of being dismissed. Therefore, low or decreasing levels of job insecurity might be more likely among individuals who experience high and/or increasing job autonomy.

In line with the conservation of resources theory, we expect that within our sample, employees with the highest initial workload and the lowest level of autonomy may present the highest initial levels of job insecurity, whereas employees with the lowest initial workload and the highest level of autonomy may experience the lowest initial levels of job insecurity. At the same time, employees who experience stable (time-invariant) workload and job autonomy, might be more prone to exhibit steady levels of job insecurity, whereas change (increase or decrease) in workload and/or control might lead to the associated changes (increase/decrease) in job insecurity.

RQ2: Do employees classified in high job insecurity trajectories simultaneously experience high initial workload and low initial job autonomy?

RQ3: Do employees classified in increasing job insecurity trajectories simultaneously experience an increase in workload and a decrease in job autonomy?

Methods

Sample and procedure

The data of the present longitudinal study were collected from Flemish employees (i.e., the Dutch-speaking region of Belgium) as part of a larger study and used in published research (Nawrocka et al., 2021). The survey was published on the website of an online HR magazine (vacature.com), calling for volunteers to participate in a survey on occupational health and well-being. Respondents were asked to access the questionnaire via a link to an online tool. The purpose of the study, as well as the assurance of anonymity and confidentiality, were stated in the introduction. In the first wave of data collection (September 2017), 2355 individuals filled out the questionnaire. All participants were invited for the subsequent two waves, which were organised in March 2018 (T2) and September 2018 (T3), hence a

6-month time lag between each wave. Overall, 1494 employees filled in the questionnaire at T2 (63.4% response rate) and 1114 at T3 (47.3% response rate). To control for contextual bias, the final sample was limited to participants who explicitly avowed to remain at the same organisation and the same position throughout the observation period. There were two reasons behind this decision. First, on average, individuals going through a transition period at work experience a higher level of job insecurity than individuals who do not go through these changes (Lee et al., 2018). Furthermore, these changes might affect not only the perception of job insecurity but also perceptions of workload and job autonomy. To provide robust estimates for different trajectories of job insecurity and the predictive power of workload and job autonomy on these trajectories, we created a sample of employees who are considered homogeneous regarding the stability of their employment.

The final sample included 784 employees who participated in all three waves, worked for the same organisation and were in the same position throughout the observation period. Over half of the respondents were women (55.2%, n=433). The age of participants varied between 21 and 64 years old (M=42.58; SD=10.34). Across the sample, close to 4% (n=31) of participants received a lower secondary education degree, 17% (n=133) had obtained higher secondary education, 45.5% (n=357) had non-university higher education and 33.5% (n=253) had a university degree (higher education, including bachelor, master, and doctoral degree). Respectively, 5.4% (n=42) were blue-collar workers, 60.1% (n=471) were white-collar workers, and 34.6% (n=271) were in managerial positions. Over three-quarters of the interviewees worked in the private sector (76.4%, n=599) and almost everyone who answered worked with a permanent contract (n=580, 96.8% of valid responses). Most of the interviewees worked full-time (80.7%, n=633). On average, respondents had 10.52 years of positional tenure (SD=9.44). In terms of gender, age, type of contract and sector of work, the sample is a good representation of the Flemish population. On the other hand, we observe an underrepresentation of employees with lower

education (below secondary education, 4% vs 14%) in favour of employees with middle education (higher secondary or non-university education, 63% vs 40%). Furthermore, our sample overrepresents employees who work full-time compared to the population data (81% vs 61%, respectively). For detailed results, see Appendix A.

Measurements

Quantitative job insecurity was measured with the four-item scale developed by De Witte (2000) and validated by Vander Elst et al. (2014). It measures the perceived likelihood (e.g., "There is a chance that I will soon lose my job") and worries about job loss (e.g., "I feel insecure about the future of my job"). The items were rated on a five-point Likert scale from 1 (totally disagree) to 5 (totally agree). The internal consistency for the current sample was α=0.925 at T1, α=0.932 at T2, and α=0.935 at T3.

Qualitative job insecurity was measured with a four-item scale developed by De Witte and De Cuyper and validated by Fischmann et al. (2021). It measures the perceived likelihood (e.g., "There is a chance that my job will change in a negative way") and worry of loss or negative change in the overall job content and working conditions (e.g., "I worry about what my job will look like in the future"). The items were rated on a five-point Likert scale from 1 (totally disagree) to 5 (totally agree). The internal consistency for the current sample was α= 0.904 at T1, α= 0.927 at T2, and α= 0.913 at T3.

Workload was measured with four items. Three items were taken from the Short Inventory to Monitor Psychosocial Hazards (SIMPH), a scale to measure job characteristics and their work-related outcomes: Pace of Work (e.g., "I work under time pressure") (Notelaers et al., 2007). The fourth item was taken from the Dutch Boredom Scale (DUBS) and measured work underload (i.e., "I don't have enough work to do") (Reijseger et al., 2013). All four items were measured on a five-point Likert scale from 1 (Never) to 5

(All the time). We reverse-coded the item from the DUBS scale to match the items from the SIMPH scale. The internal consistency for the current sample was α= 0.86 at T1, α= 0.828 at T2, and α= 0.83 at T3.

Job autonomy was measured with four items. The first item was taken from the Autonomy scale of the Short Inventory to Monitor Psychosocial Hazards (SIMPH) (i.e., "I can influence my work pace"). The three remaining items were taken from the Maastricht Autonomy Questionnaire (e.g., "I can decide for myself how I carry out my work") (De Jonge, 1995). All four items were measured on a five-point Likert scale from 1 (Never) to 5 (All the time). The internal consistency for the current sample was α= 0.804 at T1, α= 0.831 at T2, and α= 0.819 at T3.

Analysis

The final dataset was constructed in SPSS, which was also used to create new variables and obtain descriptive statistics. The new dataset was saved and used in Mplus version 8.8, where, in the following steps, the principal analysis was conducted (Muthén and Muthén, 2017). The models were estimated using maximum likelihood robust estimation (MLR). The goodness of fit of comparative models was evaluated using multiple fit indices: the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Hu and Bentler, 1999); the root mean squared error of approximation (RMSEA; Steiger, 1990) and the standardised root mean squared residual (SRMR; Hu and Bentler, 1999). Abiding by Hu and Bentler's recommendations, we consider that CFI and TLI closer to 0.95 or higher, RMSEA lower than 0.06 and SRMR lower than 0.08 indicate a good model fit (Hu and Bentler, 1999).

Job insecurity trajectory patterns

Preliminary analysis: Measurement invariance and latent growth model (LGM) for quantitative and qualitative job insecurity

In the first step, we estimated the factorial structure of both quantitative and qualitative job insecurity. We compared a one-factor job insecurity model (M1) with the hypothesised two-factor model (M2) to ensure that each dimension measures a distinct aspect of job insecurity. Every item loaded on the corresponding latent factor (either a general job insecurity factor for a one-factor model or quantitative and qualitative job insecurity factors for the hypothesised two-factor model) at each time point. Item residuals were allowed to correlate with equivalent items across time. Next, we assessed measurement invariance by comparing a sequence of models with imposing restrictions to check if the respective items represent the same underlying constructs over time (Little et al., 2007). As our baseline model, we started with the configural invariance model, i.e., an unconstrained model with equal factor structure across time. Next, we estimated the metric invariance model (M3), which placed equality constraints on factor loadings of the corresponding items across time. The strong invariance model (M4) added equality constraints to the items' intercepts. Finally, the strict invariance model (M5) constrained residual variances (Brown, 2015). Research indicates that metric invariance is a minimum requirement to proceed with the evaluation of the structural paths of direct and mediated effects among latent factors (Xu et al., 2020).

Principal analysis: Parallel-process latent class growth analysis (LCGA) for quantitative and qualitative job insecurity

In the following step, we conducted parallel-process latent growth curve analysis (LGCA) to identify average trajectories simultaneously for quantitative and qualitative job insecurity (Zhou et al., 2022). Estimating mean intercept and slope allows one to assess the average level and change over time. In contrast, freely estimated variance indicates whether there are inter-individual differences in the means and trajectory of change for the two dimensions. The intercept loadings were fixed to 1 at each time point. Considering equal time lags between each measurement wave (6-month time lag), we fixed the slope loadings to 0, 1 and 2, respectively. We allowed the latent variables for quantitative and qualitative job insecurity measured simultaneously to correlate with each other.

Finally, the job developmental trajectories for quantitative and qualitative job insecurity were assessed with parallel-process latent class growth analysis (LCGA) (for a similar methodology, see Betts et al., 2014; Cruz et al., 2017; Van Hootegem et al., 2021; Zhou et al., 2022). LCGA identifies heterogeneous developmental patterns based on the estimations of an individual trajectory for each participant. The extended, parallel LCGA process allows for examining the joint development process of closely related constructs (here, quantitative and qualitative job insecurity). Next, the variance of the growth factors within each class (intercept and slope for each construct) is fixed to zero, which means that a trajectory pattern for individuals classified within the same class is assumed homogeneous.

We addressed two common issues for the estimation problems in mixture modelling to improve the accuracy of the class identification (Wickrama et al., 2016). First, we checked the assumption of the multivariate normality of the data as a non-normal distribution could lead to over-extracting latent

trajectory classes (Bauer and Curran, 2003). Univariate skewness and kurtosis of the items (for quantitative and qualitative job insecurity) had values lower than ±2.00, which is generally accepted as a normal distribution. Furthermore, we performed a multivariate skewness/kurtosis test (SK test), which compares the multivariate skewness and kurtosis values implied by the k-class model to those obtained from the observed data. A non-significant p-value suggested that the observed distribution did meet the assumption of multivariate normality (detailed results of those tests are available upon request). Second, we run each model with 500 random sets of starting values and 20 values for the final optimisation stage (Muthén and Muthén, 2017). This practice decreases the change of model estimation to so-called "local maxima" (i.e., the highest log-likelihood value is not replicated), which could lead to incorrect fit statistics, biased parameter estimates or adoption of an inferior solution − consequently giving an incorrect class solution. Increasing the random sets of starting values avail reaching the highest log-likelihood value (i.e., global solution) and avoiding "local maxima" (Hipp and Bauer, 2006). Additionally, to assess whether the model ran the global solution, we attempt to replicate the parameter estimates of a model with the highest log likelihood values by running a model with a seed value. If the solution is replicated, the model parameters are estimated based on a global solution (Wickrama et al., 2016).

The number of classes was decided based on several principles: a) fit indices, b) parsimony of the model, c) theoretical justification and d) interpretability of the distinct classes (Jung and Wickrama, 2008). Four principal fit indices were used to select the optimal final model: Bayesian information criterion (BIC), Entropy, Average Posterior Probabilities (AvePP) and the Lo-Mendell-Rubin adjusted likelihood ratio test (aLMR-LRT) (Nylund et al., 2007; Wickrama et al., 2016). A lower BIC value implies a better model fit. Entropy and average posterior probability values range from 0 to 1, where values closer to 1 indicate clearer class separation. The Lo-Mendell-Rubin adjusted likelihood test (aLMR-LRT) provides the difference in log-likelihood values between the k-1 class model and the k-class model with the

p-value. A significant p-value indicates that the k-class model is a better fit to the data than the k-1 class model (Lo et al., 2001).

Associating workload and job autonomy with the job insecurity trajectory patterns

Preliminary analysis: Measurement invariance and latent growth model (LGM) for workload and job autonomy

First, we examined the factorial structure and measurement invariance of workload and job autonomy. All items loaded on their respective latent constructs at each wave. The item residuals were allowed to correlate with each other across the time points. Next, we conducted two latent growth curve models (LGCM) separately for workload and job autonomy. The intercept loadings were fixed to 1 at each time point. Considering equal time lags before each measurement wave (6-month time lag), we fixed the slope loadings to 0, 1 and 2, respectively. The growth factors (intercept and slope) were free to vary across the sample. Thus, the models produced these estimates (intercept and slope for workload and job autonomy, respectively) for each individual in our sample, which we then extracted by means of factors scores and merged with the original dataset for further analysis (Muthén and Muthén, 2017).

Principal analysis: The three-step procedure relating workload and job autonomy to the job insecurity trajectories

In the final step, we linked the growth factors of our predictors (intercepts and slopes of job autonomy and workload) to the job insecurity trajectories. To preserve the class specification from the previous steps of the analysis, we used the 3-step approach (Wickrama et al., 2016). The three-step procedure, also known as the "manual", consists of three separate analytical steps that use the "auxiliary variable" (i.e., AUXILIARY syntax in Mplus) option

(Asparouhov and Muthén, 2014; Muthén and Muthén, 2017; Wickrama et al., 2016). The three-step "manual" approach consists of the following steps: 1) estimate an unconditional LCGA for job insecurity (including both quantitative and qualitative job insecurity), 2) create a variable which identifies the class to which each individual most likely belongs (class membership information; CPROB syntax in Mplus; Muthén and Muthén, 2017), 3) include the predictors (workload and job autonomy), the class variable created in step 2, and the uncertainty rates (misclassification rates), which were estimated in step 1, to held class classification— estimated from the unconditional LCGA— constant (Wickrama et al., 2016). The link between job insecurity trajectory patterns and each growth factor for a specific predictor (workload and job autonomy) was evaluated separately by means of multinomial regression, where we regressed C — job insecurity trajectory class membership on the intercepts: IW (intercept workload), IA (intercept job autonomy) and slopes: SW (slope workload) and SA (slope job autonomy). The overall model fit was evaluated with the Wald chi-square test in which we compared a model with a predictor to the intercept-only model (null model; model with no predictors). Next, we examined the statistical significance of individual regression coefficients by means of odd ratios and predicted probabilities of being identified in distinct job insecurity trajectory patterns based on a change in the growth factors of workload and job autonomy. Furthermore, we conducted pairwise comparisons between the job insecurity classes based on the intercepts and slopes of our predictors.

Table 1 Means, standard deviations and correlations.

Variables	Mean	SD	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. QN_JI.T1	2.33	0.970											
2. QN_JI.T2	2.35	0.973	.678**										
3. QN_JI.T3	2.33	0.979	.653**	.697**									
4. QL_JI.T1	3.12	0.938	.485**	.389**	.371**								
5. QL_JI.T2	3.06	0.973	.354**	.561**	.431**	.641**							
6. QL_JI.T3	3.15	0.938	.312**	.407**	.499**	.568**	.658**						
7. WL.T1	3.48	0.782	.100**	0.033	.083*	.157**	.075*	.088*					
8. WL.T2	3.46	0.738	0.057	0.057	0.053	.129**	.121**	.110**	.742**				
9. WL.T3	3.45	0.734	0.062	0.056	0.070	.139**	.128**	.118**	.710**	.752**			
10. AUT.T1	3.33	0.768	-.147**	-.138**	-.118**	-.286**	-.211**	-.223**	-.173**	-.144**	-.191**		
11. AUT.T2	3.38	0.770	-.108**	-.194**	-.153**	-.291**	-.330**	-.301**	-.148**	-.191**	-.178**	.694**	
12. AUT.T3	3.39	0.754	-.101**	-.148**	-.170**	-.268**	-.293**	-.341**	-.174**	-.187**	-.251**	.660**	.728**

Notes: N = 784. QN_JI.T1–T3— score for quantitative job insecurity at Time 1, 2 and 3; QL_JI.T1–T3— score for qualitative job insecurity at Time 1, 2 and 3; WL.T1-T3— score for workload at Time 1,2 and 3; AUT.T1-T3— score for job autonomy at Time 1,2 and 3; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.$

Results

Table 1 demonstrates mean score values, standard deviations, and correlations between the core variables. From these results, we can tell that across the observational period, the respondents reported, on average, higher levels of qualitative job insecurity (M≈3.11) than quantitative job insecurity (M≈2.34). Overall, job autonomy and workload were significantly correlated with job insecurity. In line with the expectations, higher job autonomy was linked with lower quantitative and qualitative job insecurity. In addition, a high workload was linked with higher threats to job characteristics; however, it did not correlate significantly with quantitative job insecurity. In other words, a higher workload seems to be linked with a threat to keeping valued job characteristics (social contact with colleagues, career development, participation in workshops and courses, etc.), but it is not linked with a threat to job loss.

Job insecurity trajectory patterns

Results of preliminary analysis: Measurement invariance and latent growth model (LGM) for quantitative and qualitative job insecurity

The analysis of the factorial structure of quantitative and qualitative job insecurity showed that the hypothesised two-factor model (M2) had a significantly better fit to the data than the one-factor model (M1) ($\chi^2(213)$ = 502.089, CFI = .98, TLI = .973, RMSEA = .042, SRMR=0.035, see Table 2). Next, we checked if the measurement model remained invariant across time. The model with equality restrictions on factor loadings, intercepts, residual variances, and correlations between item residuals (full measurement invariance, M6) displayed good model fit ($\chi^2(269)$ = 599.575, CFI = .977,

TLI = .976, RMSEA = .04, SRMR = .038; see Table 2) and met the measurement invariance criteria (ΔCFI<0.01; Chen, 2007).

Table 2 Fit indices for competing nested factor models and standardised maximum likelihood estimates measuring quantitative and qualitative job insecurity.

Factorial structure of the measurement model										
Model No.	Model	χ2	*df*	CFI	ΔCFI	TLI	RMSEA	SRMR	Comparison to model No.	Satorra-Bentler corrected Δχ2
M1	One-factor model	3796.55	225	0.747		0.689	0.142	0.143		
M2	Two-factor model	502.089	213	0.98		0.973	0.042	0.035	M1	40696.564***
Longitudinal measurement invariance of the hypothesised two-factor model										
M2	Configural Invariance	502.089	213	0.98		0.973	0.042	0.035		
M3	Weak Invariance	514.064	225	0.98	0	0.975	0.041	0.035	M2	8.883
M4	Strong Invariance	525.436	237	0.98	0	0.976	0.039	0.035	M3	9.626
M5	Strict Invariance	583.386	253	0.977	0.003	0.974	0.041	0.038	M4	48.134
M6	Full Invariance	599.575	269	0.977	0	0.976	0.040	0.038	M5	18.827

Notes: N = 784; χ2— chi-square; *df*— degrees of freedom; CFI— comparative fit index; TLI— Tucker–Lewis's index; RMSEA— root mean squared error of approximation; SRMR— standardised root mean squared residual;

A latent growth model for quantitative and qualitative job insecurity with freely estimated variance for the growth factors (intercept and slope) provided a good fit to the data (χ^2 (280) = 735.168, RMSEA = .046, CFI = .968, TLI = .968, SRMR = .05). The estimated slope for quantitative job insecurity was not significant, which would suggest that the construct is stable (time-invariant). However, the variance of both the intercept and the slope was considerable, which implies heterogeneity in the initial experience and the trajectory of change for that construct. Similarly, the global estimate for the growth factor for qualitative job insecurity was insignificant, yet the variance around the mean for the intercept suggests significant heterogeneity within the sample (factor estimates of latent growth models are presented in Table 3). In other words, our respondents experienced different initial levels of threat to job loss and threat to job features and followed different trajectories (some might experience an increase in these threats, while others perceived it less or remained stable, over time).

Table 3 Growth factors of the different latent growth models.

	Intercept			Slope				Covariance	
	Mean estimate	Variance		Mean estimate		Variance			
		Estimate (SE)	*p* value	Estimate (SE)	*p* value	Estimate (SE)	*p* value	Estimate (SE)	*p* value
Quantitative job insecurity	0	0.641 (0.036)	*p*<.001	0.003 (0.015)	0.815	0.027 (0.014)	0.047	0.007 (0.013)	0.565
Qualitative job insecurity	0	0.458 (0.031)	*p*<.001	0.015 (0.014)	0.277	0.030 (0.013)	0.019	0.001 (0.010)	0.883
Workload	0	0.349 (0.026)	*p*<.001	-0.019 (0.010)	0.060	0.015 (0.007)	0.027	-0.012 (0.006)	0.048
Job autonomy	0	0.177 (0.023)	*p*<.001	0.020 (0.008)	0.009	0.009 (0.004)	0.016	-0.001 (0.003)	0.774

Notes. In a multiple-indicator growth model, the mean of the intercept growth factor is fixed at zero.

Results of principal analysis: Parallel-process latent class growth analysis (LCGA) for quantitative and qualitative job insecurity

To the best of our knowledge, only one study has conducted a parallel-process latent class growth analysis for quantitative and qualitative job insecurity. In their study, Van Hootegem et al. (2021) indicated that a five-class solution had the best fit to the data and gave a meaningful interpretation of the distinct classes. In this study, we compared the models that identified 2 to 7 class solutions. Table 4 presents detailed results for each class solution. Considering all four principal fit indices (low BIC, high entropy and AvePP and nonsignificant aLMR-LRT) we considered the three-, four- and five-class solution as they showed the best fit to the data (Nylund et al., 2007; Wickrama et al., 2016). The three-class solution had a value for entropy and AvePP that were most close to 1 compared to more complex models. Furthermore, the three-class solution offered large, interpretable, and theoretically meaningful classes. The Lo-Mendell-Rubin adjusted likelihood test (aLMR-LRT) for a four-class solution suggested a significantly better fit to the data than a three-class solution. However, the entropy and AvePP dropped to lower values. In addition, the trajectories in the four-class model were difficult to interpret and theoretically difficult to distinguish. Finally, the five-class solution showed a significantly better model fit than the four-class solution (significant p-value for the aLMR-LRT). Furthermore, the

model with the five-class solution provides five distinct classes of individuals with unique patterns of job insecurity trajectories. In addition, the identified classes noticeably overlap with those identified in previous research (Van Hootegem et al., 2021). Lastly, we reran the model with a seed value (the OPSEED syntax in Mplus) and successfully replicated the solution, which suggests that the model was estimated with the highest log-likelihood value (i.e., global solution). All four principles (i.e., fit indices, the parsimony of the model, theoretical justification, and interpretability of the distinct classes) suggest the five-class solution to have the best fit to our data.

Table 4 Goodness of fit indices for latent class growth analysis of quantitative and qualitative job insecurity.

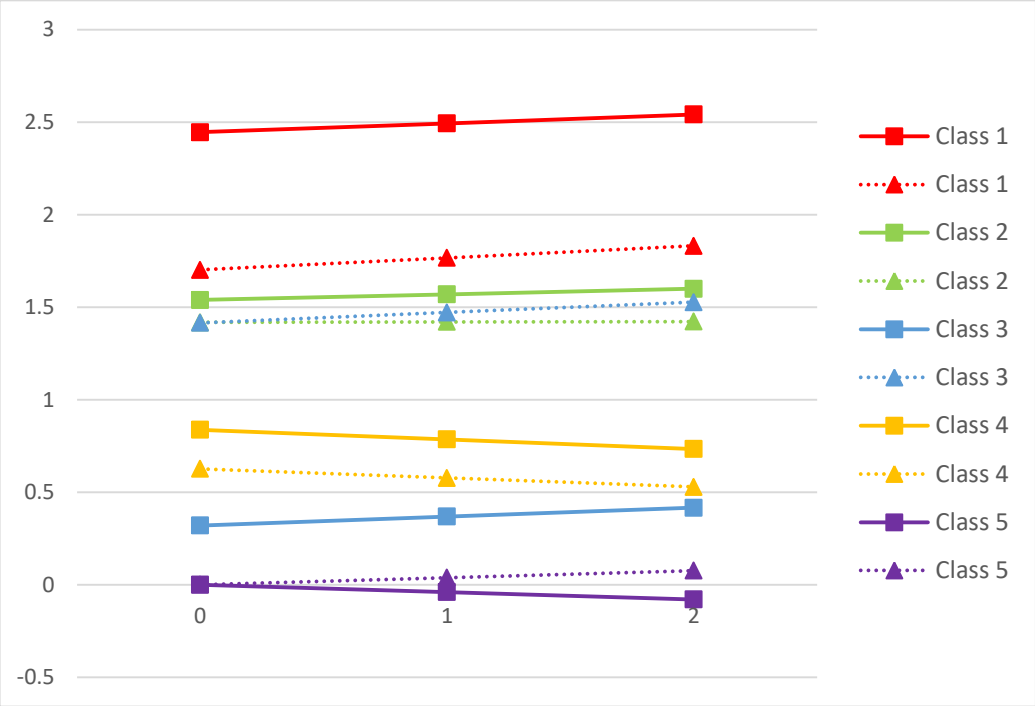
logL	No. free parameters	BIC	LMRT	Entropy	Latent trajectory proportions	AvePP
-19473.880	43	39234.274	0.0001	0.83	0.44/0.56	0.947-0.953
-19218.337	48	38756.503	0	0.812	0.37/0.31/0.32	0.894-0.93
-19128.067	53	38609.281	0.0174	0.79	0.22/0.30/0.25/0.23	0.785-0.933
-19076.072	58	38538.605	0.0196	0.777	0.09/0.28/0.21/0.21/0.21	0.794-0.908
-19031.402	63	38482.582	0.192	0.76	0.20/0.18/0.18/0.14/0.20/0.10	0.776-0.892
-19005.642	68	38464.377	0.5146	0.77	0.20/0.16/0.04/0.12/0.18/0.8/0.20	0.76-0.898

Notes: logL: log-likelihood value; BIC: Bayesian information criterion; aLMR: adjusted Lo-Mendel-Rubin likelihood test; AvePP: average latent class posterior probabilities;

To ease an interpretation and further discussion, we referred to the previous study when explaining and labelling the identified classes (for details, see Van Hootegem et al., 2021). Figure 1 presents all classes and their trajectories of quantitative and qualitative job insecurity. The first class included 73 respondents (9%), who experienced the highest initial level of quantitative (intercept = 2.445, $p<0.001$) and qualitative job insecurity (intercept= 1.701, $p<0.001$). The group remained stable over time ($slope_{quantitative}$ = 0.048, p=0.469; $slope_{qualitative}$= 0.065, p=0.068); thus, we identify this group as *stable high* class. The second class was the largest, as it involved 216 respondents (28%). The initial levels for both quantitative and qualitative job insecurity were moderately high ($intercept_{quantitative}$= 1.539, $p<0.001$; $intercept_{qualitative}$= 1.418, $p<0.001$), and these experiences continued to be moderately high over the whole observation period ($slope_{quantitative}$ = 0.030, p= 0.620; $slope_{qualitative}$= 0.002, p= 0.952). We labelled that group the

stable moderate-high class. The third group had 166 participants (21%) who experienced a low initial level of quantitative job insecurity (intercept= 0.320, $p<0.001$) and a moderately high initial level of qualitative job insecurity (intercept= 1.415, $p<0.001$). Overall, these experiences remained stable over time ($slope_{quantitative}$ = 0.048, p= 0.228; $slope_{qualitative}$= 0.056, p= 0.151), which led us to name this group the *stable qualitative JI-dominant* class. In the fourth class, we had 167 participants (21%) who experienced moderately low initial levels of quantitative and qualitative job insecurity ($intercept_{quantitative}$= 0.837, $p<0.001$; $intercept_{qualitative}$= 0.626, $p<0.001$). The slope estimates were not significant, which implied that respondents in that group continued to experience moderately low levels of job insecurity across the observation period ($slope_{quantitative}$ = -0.052, p= 0.405; $slope_{qualitative}$= -0.049, p= 0.359), thus we named this group *stable moderate-low*. In the final fifth class, 161 participants (21%) experienced the lowest initial job insecurity compared to the other four classes. As it was the reference category— the intercepts in LCGA were fixed to zero— the estimates could not be provided. The experience of job insecurity in this group, similarly to the other four classes, remained stable over time ($slope_{quantitative}$ = -0.040, p= 0.107; $slope_{qualitative}$= 0.038, p= 0.296). We called this class *stable low*. In the appendix, we include average item scores and scale scores for each class (see Appendix B and C).

Figure 1 Parallel trajectories of quantitative and qualitative job insecurity. 0, 1 and 2 on the x-axis refer to T1, T2 and T3, respectively.



Associating workload and job autonomy with job insecurity trajectory patterns

Results of preliminary analysis: Latent growth model (LGM) for workload and job autonomy

The hypothesised two-factor model for workload and job autonomy presented a good fit to the data (χ^2 (213) = 541.513, RMSEA = .044, CFI = .968, TLI = .958, SRMR = .077). Furthermore, the model remained invariant across time. Full measurement invariance showed a good model fit (χ^2(269) = 605.543, CFI = .967, TLI = .966, RMSEA = .04, SRMR = .08; see Table 5) and met the measurement invariance criteria (ΔCFI<0.01; Chen, 2007). At each observation time, the latent variables for workload and job autonomy were negatively correlated (r_{t1}= -0.060, p_{t1}<0.01; r_{t2}= -0.071, p_{t2}<0.001; r_{t3}= -0.089, p_{t3}<0.001).

Table 5 Fit indices for competing nested factor models and standardised maximum likelihood estimates for workload and job autonomy.

Factorial Measurement Model Structure of the										
Model No.	Model	χ2	df	CFI	ΔCFI	TLI	RMSEA	SRMR	Comparison to model No.	Satorra-Bentler corrected Δχ2
M7	Two-factor model	541.513*	213	0.968		0.958	0.044	0.077		
Longitudinal measurement invariance of the hypothesised two-factor model										
M7	Configural invariance	541.513*	213	0.968		0.958	0.044	0.077		
M8	Weak invariance	559.403*	225	0.967	0.001	0.96	0.044	0.078	M7	18.048
M9	Strong invariance	582.475*	237	0.966	0.001	0.961	0.043	0.079	M8	22.369*
M10	Strict invariance	597.081*	253	0.966	0	0.963	0.042	0.08	M9	17.658
M11	Full invariance	605.543*	269	0.967		0.966	0.04	0.08	M10	15.395

Notes: N= 784; χ2— chi-square; *df*— degrees of freedom; CFI— comparative fit index; TLI— Tucker–Lewis's index; RMSEA— root mean squared error of approximation; SRMR— standardised root mean squared residual; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The latent growth curve model (LGCA) for workload (χ^2 (70) = 136.734, RMSEA = .035, CFI = .987, TLI = .988, SRMR = .062) and job autonomy (χ^2 (70) = 154.408, RMSEA = .039, CFI = .978, TLI = .979, SRMR = .047) showed a good fit to the data. The two job characteristics seemed to follow contrasting trajectories. Specifically, the average trajectory for workload was decreasing but non-significant (slope= -0.019, p=0.06), while job autonomy increased (slope= 0.02, p<0.01). Furthermore, our respondents varied significantly in their initial levels and trajectories of the experience of workload and job autonomy (see Table 3).

Result of principal analysis: The three-step procedure relating workload and job autonomy to job insecurity trajectories

The results of an overall Wald chi-square test demonstrated that the initial levels of workload and job autonomy are good predictors of the different job insecurity classes (see Table 6). For each point increase in the baseline workload score, the odds of being identified in the high stable group, the moderate-high stable and qualitative-dominant class were, respectively, 2.6, 1.85 and 1.82 times the odds of being in the low, stable class (see Table 7). The high stable, followed by moderate-high stable and qualitative-dominant stable class, had the highest initial level of workload, and the mean intercept

in these groups was significantly higher than in the low-stable and moderate-low stable groups. On the other hand, for each point increase in job autonomy, the odds of being classified in the high stable job insecurity, moderate-high stable job insecurity or high qualitative-JI dominant class were 0.213, 0.152, 0.173 times the odds of experiencing low stable job insecurity. These differences are further presented in the prior probabilities of latent class membership for varying values of workload and job autonomy (see Appendix D). For instance, if we look at the probability of experiencing a high workload and low job control, they are respectively 0.32 and 0.46 for the moderate-high job insecurity class and 0.1 and 0.04 for the low job insecurity class. In contrast, the probability of experiencing a low workload is 0.38 for the low job insecurity class and 0.04 for the high job insecurity class. Interestingly, the highest probability of scoring low on the job autonomy scale was for the qualitative JI-dominant profile suggesting that a lack of control might trigger qualitative job insecurity. Overall, these results translate to a significant difference in the mean intercept between the stable low and moderate-low stable classes on one hand and the high stable, moderate-high stable and qualitative-JI dominant classes on the other hand (see Table 6).

Table 6 Growth factors of workload and job autonomy in relation to job insecurity trajectories.

	Workload				Job autonomy			
Job insecurity trajectories	Intercept (SE)	Slope (SE)	Wald test intercept (*df*)	Wald test slope (df)	Intercept (SE)	Slope (SE)	Wald test intercept (df)	Wald test slope (df)
			26.806***(4)	4.862(4)			58.179***(4)	2.716(4)
1. High stable	0.16	- 0.018			-0.063	0.018*		
	(0.080)	(0.009)	>4, 5		(0.056)	(0.007)	<4, 5	
2. Moderate-high stable	0.071	- 0.027 ***			-0.105**	0.021***		
	(0.046)	(0.005)	>5		(0.034)	(0.004)	<4,5	
3. Qualitative JI- dominant stable	0.064	- 0.015 **			-0.083*	0.015***		
	(0.054)	(0.005)	>5		(0.037)	(0.004)	<4,5	
4. Moderate-low stable	- 0.055	- 0.016 **			0.083**	0.024***		
	(0.049)	(0.005)			(0.031)	(0.004)		
5. Low stable	- 0.173 ***	- 0.017 ***			0.161***	0.021***		
	(0.044)	(0.004)			(0.029)	(0.003)		

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Regarding the differences in changes in the experiences of workload and job insecurity (i.e., the slopes), the results show no significant effect of these growth factors on job insecurity trajectories.

Table 7 The logit coefficients of predictors from the manual 3-step approach.

	High stable vs Low stable		Moderate-high stable vs Low stable		Qualitative JI-dominant vs Low stable		Moderate-low stable vs Low stable	
Predictors	Est.	OR	Est.	OR	Est.	OR	Est.	OR
Intercept workload (IW)	0.957**	2.604	0.617*	1.854	0.601*	1.824	0.290	0.548
Intercept job autonomy (IA)	-1.547**	0.213	-1.882***	0.152	-1.755***	0.173	-0.601	1.337
Slope workload (SW)	-0.57	0.566	-3.737	0.024	0.402	1.495	0.366	1.442
Slope job autonomy (SA)	-1.628	0.196	-0.389	0.678	-3.579	0.028	1.691	5.424

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

The purpose of this project was twofold. First, we identified different developmental trajectories of quantitative and qualitative job insecurity. Next, we explored the link between these trajectories and the key job characteristics from Karasek's job demand-control model, namely workload and job autonomy. Based on the conservation of resources (COR) theory, we posit that employees who experience high workload, i.e., experience overuse of resources, may perceive job insecurity more intensely than employees with less workload. Correspondingly, employees with higher job autonomy, which is a pivotal job resource, may be better equipped to handle changes in the workplace and thus experience less job insecurity. To answer our research questions, we conducted a stepwise procedure. First, we performed a parallel-process latent class growth analysis (LCGA) to identify the trajectories of quantitative and qualitative job insecurity. Second, we conducted latent growth curve analysis (LGCA) for workload and job autonomy. We then extracted the growth factors for workload and job autonomy (intercept and slope) by means of factor scores and merged them with the original dataset for further analysis (Muthén and Muthén, 2017). In the final step, we linked the growth factors of our predictors (intercepts and slopes of job autonomy and workload) to job insecurity trajectories. To preserve the class specification from the previous steps of the analysis, we used the "manual" 3-step approach (Wickrama et al., 2016). In line with prior research, five distinct trajectories of job insecurity were identified, which differed in their mean-level experience of job insecurity. Surprisingly, all

five classes of job insecurity were stable over time. In addition, the intercept of workload and job autonomy was higher and lower in high, moderate-high, and qualitative JI-dominant trajectories compared to the low job insecurity class, respectively. These results align with our expectations that high workload and low job autonomy are important predictors of job insecurity.

Theoretical implications

To answer our first research question, we investigated different developmental patterns of quantitative and qualitative job insecurity. The initial latent growth analysis for the whole sample found that respondents significantly varied in their mean level (intercept). Despite significant variance in mean-level changes (slope) of both quantitative and qualitative job insecurity, the initial overall slope estimates indicated a rather stable long-term course of development. After classifying the respondents into five job insecurity profiles, we discovered that, indeed, all classes represent a stable trajectory of job insecurity. This is in line with past research, which indicates that job insecurity is a rather stable construct, with over 60% of respondents belonging to a stable class (Kinnunen et al., 2014; Klug et al., 2019; Van Hootegem et al., 2021). It is surprising that all five job insecurity patterns followed a stable trajectory in this study. It could be that limiting our sample to employees who, throughout the observation period, remained in the same organizations and in the same occupational position constrained the sample to those who experienced no objective change to their employment. In other words, we examined employees in a reliable and steady work environment with no new or unexpected changes that might have triggered an increase or decrease in job insecurity.

Despite notable stability of the experience of job insecurity, we found significant differences between employees in the overall intensity and composition of quantitative and qualitative job insecurity. Five distinct job insecurity trajectories were established. Overall, the shape of identified trajectories is consistent with previous research that analysed the

heterogeneity of job insecurity across the population. Here, too, the majority of employees felt secure about their jobs. A little over 40% of participants experienced moderate-low to no job insecurity as they scored on average below the neutral midpoint of the quantitative and qualitative job insecurity scale (see Appendix B). Nevertheless, 37% of the respondents experienced moderate to high job insecurity, with approximately 9% experiencing chronically high levels of job insecurity. Furthermore, consistent with the previous studies, we found that roughly one-fifth (21%) of our respondents experienced a high threat to job characteristics (i.e., qualitative job insecurity) while maintaining a moderate-low threat to job loss (i.e., quantitative job insecurity) (De Cuyper et al., 2019; Urbanaviciute et al., 2021).

Next to the study of Van Hootegem and colleagues, this is the second study that examines the joint developmental trajectories of quantitative and qualitative job insecurity (Van Hootegem et al., 2021). It is encouraging to find that our results largely support evidence from the first study. Specifically, we further ratify that in most cases, both dimensions of job insecurity develop hand-to-hand over time. This is expected, as quantitative and qualitative job insecurity share most theoretical predictors. Specifically, a recent meta-analysis of the predictors of job insecurity found that the impact of personal resources (e.g., neuroticism), social resources (i.e., support), and constructive resources (e.g., employability) is similar for both quantitative and qualitative job insecurity. Yet, structural resources and demands (i.e., organisational practices and conditions) have a stronger effect on qualitative job insecurity than quantitative job insecurity. These differences might explain why a quarter of our sample experienced a moderate threat to job loss while experiencing a rather high threat to their job characteristics. Future research should explicitly examine the effect of organisational variables in predicting job insecurity trajectories.

The second aim of this study was to analyse the link between the key job characteristics of Karasek's job demand-control model with the job

insecurity trajectories. Job demands were measured in terms of perceived workload, whereas job control was represented as perceived job autonomy. In line with COR, we expected that a high workload, which drains individuals from their resources, is linked with higher job insecurity. In contrast, employees with high job autonomy, i.e., those with greater resources, are less vulnerable to resource loss and are thus expected to perceive less job insecurity.

The results confirm this premise, as the job insecurity trajectories significantly differed in terms of the baseline experience of workload and job autonomy. Specifically, the groups with high, moderate-high, and qualitative JI-dominant job insecurity had significantly higher workload and lower job autonomy than the low job insecurity class. Thus, it seems that poor job characteristics (high workload and limited autonomy) obligate excessive use of employees' resources, consequently making them an "easy target" to appraise work changes as threatening. It is interesting to note that the comparative analysis with an alternative parametrisation using the qualitative JI-dominant class as the reference category (see Appendix E) showed that employees in the qualitative JI-dominant class vs the moderate-low job insecurity class were similar in their experience of workload. The qualitative JI-dominant class, however, experienced significantly lower job autonomy than the moderate-low job insecurity class. This further supports the finding that organisational resources (i.e., job autonomy) have stronger implications for qualitative job insecurity (Jiang et al., 2021).

In conclusion, these results confirm the importance of job characteristics in the development of high vs low job insecurity trajectories and suggest that job autonomy might be of particular importance in protecting against qualitative job insecurity. At a more granular level, e.g., when differentiating between high vs moderate-high job insecurity trajectories, other factors such as personal resources and demographics might play an additional or even pivotal role. It could also mean that the employees who exhibit a high job insecurity trajectory not only experience high workload and low job

autonomy but also are equipped with fewer personal resources (i.e., employability, self-esteem, self-efficacy, external locus of control, etc.) than employees in the moderate-high job insecurity group (Jiang et al., 2021). Future research could explicitly look at the distribution of personal and organisational resources across different job insecurity trajectories.

Limitations and future research

The current study presents some limitations that need to be addressed. The first potential limitation is the homogeneity of the sample. Specifically, we limited the sample to employees who remained in the same occupational position throughout the observation period. Although we conceptualise this as a strength of the present study, i.e., we control for environmental changes that might have plausible confounding effects on the investigated variables, this could also be the reason for failing to observe developmental changes in workload and job autonomy and consequently job insecurity. For example, workload and job autonomy might be particularly volatile for newly hired employees. The findings by Bardley (2007) reported job tenure as a possible moderator of the interactive effect between job demands and control, suggesting that the buffering effect of job control might be relatively strong in the initial stages of employment. Similar results were found in the study by Verhofstadt and colleagues (2017). In addition, increasing job insecurity trajectories are expected among workers in companies that are going through organisational changes such as a merger, downsizing or restructuring (Klandermans et al., 2010). Future studies may examine these effects by comparing newly hired employees with a tenured group or employees from stable organisations with those from companies undergoing transformations.

Furthermore, our sample was collected among the readers of an online HR magazine (vacature.com) who worked for various organisations. In this regard, we could not control the organisational context and their specific work conditions. This limits the implications of the current study as we cannot explicitly address a broader set of job characteristics (apart from the

workload and job autonomy) and their associations with perceived job insecurity. Future studies could focus on surveying employees from a limited set of organisations to better understand the link between job characteristics and job insecurity.

Another shortcoming is that we did not measure or control for personality traits, which can be important determinants of employees' adaptation to work conditions. Specifically, in the context of our research, it might be that traits previously linked with job insecurity, such as neuroticism, extraversion, secure attachment, locus of control, etc., influence the impact of job characteristics, resulting in varying job insecurity trajectories (Jiang et al., 2021). Depending upon the development of the individual, personal characteristics can be viewed as either a resource (i.e., a protective factor) or a demand (i.e., a risk factor). Personal characteristics, viewed as resources (i.e., extraversion, internal locus of control, secure attachment, positive affectivity), are linked with resiliency and a favourable perception of control in the outside world (Hobfoll, 1989). Employees better equipped with personal resources are more resistant to job demands and perceive job conditions as positive, which might uplift their feeling of job security. Future research should investigate how personal resources moderate the relationship between perceptions of job demand, control, and job insecurity.

Lastly, we used a six-month time lag between the observation periods, which might not have been optimal for observing a change in all variables of interest. For instance, a change in the perception of job autonomy is rather gradual than an overnight event. Thus, it might take time for an employee to perceive a change in the experience of autonomy. In contrast, the perception of workload might be changing on a daily basis. The optimal time lag is essential to find the lag associations between the variables, yet it is highly challenging in observational research (Dormann and Griffin, 2015). One way to account for the plausible role of time could be via a 'shorttitudinal' pilot study, conducted with time intervals that are short enough to account for quicker effects and then, via merging the time lags into longer intervals, to

test for an optimal time-lag for more incremental effects (Dormann and Van de Ven, 2014).

Conclusions

To conclude, the current study aimed to identify distinct job insecurity trajectories and explore the link between these job insecurity trajectories and two key job characteristics: workload and job autonomy. We identified five job insecurity trajectories that varied in their base level and shape of experienced job insecurity. Although the majority of employees felt little to no job insecurity, almost one-third experienced moderate-high to high quantitative and qualitative job insecurity, and one-quarter were mostly worried about changes to their job conditions. One of the more significant findings to emerge from this study is that high workload and low control had the highest predictive power for experiencing moderate-high to high job insecurity, whereas experiencing high control and low workload was mainly observed among employees with moderate-low to low job insecurity trajectories. Furthermore, job control significantly differentiated between the moderate-low and qualitative JI-dominant classes, which suggests that low job control is particularly associated with experiencing worries about job conditions. These findings are of special interest to employers and organisations that struggle with job insecurity among their employees. While previous research has demonstrated that interventions aimed at communication and participation are successful in reducing job insecurity (Abildgaard et al., 2018; Vander Elst et al., 2010), it may be important for organisations to not only improve their formal channels of communication and involve employees in the decision-making process regarding the anticipated changes, but also implement programs to make employees in control of their work.

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Appendix A

Table 8 Sample vs Flemish population; Source: Statistics Belgium: www.statbel.fgov.be.

Variables		Sample	Percentages	Population (K)	Percentages
Gender	Male	351	45%	1,501	53%
	Female	433	55%	1,300	46%
Age	15-24 years	25	3%	180	6%
	25-54 years	653	83%	2,179	77%
	55-65 years	106	14%	411	15%
Education Level	Low	31	4%	383	14%
	Middle	490	63%	1,137	40%
	High	263	34%	1,249	44%
Contract	Permanent	580	74%	2,199	78%
	Temporary	19	2%	219	8%
Working hours	Full-time	633	81%	1,740	61%
	Part-time	151	19%	678	24%
Sector	Private	599	76%	2,271	80%
	Public	185	24%	559	20%
Total		784	100%	2,830	100%

Note: Data on Flemish population were taken from a first quarter of 2017.

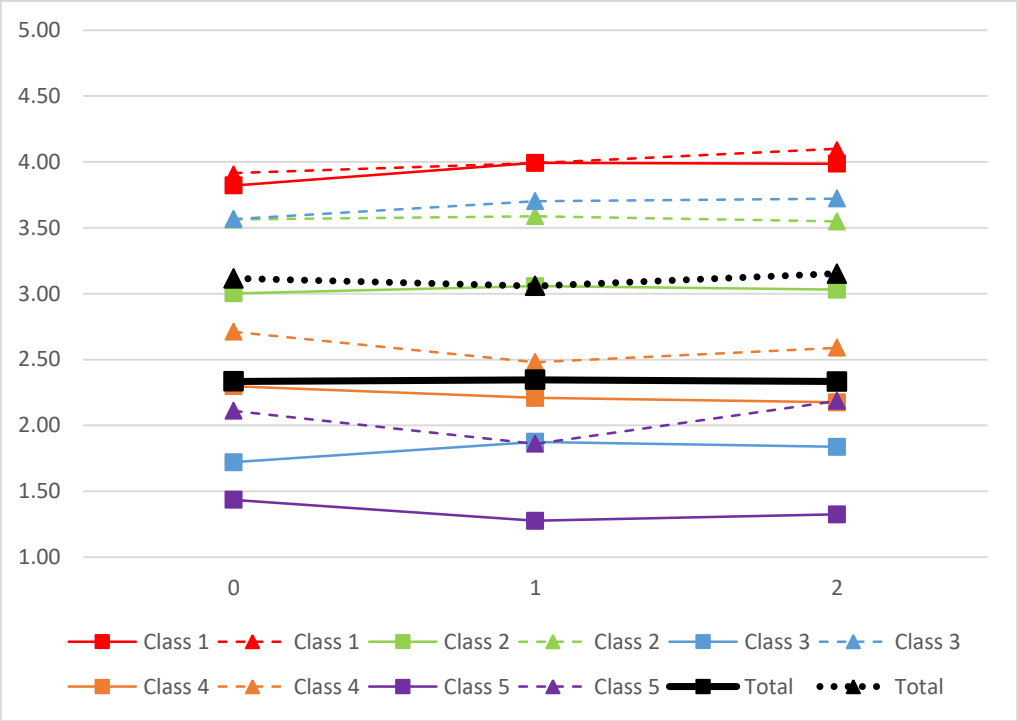
Appendix B

Table 9 Sample means for each item on quantitative and qualitative job insecurity scale weighted by an estimate.

	Quantitative Job Insecurity												Qualitative Job Insecurity											
	T1				T2				T3				T1				T2				T3			
	Qn.1	Qn.2	Qn.3	Qn.4	Qn.1	Qn.2	Qn.3	Qn.4	Qn.1	Qn.2	Qn.3	Qn.4	Ql.1	Ql.2	Ql.3	Ql.4	Ql.1	Ql.2	Ql.3	Ql.4	Ql.1	Ql.2	Ql.3	Ql.4
1: High JI class	3.76	4.23	3.53	3.77	3.91	4.19	3.75	3.87	3.85	4.17	3.68	3.94	3.81	3.83	4.02	4.02	3.83	3.82	4.06	4.05	3.91	4.02	4.21	4.13
2: Moderate-high JI class	2.81	3.22	2.70	3.13	2.88	3.35	2.77	3.14	2.90	3.28	2.76	3.12	3.45	3.44	3.70	3.67	3.41	3.55	3.74	3.70	3.46	3.51	3.68	3.66
3: Qualitative JI dominant	1.55	1.95	1.54	1.90	1.68	2.16	1.65	2.08	1.65	2.15	1.62	1.93	3.44	3.38	3.71	3.67	3.56	3.46	3.83	3.81	3.60	3.53	3.73	3.87
4: Moderate-low JI class	2.20	2.40	2.08	2.44	2.14	2.28	2.00	2.39	2.08	2.29	2.01	2.29	2.68	2.62	2.85	2.86	2.49	2.35	2.61	2.73	2.62	2.49	2.69	2.76
5: Low class JI	1.40	1.51	1.35	1.63	1.29	1.32	1.20	1.48	1.33	1.40	1.29	1.50	2.11	1.96	2.14	2.22	1.94	1.73	1.86	1.98	2.18	2.02	2.22	2.31

Appendix C

Figure 2 Mean scores for quantitative and qualitative job insecurity across three time points for five trajectories of job insecurity.



Appendix D

Figure 3 Predicted prior probabilities of latent class membership for varying values of workload.

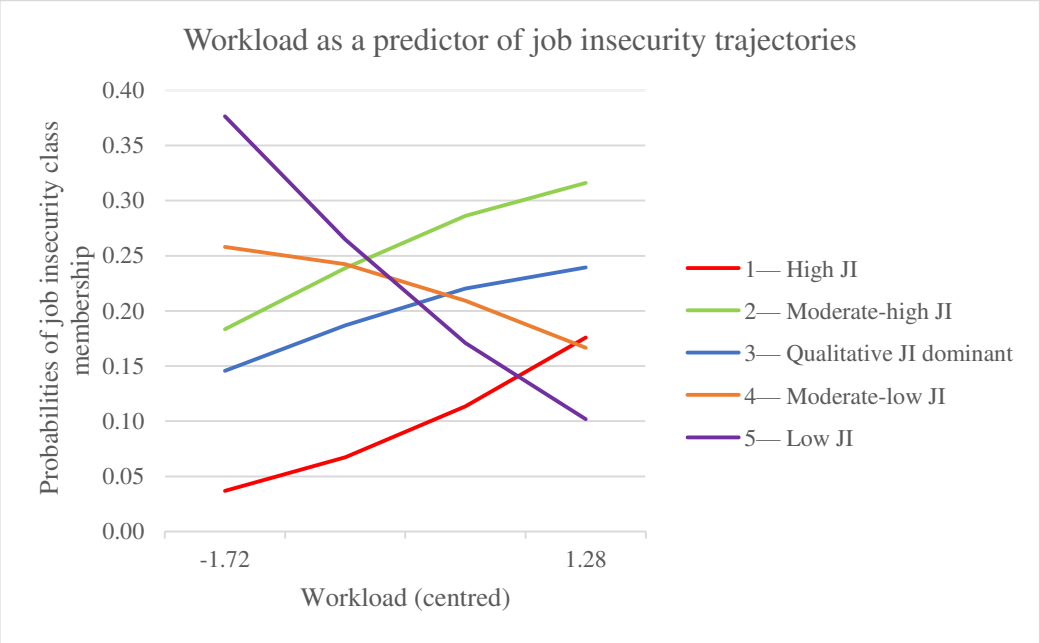
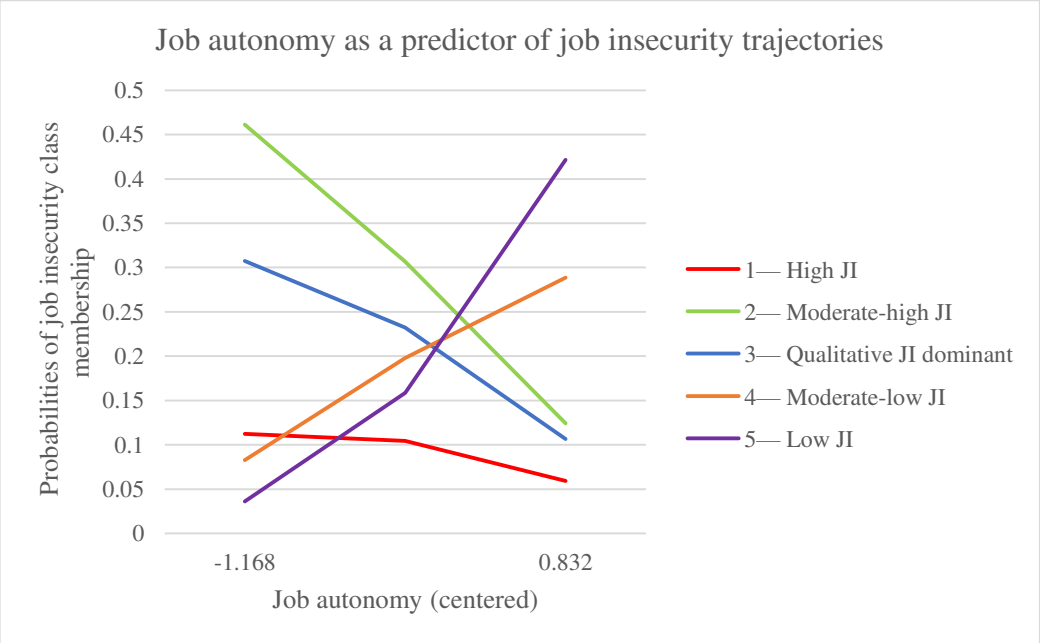


Figure 4 Predicted prior probabilities of latent class membership for varying values of job autonomy.



Appendix E

Parameterization using Reference Class 1

	Moderate-high stable vs High stable		Qualitative JI-dominant vs High stable		Moderate-low stable vs High stable		Low stable vs High stable	
Predictors	Est.	OR	Est.	OR	Est.	OR	Est.	OR
Intercept workload (IW)	-0.340	0.712	-0.356	0.700	-0.667*	0.513	-0.957**	0.384
Intercept job autonomy (IA)	-0.335	0.715	-0.208	0.812	0.946*	2.575	1.547**	4.697

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Parameterization using Reference Class 2

	High stable vs Moderate-high stable		Qualitative JI-dominant vs Moderate-high stable		Moderate-low stable vs Moderate-high stable		Low stable vs Moderate-high stable	
Predictors	Est.	OR	Est.	OR	Est.	OR	Est.	OR
Intercept workload (IW)	0.340	1.405	-0.016	0.984	-0.327	0.721	-0.617*	0.539
Intercept job autonomy (IA)	0.335	1.398	0.127	1.136	1.281***	3.599	1.882***	6.566

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Parameterization using Reference Class 3

	High stable vs Qualitative JI-dominant		Moderate-high stable vs Qualitative JI- dominant		Moderate-low stable vs Qualitative JI- dominant		Low stable vs Qualitative JI-dominant	
Predictors	Est.	OR	Est.	OR	Est.	OR	Est.	OR
Intercept workload (IW)	0.356	1.428	0.016	1.016	-0.311	0.733	-0.601*	0.548
Intercept job autonomy (IA)	0.208	1.231	-0.127	0.88	1.153**	3.169	1.755***	5.781

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Parameterization using Reference Class 4

	High stable vs Moderate-low stable		Moderate-high stable vs Moderate-low stable		Qualitative JI-dominant vs Moderate-low stable		Low stable vs Moderate-low stable	
Predictors	Est.	OR	Est.	OR	Est.	OR	Est.	OR
Intercept workload (IW)	0.667*	1.949	0.327	1.387	0.311	1.365	-0.290	0.748
Intercept job autonomy (IA)	-0.946*	0.388	-1.281***	0.278	-1.153**	0.316	0.601	1.824

Notes: N = 784; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

GENERAL DISCUSSION

Main findings with respect to the research objectives

As economies across the globe navigate the post-pandemic recovery phase, the labour market undergoes unprecedented transformations that not only raise employees' threat to job loss (i.e., quantitative job insecurity) but also pose a considerable threat to their job features (i.e., qualitative job insecurity). Although job insecurity is a prevalent work stressor with overwhelming consequences for employees and organisations (De Witte et al., 2016), the direction and salience of the relationship between quantitative and qualitative job insecurity is still understudied and current research is methodologically limited. Thereupon, in this doctoral dissertation, we pursued to apply a theoretical framework to hypothesise and explore the complexity of the relationship between quantitative and qualitative job insecurity. In addition, we considered the common methodological barriers in work and organisational research and implemented the latest methods and statistical inference to enhance methodological literacy in research on psychosocial risk factors.

First, we aimed to apply a theoretical model to explain all plausible forms of the relationship between quantitative and qualitative job insecurity. Compliant with COR, we argued for a normal and reversed relationship between quantitative and qualitative job insecurity and joined these processes, suggesting a reciprocal relationship. Second, we aimed to bridge the gap between theory and methodology and employ the latest methods to account for the complexity of psychological constructs, such as the dimensions of job insecurity. For that purpose, we proposed three main objectives: a) longitudinal analysis of the relationship between quantitative and qualitative job insecurity (*O2*), b) disaggregation of within-person and

between-person effects (*O3*), and c) implementation of a variable-centered approach and a person-centered approach. In the following section, we summarise the main findings with respect to these specified objectives. Subsequently, we review the limitations of the whole project and give recommendations for future research.

Objective 1: A reciprocal relationship between quantitative and qualitative job insecurity through the lens of the conservation of resources (COR) theory

This objective applied a theoretical framework to explain all plausible paths in the relationship between quantitative and qualitative job insecurity. Chapter 1 and Chapter 2 explicitly addressed this objective. In Chapter 1, we integrated Jahoda's deprivation theory and conservation of resources (COR) theory, whereas in Chapter 2, we built a theoretical research model solely based on COR theory. Therefore, we can conclude that COR is a sufficient framework to interpret the overall findings of this dissertation project.

Conservation of resources (COR) theory posits that stress arises as a response to environmental factors that involve (1) the potential loss of resources, (2) actual resource loss, or (3) the absence of resource acquisition after investing in resources (Hobfoll, 1989). According to COR theory, stable employment, income, benefits, social support, career opportunities, etc., are all considered job resources (Hobfoll et al., 2018). Both quantitative and qualitative job insecurity relate to worries about the anticipated depletion of these resources. Within the framework of COR theory, resources that share similar environmental and developmental conditions, such as those found in the work context, form interconnected collections known as resource caravans. This interconnectedness explains why these resources appear to be interrelated rather than separate entities (Hobfoll et al., 2018). Consequently, stress resulting from a threat to job resources, whether it pertains to the job as a whole or specific job aspect, alters the environmental conditions

surrounding the resources caravans— resources caravans' passageways— diminishing individuals' perception of the sustainability of these resources. Furthermore, according to COR, those with fewer resources are more vulnerable to further loss or threat to resources. In that respect, we expect that quantitative and qualitative job insecurity deplete personal resources, lead to exhaustion, and consequently, higher vulnerability to overflowing feelings of job insecurity. In line with COR theory, we applied a research model to test three directions of the relationship between quantitative and qualitative job insecurity: a) a path that was argued in past research, where quantitative job insecurity was said to precede and lead to qualitative job insecurity (Chirumbolo et al., 2017), b) a reverse relationship, in which qualitative job insecurity affects quantitative job insecurity, and c) a reciprocal relationship, integrating both previous relationships.

The three types of relationships have been jointly tested in two studies presented in Chapter 1 and Chapter 2. Chapter 1 supported the reverse relationship, indicating a detrimental impact of qualitative job insecurity on quantitative job insecurity. In contrast, Chapter 2 sustained the conventional relationship, in which quantitative job insecurity affects qualitative job insecurity. Neither study found support for the reciprocal relationship. Although Chapter 3 did not explicitly explore the relationship between quantitative and qualitative job insecurity, the person-centered analysis shed light on the heterogeneity in the parallel development of both dimensions of job insecurity. Specifically, whereas for most employees, quantitative and qualitative job insecurity go side-by-side, we identified a large group of employees who, over time, experienced a high threat to job characteristics while remaining relatively confident about keeping their jobs. These findings suggest that even though quantitative and qualitative job insecurity are found to affect one another, the context and timeline in which these associations surface might differ. Altogether, our findings suggest that quantitative and qualitative relationships occur in both directions but not simultaneously.

In line with COR, we interpret these results as follows. Both quantitative and qualitative job insecurity are threats to specific job resources. A rise in threats to either job loss or job characteristics is expected to affect the perceived security of other job resources. Nevertheless, the context and the timeline of these processes seem to vary. The experience of quantitative job insecurity— a threat to an umbrella type of resource, i.e., employment— might be cumulative, which means that it is immediately coupled with the threat to the job characteristics of that job position (Urbanaviciute et al., 2021). Thus, employees who experience a rise in quantitative job insecurity might almost immediately experience a rise in qualitative job insecurity. The reversed relationship appears to be different. First, qualitative job insecurity can be perceived independently from quantitative job insecurity. Thus, employees might anticipate a change in leadership or relocation of the company without worrying about job loss. However, a prolonged state of insecurity towards work conditions overstrains employees' personal resources aimed to cope with the uncertain situation Consequently, it amplifies their vulnerability to experience spillover of these threats across related job resources and eventually employment itself. That said, the process of a reverse relationship might be more convoluted and take longer to develop.

In closing, despite the lack of empirical evidence for a reciprocal relationship between quantitative and qualitative job insecurity, the collective findings from all three chapters are a promising foundation for future research. Altogether, we conclude that the effects between quantitative and qualitative job insecurity occur in both directions. In addition to the previously presumed role of quantitative job insecurity in experiencing qualitative job insecurity, we found a theoretical and empirical basis for the reverse relationship. Consequently, the link between qualitative and quantitative job insecurity can no longer be disregarded. However, further research is needed, which we address in detail in the limitations section.

Objective 2. Longitudinal analysis of the relationship between quantitative and qualitative job insecurity

The objective of the longitudinal analysis was divided into two sub-objectives: a) to measure the stability and change of quantitative and qualitative job insecurity and b) to test temporal precedence between the dimensions of job insecurity and make inferences about their relationship. In the following section, we discuss the results separately for each sub-objective.

2.1. Measurement of stability and change

Stability and change of quantitative and qualitative job insecurity were measured using three methods: an autoregressive model, a latent growth model and intraclass correlations. Each method granted unique information, which altogether enhanced our understanding of the development of the two dimensions of job insecurity.

In Chapter 1 and Chapter 2, we used an autoregressive model to test the rank-order stability of both dimensions of job insecurity. In Chapter 1, the autoregressive effects for both quantitative and qualitative job insecurity were strong and significant, suggesting rank-order stability, i.e., a predictive effect of quantitative job insecurity (or qualitative job insecurity) at time *t* for quantitative job insecurity (or qualitative job insecurity) at time *t+1*. However, in Chapter 2, we found weaker autoregressive effects for quantitative job insecurity and insignificant effects for qualitative job insecurity. The reason for the inconsistency in these findings might be due to the type of variance that was used for the analysis. In particular, before estimating the autoregressive effects in Chapter 2, we tested the intraclass correlation (ICC) to check for the variance of quantitative and qualitative job insecurity due to between-person differences (Wilms et al., 2020). The reliability-adjusted ICC(1) for both quantitative and qualitative job insecurity

suggested about 63% of the variance at the between-person level, leaving only 37% of the variance at the within-person level. Thus, in Chapter 2, we estimated the autoregressive effects with within-person variance while controlling for the between-person variance. Job insecurity is a psychological construct; If not controlled for, between-person differences may inflate the autoregressive effects and bias the findings on stability and change of job insecurity (Hamaker et al., 2015). Indeed, previous studies which used the total variance of job insecurity consistently found stronger autoregressive effects of job insecurity than studies that estimated autoregressive effects using a within-person variance only (De Cuyper et al., 2022; Van Hootegem et al., 2021). That said, we cautiously suggest that the between-person variance might have overly inflated autoregressive effects found in Chapter 1.

In Chapter 3, we used a latent growth model to estimate the trajectory of quantitative and qualitative job insecurity over one year. The results corroborate previous findings from Chapter 2, showing significant variance in the initial values (intercepts) of quantitative and qualitative job insecurity, i.e., between-person variance. Furthermore, we found non-significant slopes with significant yet weak variance for both dimensions of job insecurity, which indicates that across samples, quantitative and qualitative job insecurity remain stable throughout the observation period.

Taken together, the results suggest that quantitative and qualitative job insecurity are rather stable constructs. Across all three studies, we found that changes in perceiving quantitative and qualitative job insecurity were weak and insignificant, which indicates that across one year, the participants perceived job insecurity as usual— with negligible deviations from their average experience. In addition, we found that quantitative and qualitative job insecurity are very similar in terms of stability and change; Over 60% of the variance in quantitative and qualitative job insecurity was found to pertain to individual differences (between-person variance) and nearly 40% pertained to the change over time (within-person variance). Altogether, we

suggest that disaggregating the variance of job insecurity and estimating the autoregressive effects using only within-person variance rather than with the total variance yields more accurate estimates of stability and change of quantitative and qualitative job insecurity.

2.2 Temporal precedence

Temporal precedence in the relationship between quantitative and qualitative job insecurity was tested in Chapter 1 and Chapter 2. In both chapters, the cross-lagged effects were estimated with three-wave longitudinal data and a six-month time lag between the measurement points. In Chapter 1, we used a traditional cross-lagged panel model (CLPM). We found that, while controlling for autoregressive effects, qualitative job insecurity was positively associated with quantitative job insecurity six months later. These findings suggest that the experience of a threat to job characteristics is linked with a threat to job loss over time. On the other hand, in Chapter 2, we used a random-intercept cross-lagged panel model (RI-CLPM)— an alternative method to traditional CLPM— which, next to autoregressive effects, controls for the between-person differences and explores the relationship at the within-person level. The results were opposite to the ones in Chapter 1: quantitative job insecurity was associated with qualitative job insecurity six months later. These results thus suggest that experiencing a higher-than-usual threat to job loss is linked with experiencing a higher-than-usual threat to job characteristics over time.

Altogether, we found that across a six-month time interval, the lagged effects in the relationship between quantitative and qualitative job insecurity seem to prevail in both directions, however not concurrently. Although we did not find a reciprocal relationship between quantitative and qualitative job insecurity, further research with different time lags is recommended, which we address in detail in the respective sections.

Objective 3. Disaggregation of within-person and between-person effects

In this doctoral dissertation, Chapter 2 was conducted using a within-person design. The use of a within-person approach aligns with the theoretical assumption of the idiosyncratic interdependency between the dimensions of job insecurity and the demand for the methodology to test these processes accordingly (Hoffman and Stawski, 2009). Specifically, the theoretical model that we apply in this dissertation hypothesises about how an employee's experience of change in one type of job insecurity relates to that employee's experience of another type of job insecurity (Hoffman, 2015). Thus, we aimed to explore a dynamic system of interdependency between two internal processes. Empirical research on job insecurity, and in general, work and organisational research, often fails to account for the psychological attributes of work stressors, i.e., to test for the within-person variance change, while controlling for between-person variance (i.e., individual differences). Methodological researchers repeatedly criticise this as an incorrect practice that may lead to biased and incorrect conclusions (Hamaker et al., 2015; Hoffman and Stawski, 2009; Laursen and Hoff, 2006; Mulder and Hamaker, 2021).

The results in Chapter 2 were informative in two ways. First, we found that between-person differences accounted for over 60% of the quantitative and qualitative job insecurity variation. Second, we found that within-person changes in quantitative job insecurity were related to within-person changes in qualitative job insecurity six months later. Notably, the inconsistent findings on the direction of the relationship between the two dimensions of job insecurity between Chapter 1 and Chapter 2 might have exposed the risk of bias when failing to disaggregate within-person from between-person variance. In particular, the findings in Chapter 1— which showed that qualitative job insecurity affects quantitative job insecurity over time — might have been biased by the sample composition and individual differences

in trajectories of job insecurity, which were not controlled. Given that in Chapter 3 we used a subset of the same sample as in Chapter 1, we were able to test that supposition. The findings corroborate this interpretation. We identified five distinct job insecurity trajectory patterns. In four classes, quantitative and qualitative job insecurity were experienced on a similar level, however, in one class (n=166, 21%), employees experienced high levels of qualitative job insecurity and, concurrently, low levels of quantitative job insecurity. Thus, the significant effect of qualitative job insecurity on quantitative job insecurity might have been erroneously inflated by unrestrained individual differences in job insecurity trajectories and a large group of employees who experienced a high threat to job characteristics and a low threat to job loss. However, this is only a presumed explanation for the differences in the results; Thus, a formal examination is recommended.

Objective 4. Implementation of a variable-centered versus a person-centered approach

We used a variable-centered approach in Chapter 1 and Chapter 2, whereas in Chapter 3, we employed a person-centered approach. Implementing variable and person-centered approaches grants complementing information to draw more accurate conclusions on the relationship between quantitative and qualitative job insecurity. The variable-centered approach is well suited for understanding the link between the two variables and generalising these findings for the whole population (Laursen and Hoff, 2006). In other words, a variable-centered approach works on the assumption that the process is identical for all individuals, i.e., the population is homogeneous. On the other hand, a person-centered approach assumes that the population is heterogeneous with respect to the tested constructs and is used to identify between-person differences and groups of individuals in clusters that exhibit similar qualities (Laursen and Hoff, 2006; Morin et al., 2018).

In Chapter 1 and Chapter 2, in which we assumed that the relationship between the two dimensions of job insecurity is expected to be the same for all employees, we found empirical evidence for two distinct associations: qualitative job insecurity leading to quantitative job insecurity (see Chapter 1) and quantitative job insecurity leading to qualitative job insecurity (see Chapter 2). These— at first sight— contrasting results might add up if we examine the development of quantitative and qualitative job insecurity with a person-centered approach. In Chapter 3, we applied a person-centered approach to explore the sample used in Chapter 1. We tested quantitative and qualitative job insecurity trajectories within individuals and identified groups of individuals with similar patterns. We found five distinct job insecurity trajectories, which significantly differed in baseline levels of quantitative and qualitative job insecurity. In addition, in four out of five trajectories, employees experienced similar levels of both dimensions, whereas one-fifth of the sample experienced a high perceived threat to job characteristics and a low perceived threat to job loss.

Given the results from Chapter 3, we question the assumption of homogeneity of the relationship between the two dimensions of job insecurity and presume that the direction and saliency of the associations between quantitative and qualitative job insecurity might vary across different job insecurity trajectories. For example, in line with the notion of cumulative experience of threat to job loss, employees who perceive similar levels of quantitative and qualitative job insecurity might endure quantitative job insecurity, inflating the perception of qualitative job insecurity (Urbanaviciute et al., 2021). On the other hand, employees who perceive chronic high threats to job features might eventually reach a threshold whereafter these threats extrapolate to threats of job loss. However, it is important to note that the presumed explanation for the variations in the outcomes is merely speculative, highlighting the need for a thorough investigation in the future. Therefore, it is advisable to conduct a formal analysis to gain a comprehensive understanding of this issue.

Altogether, the results highlight the importance of a joint, variable- and person-centered approach in research on psychological risk factors. Our findings underline the importance of future research to investigate the relationship between quantitative and qualitative job insecurity across different job insecurity trajectories, which we elaborate on in the next section on future research.

Limitations

In this doctoral dissertation, we investigated long-term associations between quantitative and qualitative job insecurity. To overcome typical methodological challenges encountered in work and organisational psychology research, we employed a diversified approach and the newest methods for data analysis and statistical inference. Nevertheless, we acknowledge that the project has several limitations that must be considered.

Number of measurements and time lag

In this dissertation project, we used two datasets— each dataset employed a six-month time lag to collect three measures across one year. The structure of these datasets unveils two nontrivial limitations, which we further translate into recommendations for future research. The first limitation is the time lag used in all three studies. To the best of our knowledge, this is the first project that conducted empirical research on the longitudinal associations between quantitative and qualitative job insecurity; thus, there is no previous work that could indicate the ideal time interval to measure the relationship between job insecurity dimensions. In addition, the datasets that we used were collected for the purpose of different projects and the six-month time lag was most likely theoretically determined to observe other processes. Although a six-month time lag is commonly used in job insecurity studies, it may be an inaccurate time interval to observe the associations between quantitative and qualitative job insecurity. Thus, the optimal time lag in the relationship is yet

to be quantified. We recommend that future longitudinal studies on the relationship between quantitative and qualitative job insecurity should implement varied time lags, shorter and longer than six months. A potential approach to determine the optimal time lag is conducting a "shortitudinal" pilot study, where time intervals are intentionally shorter than the anticipated optimal time lag. This allows for estimating the impact of different time lags on the associations between the two aspects of job insecurity (Dormann and Griffin, 2015).

The second limitation is the number of waves. In all three empirical studies, we used three-wave datasets. Although three waves are more than the minimum of two observation times to estimate the lagged effects and sufficient time points to estimate the latent growth curve (Little, 2013), a longitudinal design with more than three observation points would shed more light on the stability of job insecurity dimensions and the evolution of their relationship. For instance, in the current project, we are constrained to assume that the relationship between quantitative and qualitative job insecurity is linear. However, as we observe that a threat to job characteristics, i.e., qualitative job insecurity, can develop independently from a threat to job loss, i.e., quantitative job insecurity, it could be that the effect of qualitative job insecurity on quantitative job insecurity is exponential rather than linear. In other words, in consequence of an initial rise in a threat to job characteristics, we would observe no rise to a threat to job loss. However, persistent and prolonged increases in threat to job characteristics might reach a specific threshold, after which it gradually affects the threat to job loss. Future research with at least four waves could explicitly examine this presumption regarding the shape of the relationship between qualitative and quantitative job insecurity.

Generalizability of the results

We advise caution when generalising our findings across all employees. We especially identify two areas for improvement concerning the representativeness of the sample. First, all three studies were conducted based on convenience samples that were not representative of the Belgian workforce. The sample in studies presented in chapters 1 and 3 was collected among the Dutch-speaking population; females, employees between 25-54 years, middle educated, and full-time workers were overrepresented in the sample compared to a Flemish working population. In Chapter 2, the data were collected among 13 organisations across Belgium (Dutch and French-speaking workforce). Although the sample was heterogeneous regarding its composition, we had no data to check if the sample was representative of the workforce across all three Belgian regions: Flanders, Wallonia, and Brussels. Future studies could benefit from replicating the results using a sample that is representative of the Belgian workforce population.

Second, our findings are limited to the Belgian population and cannot be generalised to other countries. Macro factors, which can be defined as "characteristics of the larger economic social and cultural system in which a person is embedded" (Ten Brummelhuis and Bakker, 2012), has shown to alter the perceptions of job insecurity (Jiang et al., 2021). For instance, cultures higher on uncertainty avoidance have been shown to experience less threat to job loss, whereas cultures with a strong performance orientation experienced more qualitative job insecurity (Sender et al., 2017). Furthermore, employees in cultures with higher individualism, national GDP and egalitarianism were found to experience more personal/organisational resources and, consequently, less job insecurity. Future studies should explore the relationship between quantitative and qualitative job insecurity in different countries. Furthermore, a cross-cultural study could contribute to the literature with an explicit test of the moderating effect of macro factors on the relationship between the two dimensions of job insecurity.

Future research

Within this dissertation project, we introduced a new field of research on the relationship between quantitative and qualitative job insecurity. Although future research should first and foremost concentrate on replicating our findings and cover the limitations that were mentioned above, we further identify two promising areas of research.

Measurement of qualitative job insecurity

In this dissertation, we used a generic Qualitative Job Insecurity Scale (QUAL-JIS) that measures employees' threat of negative change to any job characteristics. The scale consists of four generic items, which are not restricted to asking about a particular set of job features (Fischmann et al., 2021). In this regard, the current project contributes initial evidence for the relationship between a threat to job loss (i.e., quantitative job insecurity) and a generic (unspecified) threat to job features. Future research should explore whether the relationship between quantitative and qualitative job insecurity differs if we account for specific job features. In doing so, it may be interesting to adopt alternative scales of qualitative job insecurity that measure a threat to specific job features. For instance, the recently validated Multidimensional Qualitative Job Insecurity Scale (MQJIS) measures a perceived threat to four different aspects of work situation: job content, social relationship, employment conditions and working conditions (Brondino et al., 2020). We propose, as a progression of this dissertation project, to explore the link between quantitative job insecurity and different aspects of work situations measured as distinct dimensions of qualitative job insecurity.

The relationship between quantitative job insecurity across different patterns of job insecurity trajectories

In the last chapter, we explored the heterogeneity of the sample and identified five distinct job insecurity trajectories. Whereas in four out of five classes, the perceptions of quantitative and qualitative job insecurity were hand in hand, one class identified employees who felt insecure about their job conditions (i.e., high qualitative job insecurity) and concurrently felt relatively safe about their job (i.e., low quantitative job insecurity). A similar shape of job insecurity profiles was found in earlier research, suggesting that qualitative job insecurity can develop independently from quantitative job insecurity, whereas the latter is a cumulative process of both dimensions (i.e., qualitative job insecurity may increase on its own, while a rise in quantitative job insecurity is always accompanied by qualitative job insecurity). This presumption raises a question of different associations between quantitative and qualitative job insecurity across distinct shapes of job insecurity profiles. Future research could replicate our findings on identifying varying job insecurity trajectories and extend our research by comparing the associations between quantitative and qualitative job insecurity between the groups where the two dimensions develop hand in hand and the groups where qualitative job insecurity develops independently.

Conclusions

As economies worldwide navigate the post-pandemic recovery phase, the labour market is undergoing significant changes and uncertainties. Remote work has become more prevalent, and digital transformation and automation have accelerated, leading to new ways of work. Consequently, quantitative job insecurity, i.e., a threat to job loss, and qualitative job insecurity, i.e., a threat to job characteristics, have become leading psychosocial work stressors. Although perceived quantitative and qualitative job insecurity are well-documented to have an adverse effect on employees and organisations,

little is known about the relationship between the two dimensions of job insecurity. To date, research has been restricted to a unidirectional view, where quantitative job insecurity leads to qualitative job insecurity. Yet, the reverse or reciprocal relationship are both plausible alternatives. In this doctoral dissertation, we set out to apply a theoretical framework to elucidate the relationship between quantitative and qualitative job insecurity and, via the latest data analysis methods and statistical inference techniques, provide a comprehensive longitudinal analysis of the interplay between the two dimensions.

In conclusion, the collective findings from three separate studies shed light on the relationship between quantitative and qualitative job insecurity. Our findings indicate that the relationship between quantitative and qualitative job insecurity occurs in both directions; however, the process is not reciprocal, i.e., it does not occur simultaneously. Furthermore, over half of the variance in both types of job insecurity is at the between-person level, which stresses the importance of controlling for the between-person variance when exploring the intraindividual processes. Finally, we found five distinct job insecurity trajectories, which questions the homogeneity of the relationship between the two dimensions of job insecurity and presume that the direction and saliency of the associations between quantitative and qualitative job insecurity might vary across different job insecurity trajectories.

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