

# Hit by a double whammy? Trajectories of perceived quantitative and qualitative job insecurity in relation to work-related learning aspects

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# Hit by a double whammy? Trajectories of perceived quantitative and qualitative job insecurity in relation to work-related learning aspects

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## ABSTRACT

The aim of this study was to identify developmental patterns of job insecurity, taking into account quantitative as well as qualitative job insecurity, and to examine if these groups vary with regard to different work-related learning aspects, that is, occupational self-efficacy, learning from supervisor and colleagues, and acquired knowledge and skills (KSAOs). We conducted latent class growth analysis using three-wave data of 1366 Dutch employees. Five job insecurity patterns were identified: (1) high stable ( $n = 132$ ), (2) moderate-low stable ( $n = 555$ ), (3) low stable ( $n = 217$ ), (4) decreasing ( $n = 357$ ) and (5) increasing ( $n = 105$ ). In every class, the change pattern was similar for quantitative and qualitative job insecurity. Those in trajectories with high initial levels of job insecurity had lower initial levels of occupational self-efficacy, learning from others, and KSAOs than those with low initial levels of job insecurity. Additionally, job insecurity trajectories differed in the development of occupational self-efficacy over time. The findings indicate that there are distinct trajectories of the combination of quantitative and qualitative job insecurity, and that these demonstrate a substantial amount of heterogeneity concerning work-related learning.

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## KEYWORDS

Job insecurity; self-efficacy; workplace learning; conservation of resources theory; latent class growth analysis; person-centred approach

The labour market has become increasingly volatile, causing more and more employees to worry about their future work situation (Benach et al., 2014). These perceptions of job insecurity can pertain to the threat to the continuity of the job itself (i.e. quantitative job insecurity) or to the continuity of valued job features (i.e. qualitative job insecurity) (Hellgren et al., 1999). Previous research has demonstrated that job insecurity is a substantial work stressor, with detrimental consequences for employee and organization, in both the short and the long term (for meta-analyses see: Cheng & Chan, 2008; Jiang & Lavaysse, 2018; Sverke et al., 2002, 2019).

Research using a person-centred approach has indicated that it is important to consider subgroups of job insecurity characterized by different levels or patterns of job insecurity (Laursen & Hoff, 2006). For instance, Vander Elst and colleagues (2017) demonstrated that job insecurity only related to increased levels of depressive symptoms among individuals who experienced high levels of job insecurity, which concerned solely a small subgroup of the sample (i.e. 3.5%). However, it might be particularly relevant to investigate these subgroups from a developmental perspective, as job insecurity may fluctuate over time, and not all employees experience the same longitudinal pattern of job insecurity (Klug et al., 2020). Moreover, longitudinal patterns of quantitative job insecurity may display a substantial amount of heterogeneity in terms of occupational well-being (Kinnunen et al., 2014; Klug et al., 2019).

The current study takes into account distinct subgroups of individuals that differ with regard to their longitudinal trajectories of job insecurity, as these trajectories may relate

differently to outcomes. An important, yet largely neglected, outcome to link to these job insecurity trajectories is work-related learning, as the importance of work-related learning has its roots in the same societal and industrial changes that are responsible for increased perceptions of job insecurity. Knowledge and skills quickly become obsolete due to rapid technological changes, market changes and ceaseless innovation (Rozendaal et al., 2005). For organizations, it becomes important to invest in the continuous development of their employees if they want to maintain their competitive position (Rozendaal et al., 2005). Moreover, work-related learning may have particular resonance for employees experiencing job insecurity, as it might allow employees to adjust to new demands in their job and to prepare for future job changes. Nonetheless, an extensive body of research suggests that employees cope with job insecurity by psychologically withdrawing from the job and the organization (for reviews see: Lee et al., 2018; Shoss, 2017; De Witte et al., 2016, 2015). If job insecurity negatively impacts learning at work, employees might be hit by a “double whammy” (i.e. a combination of two negative circumstances or effects): workers are simultaneously in an insecure job situation and are also less likely to engage in learning at work, which might further encumber the vulnerability of these workers within the labour market.

The present study contributes to the literature on job insecurity and work-related learning in a number of ways. First, this study looks at groups of individuals that differ in their initial level and development of job insecurity over time, thereby taking the time aspect of a stress reaction into account. This

perspective has been shown to be important, as Ferrie et al. (2002), for instance, have demonstrated that the prolongation of job insecurity is an important factor in determining mental illness among employees. Second, the present study jointly investigates quantitative as well as qualitative job insecurity. These theoretically and empirically distinct forms of job insecurity have been shown to uniquely relate to a range of outcomes, independently of each other (e.g. Probst et al., 2019; Richter et al., 2013; Sender et al., 2017). The inclusion of both quantitative and qualitative job insecurity allows for a more comprehensive assessment of insecurity in current work life. In addition, little is known on how both insecurity types co-occur (see De Cuyper et al., 2019 for an exception), and to the best of our knowledge, no attempt has been undertaken to do so over time. The simultaneous investigation of quantitative and qualitative job insecurity in a person-centred approach provides insight into how these types of job insecurity develop over time. Third, this study examines whether job insecurity trajectories relate to different aspects of work-related learning, in which we consider different aspects of the learning process. We focus on occupational self-efficacy, which is viewed as an important first step for engagement in learning behaviour (Bandura, 1997), on two forms of informal learning (i.e. feedback and help provided by one's colleagues and supervisor), and on newly acquired knowledge, skills and competencies as a result of engaging in learning behaviour. Despite the importance of work-related learning, a surprisingly limited amount of studies has examined its relationship with such a substantial work stressor as job insecurity. It is particularly important to study learning at work in relation to the experience of job insecurity, as employees who worry about continuity in their job situation may be less inclined to engage in work-related learning, even though they may especially benefit from doing so.

### **Job insecurity as a stressor**

Job insecurity entails the perceived risk, and overall concern, that the existence of the future job is at stake (Greenhalgh & Rosenblatt, 1984). This definition underscores the subjective character of the construct, indicating that the experience of job insecurity is relevant regardless of whether an objective threat exists (Rosenblatt & Ruvio, 1996). Job insecurity may be understood as a multi-faceted concept, in which concerns about the continuity of the current job situation can pertain to the loss or deterioration of any employment condition (Rosenblatt & Ruvio, 1996). The literature therefore distinguishes between quantitative and qualitative job insecurity, which refer to potential loss of the job itself and potential loss of subjectively important features of the job, respectively (Greenhalgh & Rosenblatt, 1984). Qualitative job insecurity may thus refer to any negative or unwanted change in characteristics or conditions of the job, such as decreasing pay development, deteriorating job content, lacking of career opportunities or a decreasing ability to use one's skills (Hellgren et al., 1999). The present study considers both forms of job insecurity when investigating longitudinal trajectories.

At the heart of the job insecurity construct lies its involuntary nature and the subsequent powerlessness that employees

experience to deal with the perceived threat to the job situation (Lee et al., 2018). Previous research has indicated that this perceived lack of control could be even more detrimental than actual job loss (Dekker & Schaufeli, 1995). This fits the notion of conservation of resources (COR) theory (Hobfoll, 1989) that not only loss but also threat can lead to strain (Halbesleben et al., 2014). According to COR theory, stress occurs in the face of potential or actual loss of valued resources, such as employment, career progress or autonomy (Hobfoll, 1989). Hence, within this framework, both quantitative and qualitative job insecurity can be viewed as threats to resource loss.

### **Work-related learning aspects as resources**

We consider different variables that are related to employee learning at work, in which each dimension may reflect a different aspect of the learning process. First, we include occupational self-efficacy, which is defined as "the competence that a person feels concerning the ability to successfully fulfil the tasks involved in their job" (Rigotti et al., 2008, p. 239). Although occupational self-efficacy does not encompass learning in itself, previous research has indicated that self-efficacy is one of the most consistent precursors of involvement in learning activities and behaviour (Maurer et al., 2003; Sitzmann & Ely, 2011).

Second, we incorporate two forms of informal learning behaviour, namely learning from colleagues and from one's supervisor. Whereas formal learning refers to organized knowledge acquisition with systematic support to cultivate learning, informal learning comprises unstructured ways of learning without explicit objectives in terms of learning outcomes (Van Der Klink et al., 2014). We focus on informal learning as prior studies have indicated that employee learning mostly occurs through everyday practices and in non-educational settings (Tannenbaum et al., 2010), the majority of which takes place through interaction with other people (Eraut et al., 2002). In line with this view, social learning has been identified as a key dimension of learning (Billett, 2004; Boud & Middleton, 2003; Eraut, 2007). Therefore, the current study includes learning from colleagues and from one's supervisor, which refers to employees' perception of being provided with feedback, help and advice from their co-workers and supervisor. This type of learning concerns the extent to which colleagues and supervisors engage in certain behaviours, which is assumed to offset a learning process in which employees acquire new or deepen existing knowledge, skills and competences (Nikolova et al., 2013).

Third, we examine the extent to which employees acquire new knowledge, skills and abilities (KSAOs). The inclusion of KSAOs allows to investigate whether learning gains were obtained as a result of engaging in learning behaviour (Nikolova et al., 2019).

Building on COR theory, these work-related learning variables can be viewed as resources. Occupational self-efficacy is regarded as one of the most important resources within the COR framework, as it, in line with the personal resource construct, refers to the ability to successfully control and manage aspects of the environment (Bandura, 1997; Hobfoll et al., 2003). Learning from colleagues and supervisors can also be defined as resources, as they serve as channels for the attainment and conservation of valued resources, such as the

development of new competencies (i.e. KSAOs) (Hobfoll, 2001). KSAOs are considered to be personal resources, since knowledge, skills and competencies are aspects of the self that can increase employees' resilience during challenging circumstances (Hobfoll et al., 2003; Nikolova et al., 2014).

### **Longitudinal patterns of job insecurity**

This study examines longitudinal patterns of quantitative and qualitative job insecurity, which may differ across individuals rather than being homogeneous among the population (Kinnunen et al., 2014). Prior research has largely neglected the long-term development of job insecurity. Nonetheless, longitudinal studies employing a cross-lagged panel design can give an indication of the stability of the construct over time. For instance, a study by Mauno et al. (2001) indicated that employees continued to report similar job insecurity levels across a time span of three years. In line with this, a number of studies in different contexts, using different time lags, have suggested that quantitative job insecurity is relatively stable. De Cuyper et al. (2012; 1 year timelag; Finnish sample) found a stability coefficient of .67, whereas Selenko et al. (2017; 2 month timelag; English sample) and Vander Elst et al. (2014; 6 month timelag; Belgian sample) reported coefficients up to .77 and .79, respectively. Qualitative job insecurity also appears to be quite stable, with stability coefficients ranging from .57 and .64 (Fischmann et al., 2018; 6 month timelag; Romanian sample), to .75 (Van Hootegeem & De Witte, 2019; 6 month timelag; Belgian sample) and .78 (Vander Elst et al., 2014; 14 month timelag; Swedish sample). Note, however, that these coefficients are based on auto-regressive pathways in cross-lagged panel models, which tend to overestimate the amount of stability (Hamaker et al., 2015). Within-person analyses are necessary for a more sound assessment of construct stability within individuals."

Despite the high degree of - potentially overestimated - stability, the coefficients also indicate that changes in job insecurity do occur among some employees. External factors, such as transitioning into stable employment or experiencing an organizational restructuring, may bring about subsequent decreases or increases in job insecurity. (De Jong et al., 2016; Klug et al., 2019). The current study, however, does not focus on job insecurity antecedents but rather on the way in which job insecurity profiles relate to work-related learning outcomes.

Some research has looked into the developmental patterns of quantitative job insecurity. Kinnunen et al. (2014) found eight trajectories in a Finnish university context across two years, whereas Klug et al. (2019) retrieved six trajectories among young German workers over the course of six years. In both studies, the majority of respondents showed stable job insecurity perceptions, in which respectively 75% and 73% belonged to stable trajectories. Of the remaining employees, an approximately equal number of participants showed an increase or decrease in job insecurity over time (Kinnunen et al., 2014; Klug et al., 2019). Based on these research findings, it is expected that the majority of employees will be included in the stability trajectories. However, due to the exploratory nature of the method used for identifying subgroups (i.e. latent class growth analysis, see method section), no specific

hypotheses regarding the amount, level, or pattern of trajectories are formulated in the current study.

*Research Question 1: Which distinct developmental trajectories of quantitative and qualitative job insecurity exist that differ in terms of initial levels and patterns of change over time?*

### **Work-related learning aspects in relation to job insecurity patterns**

The relationship between job insecurity and work-related learning is investigated from two viewpoints. We first consider the initial level of the job insecurity trajectories, after which the (lack of) change in job insecurity will be addressed. As COR theory posits, individuals who have to deal with stressors are less likely to apply resources towards growth and development and, as a consequence, are more likely to remain within a demanding job situation (Hobfoll, 2002). This is related to a defensive posture in which workers under stress direct their energy towards the conservation of resources they already have rather than towards the obtainment of new resources (Hobfoll, 2001). Moreover, this defensive posture is energy consuming, and, consequently, individuals experiencing stress due to quantitative or qualitative job insecurity have a lower likelihood to engage in work-related learning because their resources are spent on dealing with the stressor (De Cuyper et al., 2012).

Internal resources, such as self-efficacy, can be greatly affected by the experience of stress, as previous research has demonstrated that resource loss negatively influences how capable individuals feel to handle future situations (Benight et al., 1999). Moreover, individuals under stress will scale back from activities that may put strain on their resources. By withdrawing from the work situation, one is less likely to encounter beneficial work experiences, such as feelings of mastery or positive affect, which foster the perception that one is able to handle difficult situations at work (Bandura, 1977). In line with this reasoning, a number of studies have shown that insecurity about continuity in one's job situation may undermine the perception about one's capacities to successfully manage occupational tasks and demands. For instance, quantitative job insecurity has been found to negatively relate to self-efficacy (Etehadi & Karatepe, 2018) and to self-esteem across a 1-year period (Kinnunen et al., 2003), and qualitative job insecurity has been shown to negatively impact occupational self-efficacy (Van Hootegeem & De Witte, 2019).

Social resources, such as social support, can also be impacted by psychological distress, as demonstrated by Hobfoll et al. (2003) who found that resource loss negatively changed perceived social support. Job insecurity, and the negative emotions associated with this insecurity, may impede employees' capacity to identify (learning) resources. This might result in a perceived reduced availability of others. Moreover, an insecure job situation has been shown to negatively affect relationships in the workplace, as prior research has indicated that the social or interpersonal strain associated with quantitative job insecurity can develop into becoming a perpetrator or a target of workplace bullying (Baillien & De Witte, 2009; De Cuyper et al., 2009). Similarly, a study by



Kinnunen et al. (2000) indicated that quantitative job insecurity weakens the extent to which employees feel that they can get help from their colleagues or their supervisor. Therefore, individuals experiencing job insecurity may be less likely to perceive that they can get feedback, advice or tips from their co-workers or superior, thereby having a lower likelihood to learn through interaction with others.

Resources in the form of new knowledge, skills, and competences have also been shown to suffer from worries, anxieties and stress. Lepine et al. (2004), for instance, demonstrated that the experience of resource threat was related to individuals exerting less effort to learn new knowledge and skills and to lower learning performance. The stressful experience of job insecurity may undermine the extent to which employees learn at work, as prior research has shown that qualitative job insecurity has a negative effect on the acquisition of KSAOs (Nikolova et al., 2019).

The stress process is assumed to be similar for all four outcomes, namely, individuals adopt a defensive posture to conserve resources, which is resource consuming and leads to withdrawal and disengagement from the work situation. Consequently, individuals with high initial levels of job insecurity may have low initial levels of occupational self-efficacy, learning from others and KSAOs, and individuals with low initial levels of job insecurity may have high initial levels of these different learning aspects. As the reaction to a stressor (i.e. job insecurity) is stronger with higher intensity of the stressor (Zapf et al., 1996), employees with higher initial levels of job insecurity may react more strongly, reflecting itself in lower initial levels of learning at work, as opposed to individuals experiencing little job insecurity. Along these lines, Kinnunen et al. (2014) demonstrated that trajectories with high initial levels of quantitative job insecurity had higher scores on exhaustion and turnover, and lower scores on vigour in contrast to trajectories with low initial levels of job insecurity. Moreover, the research findings of Klug, Bernhard-Oettel et al. (2019) showed that trajectories characterized by high initial levels of quantitative job insecurity exhibited lower overall levels of job and life satisfaction than trajectories with low levels of job insecurity.

*Research Question 2:* How do the identified job insecurity trajectories with different initial levels of job insecurity vary in their initial levels of occupational self-efficacy, learning from colleagues or supervisor, and KSAOs?

Finally, we take into account change and stability when linking job insecurity trajectories to aspects of work-related learning. Employees may vary in their development of learning at work depending on the pattern of quantitative and qualitative job insecurity over time. Regarding change in job insecurity trajectories, COR theory states that individuals under stress are more vulnerable to loss cycles, in which initial loss begets further loss (Hobfoll, 1989). Accordingly, increasing levels of job insecurity are considered as a resource loss, which, in turn, increases employees' vulnerability to ongoing loss in the form of decreasing levels of employee learning. At the same time, decreasing levels of job insecurity may provide individuals with the energy to invest in resources again, which may result in gains in learning at work. Thus, once a stressor is reduced, individuals can experience an improvement in psychological functioning (Zapf et al., 1996). This improvement, however, does not necessarily imply that employee

functioning is fully restored, as a decreasing change pattern solely indicates that the level of stressor has decreased, not that that it has disappeared. Similarly, an increase in job insecurity does not automatically entail that individuals have high perceived job insecurity, and consequently, does not imply that aspects tied to learning at work completely deteriorate. These changing job insecurity patterns may not reflect themselves in absolute re-establishment or destruction of learning at work but rather into recovery or deterioration of work-related learning relative to initial levels of the stressor.

Concerning the stability of job insecurity, individuals who are continuously exposed to the threat of resources loss will likely try to offset this loss and conserve remaining resources, which depletes their energy and resources (Hobfoll, 1989, 2001). Hence, the longer a stressor persists, the more resources are exhausted. The experience of long-term job insecurity may therefore have the greatest impact on psychological dysfunctioning (Zapf et al., 1996).

Previous research has demonstrated that the developmental pattern of a stressor has consequences for the way in which employees respond to it. As there are currently no studies on the way in which job insecurity trajectories relate to changes in work-related learning aspects, we build on research that is conceptually related to either job insecurity or learning at work. Kinnunen et al.'s (2014) research findings indicate that high stable quantitative job insecurity was associated with low stable vigour and high stable exhaustion and turnover intentions, and that changes in quantitative job insecurity were related to changes in exhaustion and turnover intentions. In addition, prior studies have demonstrated that the detrimental effects of threats of dismissal on self-rated health and psychiatric symptoms were stronger among individuals who were repeatedly exposed to potential job loss (Ferrie et al., 2002; Magnusson Hanson et al., 2015). Trajectories of psychological distress, which the experience of job insecurity entails, have also been shown to have differential associations with resources: individuals experiencing chronic distress were more likely to demonstrate loss in perceived social relational quality than those in other distress trajectories (Hou et al., 2010). Moreover, a recent study demonstrated that changes in quantitative and qualitative job insecurity were related to changes in occupational self-efficacy and KSAOs (Van Hootegem et al., 2021), which suggests that changes in job insecurity are related to changes in employees' resources.

*Research Question 3:* How do the identified job insecurity trajectories with different patterns of change in job insecurity vary in their pattern of change of occupational self-efficacy, learning from colleagues or supervisor, and KSAOs?

## Method

### Participants and procedure

The study is based on three-wave data collected in March 2012 (T1), October 2012 (T2) and March 2013 (T3) by an ISO-certified online marketing research company operating in The Netherlands. To obtain a representative heterogeneous sample, the company stratifies its sample based on information provided by the Central Office for Statistics of the Netherlands

regarding gender, age and education of the total Dutch population. As an incentive, respondents receive points for completely filling in the questionnaire, which can be exchanged for gift vouchers. For this study, participants received 100–120 points per wave, which equals a value between €1.11–1.33.

A total of 3467 participants received an invitation to partake in the study, of which 1711 employees completely filled in the survey (response rate of 49.4%). The survey was available to participants for a one-week period. Respondents who filled in the questionnaire at T1 and who were still a panel member, were invited to participate at T2 ( $N = 1689$ ). This resulted in participation of 1366 employees (response rate of 80.9%). At T3, panel members who filled in the survey at T1 and T2 were invited ( $N = 1359$ ). We received 1013 usable questionnaires (response rate of 74.5%). Since this is a longitudinal study in which linear trajectories are estimated, we only maintained participants which provided data for at least two data points. The final sample consisted of 1366 employees, 353 of whom filled in the survey at T1 and T2, and 1013 at all three time points.

The respondents had a mean age of 43.72 ( $SD = 10.89$ ) and 40.8% were female. Of the sample, 16.5% were lower educated (i.e. no education, primary education, or pre-vocational education), 45.2% had mid-level educational training (i.e. secondary vocational education or general secondary education) and 38.3% received higher educational training (university of applied sciences degree or university degree). The vast majority of the respondents had a permanent contract (88%), worked full-time (60%) and were not in a supervisory position (80%).

### Sample attrition

We analysed possible sample attrition by means of two binary logistic regression, using SPSS software (version 25). We included the study variables at T1, and the following demographic variables: age, contract type (1 = temporary contract vs 0 = permanent contract), educational level, employment percentage (1 = fulltime vs 0 = parttime), gender (1 = female vs 0 = male), number of children, supervisory position (1 = supervisory position vs 0 = no supervisory position). First, we compared individuals who only participated in the first wave (i.e. individuals who were excluded from our sample) to individuals who participated in at least two waves (1 = participation at T1 vs 0 = participation in at least two waves). The logistic regression model was statistically significant,  $\chi^2(16) = 52.075$ ,  $p < .01$ . Individuals with lower education ( $B = -.267$ ,  $p < .01$ ), lower tenure ( $B = -.017$ ,  $p < .05$ ) and a supervisory position ( $B = .377$ ,  $p < .01$ ) were more likely to drop out ( $B = -.267$ ,  $p < .01$ ). None of the study variables were significantly associated with dropout at T1. Second, we compared individuals who responded at T1 and T2 to individuals who participated in all three waves (1 = participation in T1 and T2 vs 0 = participation in T1, T2 and T3). The logistic regression model was statistically significant,  $\chi^2(16) = 58.479$ ,  $p < .01$ . Men were more likely to drop out ( $B = -.388$ ,  $p < .01$ ). In addition, employees with lower scores on occupational self-efficacy were more likely to drop out ( $B = -.422$ ,  $p < .01$ ;  $M_{\text{dropout}} = 3.78$ ;  $M_{\text{no dropout}} = 3.94$ ). We used full information maximum likelihood (FIML) to limit biases associated with systematic drop-out. FIML allows for the

inclusion of partially complete data (i.e. participants who only filled in two waves) by estimating parameters on the basis of the available complete data (Enders & Bandalos, 2001; Schlomer et al., 2010).

### Measures

(Table 1) demonstrates mean score values, standard deviations, correlations, and Cronbach's alpha (calculated using SPSS). All items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

#### Quantitative job insecurity

Employee perceptions of quantitative job insecurity were assessed using the four items Job Insecurity Scale developed by De Witte (2000) and validated by Vander Elst et al., (2014). A sample item is "I feel insecure about the future of my job".

#### Qualitative job insecurity

Qualitative job insecurity was measured using a four item measure, similar to the items of De Witte et al. (2010). This scale has been successfully used in previous studies, e.g. Fischmann et al. (2018), and Van Hootegem and De Witte (2019). An example item is "I feel insecure about the characteristics and conditions of my job in the future".

#### Occupational self-efficacy

Employees' perceptions of occupational self-efficacy were measured using six items of the occupational self-efficacy scale (Schyns & Von Collani, 2002), validated by Rigotti et al. (2008). An example item is "Whatever comes my way in my job, I can usually handle it".

#### Learning from colleagues

Learning from colleagues was measured using a four-item measure developed and validated by Nikolova et al. (2013). An example item is "My colleagues advise me if I don't know how to conduct a certain task".

#### Learning from supervisors

The extent to which employees learn from supervisors was assessed by means of the four-item scale, which was developed and validated by Nikolova et al. (2013). A sample item is "My supervisor is eager to trouble shoot with me how to solve a work-related problem".

#### KSAOs

Employees' newly acquired KSAOs in the past six months were measured with four items developed by Taverniers (2011). This scale has been previously used in, e.g. Nikolova et al. (2019) and Nikolova et al. (2016). An example item is "I have obtained new competences, which help me to function better at my work".

#### Covariates

Age (in years) and educational level (coded in two dummies: "lower educational training" and "higher educational training", with mid-level educational training as the reference category) were included as control variables, since these demographic variables could potentially influence both job insecurity, and

Table 1. Means, standard deviations, correlations and Cronbach's alpha for the study variables.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Age	43.72	10.89	-																				
2. Low edu.	.16	0.37	.20**	-																			
3. High edu.	.38	0.49	-.15**	-																			
4. QNJIT1	2.35	0.94	.05	.06*	-.03																		
5. QNJIT2	2.37	0.94	.05	-.04	-.04	.66**																	
6. QNJIT3	2.40	0.94	.06*	.09**	-.10**	.57**	.65**																
7. QLJIT1	2.64	0.93	.10**	.04	-.05	.72**	.52**	.48**															
8. QLJIT2	2.61	0.94	.07**	.02	-.03	.52**	.74**	.54**	.63**														
9. QLJIT3	2.65	0.93	.07*	.06*	-.11**	.42**	.50**	.75**	.55**	.62**													
10. OSET1	3.90	0.59	.05	-.06*	.04	-.20**	-.14**	-.13**	-.23**	-.13**	-.16**												
11. OSET2	3.90	0.59	.05	-.04	.03	-.17**	-.18**	-.15**	-.19**	-.20**	-.19**	.51**											
12. OSET3	3.96	0.54	.09**	-.01	.06	-.17**	-.16**	-.18**	-.21**	-.16**	-.20**	.51**	.58**										
13. LFCIT1	3.88	0.82	-.17**	-.07*	.07**	-.13**	-.12**	-.11**	-.19**	-.14**	-.10**	.16**	.11**	.12**									
14. LFCIT2	3.87	0.79	-.15**	-.05	.07**	-.09**	-.09**	-.10**	-.14**	-.13**	-.10**	.10**	.15**	.09**	.53**								
15. LFCIT3	3.89	0.76	-.13**	-.08**	.10**	-.10**	-.12**	-.14**	-.17**	-.14**	-.14**	.07*	.10**	.13**	.49**	.59**							
16. LFAST1	3.44	1.01	-.16**	-.06*	.07*	-.18**	-.16**	-.12**	-.28**	-.21**	-.16**	.12**	.09**	.04	.46**	.29**	.33**						
17. LFAST2	3.40	1.01	-.10**	-.01	.05*	-.14**	-.14**	-.18**	-.23**	-.26**	-.24**	.13**	.17**	.10**	.32**	.40**	.35**	.55**					
18. LFAST3	3.46	0.97	-.11**	-.01	.08**	-.10**	-.17**	-.18**	-.19**	-.25**	-.24**	.06	.12**	.13**	.27**	.35**	.48**	.50**	.61**				
19. KSAOT1	2.86	0.91	-.24**	-.19**	.25**	-.14**	-.14**	-.15**	-.18**	-.14**	-.14**	.09**	.06*	.03	.31**	.24**	.25**	.36**	.25**	.25**	.25**	.25**	.25**
20. KSAOT2	2.77	0.93	-.22**	-.15**	.25**	-.08**	-.15**	-.12**	-.12**	-.13**	-.14**	.08**	.11**	.05	.26**	.33**	.29**	.28**	.38**	.34**	.34**	.34**	.34**
21. KSAOT3	2.84	0.91	-.24**	-.16**	.25**	-.05	-.12**	-.15**	-.12**	-.13**	-.13**	.01	.01	.09	.22**	.30**	.29**	.21**	.30**	.36**	.36**	.36**	.36**

Note: \* p < .05; \*\* p < .01; Low edu. = low educational level; High edu. = high educational level; QNJ = quantitative job insecurity; QLJ = qualitative job insecurity; OSE = occupational self-efficacy; LFC = learning from colleagues; LFS = learning from supervisor; KSAOs = knowledge, skills and competencies



work-related learning outcomes (e.g. Nikolova et al., 2016; De Witte & Näswall, 2003).

### Analysis strategy

Data were analysed with Mplus version 8.3, using maximum likelihood robust (MLR) estimation. We used several goodness-of-fit indices to evaluate model fit: (a) the comparative fit index (CFI) (Bentler, 1990), (b) the Tucker-Lewis Index (TLI) (Hu & Bentler, 1999), (c) the root mean squared error of approximation (RMSEA) (Steiger, 1990), and (d) the standardized root mean squared residual (SRMR) (Hu & Bentler, 1999). CFI and TLI values close to .95 or greater, RMSEA values of .06 or below, and SRMR values of .08 or below indicate good model fit (Hu & Bentler, 1999).

### Identifying job insecurity trajectories

We first assessed the factorial structure of both types of job insecurity to ensure that both constructs are empirically distinct and investigated whether the quantitative and qualitative job insecurity measures were invariant over time. Every item loaded on their corresponding latent factor at every time point. Item residuals were allowed to correlate with equivalent items across time. The hypothesized two-factor model ( $\chi^2(213) = 885.739$ , RMSEA = .048, CFI = .962, TLI = .951, SRMR = .038; see Appendix A) provided a significantly better fit to the data than the one-factor job insecurity model. In addition, we assessed measurement invariance by comparing a sequence of models with imposing restrictions. We found support for a full measurement invariance model ( $\chi^2(261) = 916.383$ , RMSEA = .043, CFI = .963, TLI = .961, SRMR = .040; see Appendix A), meaning that factor loadings, intercepts, residual variances and correlations between item residuals at adjacent time waves were fixed equal across time, as indicated by the subsequent CFI differences lower than .01 (Chen, 2007).

In a subsequent step, we examined the development of job insecurity over time, by estimating a latent growth curve model in which quantitative and qualitative job insecurity were both included. This allows to assess whether on average change occurred in these constructs over time, and whether there were inter-individual differences in change. We allowed the latent job insecurity variables measured at the same time point to correlate with each other. The intercept loadings were fixed to 1 at every time point. The intercept refers to the initial level, or the mean of the variable of interest at the first time point (Wickrama et al., 2016). As we had two time lags of the same length (e.g. six months), the loadings of the slope were fixed to 0, 1 and 2, for T1, T2 and T3 respectively.

To estimate job insecurity trajectories, we used latent class growth analysis (LCGA). A LCGA extends a conventional growth curve model to incorporate heterogeneity in the form of categorical latent classes, which results in separate growth models for each longitudinal class (Wickrama et al., 2016). The variance and covariance estimates for the growth factors are fixed to zero in a LCGA, assuming that all individual growth trajectories within a class are homogenous (Jung & Wickrama, 2008). The growth trajectories of quantitative and qualitative job insecurity were simultaneously included in the

LCGA. We used 500 random sets of starting values for the initial stage and 10 final stage optimizations (Muthén & Muthén, 1998–2017). A common problem of latent class analyses, such as LCGA, is that they do not always converge at the best possible log likelihood value (i.e. global maximum or global solution), which may lead to model estimation at a so-called local maximum of the log likelihood (i.e. local solution) (Geiser, 2012). These local solutions can have substantial consequences, possibly leading to incorrect fit statistics, biased parameter estimates or adoption of an inferior solution (Hipp & Bauer, 2006). We assessed whether we ran into a local likelihood maximum by comparing whether the parameter estimates obtained with the seed values of the best loglikelihood values were very similar to the estimates of the initial analyses (i.e. OPTSEED syntax in Mplus) (Jung & Wickrama, 2008; Muthén & Muthén, 1998–2017).

Several criteria were used to decide on the number of classes (Nylund et al., 2007; Wickrama et al., 2016): (a) Bayesian information criterion (BIC), (b) the Lo–Mendell–Rubin adjusted likelihood ratio test (LMR), (c) Entropy and Average Posterior Probabilities (AvePP), (d) sample size of the smallest class, and (e) interpretability of each class trajectory. Lower BIC values indicate a better model fit, while a significant LRT test indicates that a model with  $k + 1$  classes outperforms a model with  $k$  classes. Entropy and AvePP values range from 0 to 1, with higher values indicating clearer class separation (Clark & Muthén, 2009). The smallest class should contain a minimum of 5.0% of the sample and/or the sample size of the smallest class should contain at least 25 individuals (Wickrama et al., 2016).

### Linking job insecurity trajectories to work-related learning aspects

The work-related learning outcomes were also analysed based on T1, T2, and T3. The longitudinal factor structure and measurement invariance of the learning outcomes were first examined. All items loaded on their respective latent construct at each wave, and item residuals of corresponding items were allowed to correlate across time points. The hypothesized four-factor model, in which all constructs loaded on their respective factor, provided the best fit to the data ( $\chi^2(1257) = 2259.622$ , RMSEA = .024, CFI = .977, TLI = .974, SRMR = .035; see Appendix B). When testing for measurement invariance, the results provided support for a full invariance model ( $\chi^2(1375) = 2416.425$ , RMSEA = .024, CFI = .976, TLI = .975, SRMR = .039; see Appendix B), in which factor loadings, intercepts, residual variances and correlations between item residuals at adjacent time waves were fixed equal across time.

To obtain growth factors for the different learning outcomes, we fitted each growth model separately as a first step. The growth curve models of occupational self-efficacy ( $\chi^2(153) = 250.942$ , RMSEA = .022, CFI = .988, TLI = .988, SRMR = .045), learning from colleagues ( $\chi^2(64) = 55.480$ , RMSEA = .000, CFI = 1.00, TLI = 1.00, SRMR = .023), learning from one's supervisor ( $\chi^2(64) = 270.447$ , RMSEA = .049, CFI = .976, TLI = .975, SRMR = .028), and KSAOs ( $\chi^2(64) = 185.216$ , RMSEA = .037, CFI = .986, TLI = .986, SRMR = .019) provided a good fit to the data. We then extracted

the intercepts and slopes from these models by means of factor scores (Muthén & Muthén, 2017).

To link job insecurity trajectories to the intercepts and slopes of the different learning aspects, we implemented the three-step approach. We used the “manual” method (i.e. performing the three analytical steps separately) to allow for the simultaneous inclusion of covariates and outcomes in the final step. In the first step, a latent class model is identified using only latent class indicator variables (i.e. LCGA of quantitative and qualitative job insecurity) (Asparouhov & Muthén, 2014). In the second step, the variable identifying the class to which each individual most likely belongs is created, manually accounting for the misclassification errors (i.e. the uncertainty rates of class membership) that were estimated in Step 1 (Vermunt, 2010; Wickrama et al., 2016). This ensures that the inclusion of external variables does not change the class formation (Wickrama et al., 2016). In the last step, the covariates and outcomes are included, using the class variable and the misclassification errors of the second step (Asparouhov & Muthén, 2014). We included age and educational level as covariates by regressing class membership and the growth factors of the learning aspects on age and educational level. We used Wald chi-square tests to assess whether the growth factor means of the work-related learning aspects significantly differed depending on one’s class membership (Asparouhov & Muthén, 2007). For research question 2, we did pairwise comparisons between the job insecurity classes on the intercepts of the outcome variables, while for research question 3 we compared the slopes of the outcome variables across classes.

## Results

### Job insecurity latent growth models

The linear growth model of quantitative and qualitative job insecurity provided a good fit to the data ( $\chi^2(276) = 17,927.327$ , RMSEA = .041, CFI = .963, TLI = .961,

SRMR = .041). The positive slope was significant, indicating that employees on average follow a linear trend in quantitative job insecurity see (Table 2). The variance of the slope was also significant, which entails that over the whole sample employees differed in their growth trajectory. The covariance between the intercept and slope was negative, but just above the threshold for significance, signifying that, in general, the growth curve of quantitative job insecurity was unrelated to the initial level. The slope growth factor mean of qualitative job insecurity was positive but non-significant, which means that there is no development over time on average concerning qualitative job insecurity. However, the variance of the slope growth factor was significant, indicating that there is significant variability in employees’ growth rates. The negative covariance between the intercept and slope was significant, which suggests that individuals with higher initial levels of qualitative job insecurity had a steeper decrease in qualitative job insecurity over time compared to individuals with lower initial values.

### Latent class growth analysis

As previous research has indicated class solutions of up to eight job insecurity trajectories, we compared solutions of one to eight trajectories (Kinnunen et al., 2014). The BIC values continued to decrease per added class see (Table 3). Although the BIC value is an important criterion for deciding on the number of classes, it has been recommended to include more than one comparison in selecting a final model (Van De Schoot et al., 2017). The adjusted LMR test indicated that a five-class solution fitted the data best. Starting from the six-class solution, the smallest class contained less than 5% of the sample, which has been suggested as a threshold for the sample size of the smallest class. As the entropy and AvePP values indicated good classification of individuals, the five-profile model was selected (Clark & Muthén, 2009; Wickrama et al., 2016). In addition, this class solution provided five developmentally distinct

**Table 2.** Growth factors of the different latent growth models.

	Intercept			Slope				Covariance	
	Mean estimate	Variance		Mean		Variance		Estimate (SE)	P value
		Estimate (SE)	P value	Estimate (SE)	P value	Estimate (SE)	P value		
Quantitative job insecurity	0	.613 (.045)	p < .001	-.046 (.013)	p < .001	.067 (.020)	p < .001	-.047 (.024)	p = .053
Qualitative job insecurity	0	.524 (.039)	p < .001	-.015 (.013)	p = .242	.055 (.018)	p < .01	-.047 (.021)	p < .05
Occupational self-efficacy	0	.202 (.024)	p < .001	.019 (.009)	p < .05	.016 (.011)	p = .141	-.007 (.012)	p = .583
Learning from colleagues	0	.439 (.052)	p < .001	.006 (.013)	p = .625	.046 (.026)	p = .072	-.033 (.029)	p = .263
Learning from supervisor	0	.614 (.059)	p < .001	.002 (.015)	p = .889	.086 (.028)	p < .01	-.065 (.033)	p = .053
KSAOs	0	.456 (.038)	p < .001	-.02 (.012)	p = .099	.036 (.019)	p = .058	-.008 (.021)	p = .703

Notes. In a multiple indicator growth model, the mean of the intercept growth factor is fixed at zero (Muthén & Muthén, 1998–2017)

**Table 3.** Goodness of fit indices for latent class growth analysis of quantitative and qualitative job insecurity.

No. of trajectories	logL	No. free parameters	BIC	aLMR p value	Entropy	Latent trajectory proportions	AvePP
1	-35,175.161	46	70,682.425			100	
2	-33,878.430	51	68,125.061	.000	0.840	57.6/42.4	.95-.96
3	-33,524.126	56	67,452.552	.007	0.799	37.3/17.9/44.9	.90-.92
4	-33,363.982	61	67,168.362	.001	0.799	17.1/41.7/9.0/32.3	.87-.91
5	-33,251.061	66	66,978.619	.011	0.800	26.1/7.7/15.9/9.7/40.6	.78-.91
6	-33,190.060	71	66,892.714	.107	0.795	15.2/2.2/12.6/38.4/7.8/23.8	.79-.91
7	-33,120.397	76	66,789.488	.096	0.804	26.0/5.1/35.1/13.8/14.3/3.4/2.3	.82-.94
8	-33,081.593	81	66,747.977	.132	0.800	5.9/14.2/3.3/2.1/13.0/5.1/20.4/36.1	.73-.91

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

profiles. The results of the OPTSEED command indicated that the parameter estimates of the five trajectory model were replicated across solutions, which suggests that we did not run into a local likelihood maximum (Jung & Wickrama, 2008).

Figure 1 illustrates the different trajectories of quantitative and qualitative job insecurity. The first group included 357 individuals (26.1%) and is characterized by a relatively high initial level of both quantitative (intercept = 1.09,  $p < .01$ ) and qualitative job insecurity (intercept = .96,  $p < .01$ ) that decreased over time (slope<sub>quantitative</sub> =  $-.16$ ,  $p < .01$ ; slope<sub>qualitative</sub> =  $-.19$ ,  $p < .01$ ). We coined this group the *decreasing group*. The second trajectory consisted of 105 individuals (7.7%) and had moderate levels of quantitative (intercept = .17,  $p = .18$ ) and qualitative (intercept = .10,  $p = .62$ ) job insecurity. Both quantitative and qualitative job insecurity increased over time, as indicated by the significant slopes (slope = .78,  $p < .01$ ; slope = .62,  $p < .01$ , respectively). We called this group the *increasing group*. The third group comprised of 217 (15.9%) individuals of the entire sample, and consisted of employees who had low levels of both quantitative (intercept =  $-.58$ ,  $p < .01$ ) and qualitative job insecurity (intercept =  $-.74$ ,  $p < .01$ ), that continued to be low across time (slope =  $-.04$ ,  $p = .13$ ; slope =  $-.04$ ,  $p = .21$ , respectively). We labelled this trajectory *low stable*. The fourth trajectory consisted of 132 individuals (9.7%) and is characterized by high levels of quantitative (intercept = 1.87,  $p < .01$ ) and qualitative (intercept = 1.47,  $p < .01$ ) job insecurity. The slope of quantitative job insecurity indicates a small increase over time (slope = .12,  $p < .05$ ), while the slope of qualitative job insecurity indicated stability over time (slope = .09,  $p = .06$ ). Overall, the levels of job insecurity remained quite stable over time, which is why we named this trajectory *high stable*. The fifth group included 555 (40.6%) individuals who had moderate to low levels of quantitative and qualitative job insecurity. Since the intercepts of the last group are fixed to zero in LCGA, these estimates could not be provided. The job insecurity scores of this group are similar to

the overall sample means displayed in (Table 1) (see Appendix C for the sample means per latent class based on respondents' probability of belonging to a latent class). The quantitative job insecurity slope suggested a slight increase over time (slope = .05,  $p < .05$ ), whereas the qualitative job insecurity slope indicated stability across time (slope = .04,  $p = .07$ ). Since both slopes indicated very limited change over time, we labelled this group the *moderate-low stable group*.

### Job insecurity trajectories in relation to work-related learning aspects

The results demonstrated that the job insecurity classes significantly differed in terms of their baseline levels (i.e., intercepts) on all four work-related learning outcomes see (Table 4), as indicated by the significant overall Wald tests. When the classes were separately compared, the results indicated that the high stable group, followed by the decreasing group, which both had the highest initial levels of job insecurity, had the lowest baseline levels on the work-related learning outcomes. The low stable group, characterized by the lowest initial level of job insecurity, consistently had the highest scores. The increasing and moderate low trajectory had relatively similar intercept values on the various learning outcomes, which is not surprising given that both groups had comparable initial values at T1.

Regarding the differences in changes in baseline levels over time (i.e. slopes), the results indicate that the diverse job insecurity trajectories did not significantly differ in terms of learning from colleagues, from one's supervisor, or KSAOs. We did, however, find that the trajectories differed in the development of occupational self-efficacy over time. The low stable and the moderate-low stable group significantly differed from the increasing and decreasing trajectories. Only the low stable trajectories had a significant slope, of which the positive and small values indicate that participants in these groups experienced a slight increase in occupational self-efficacy across time.

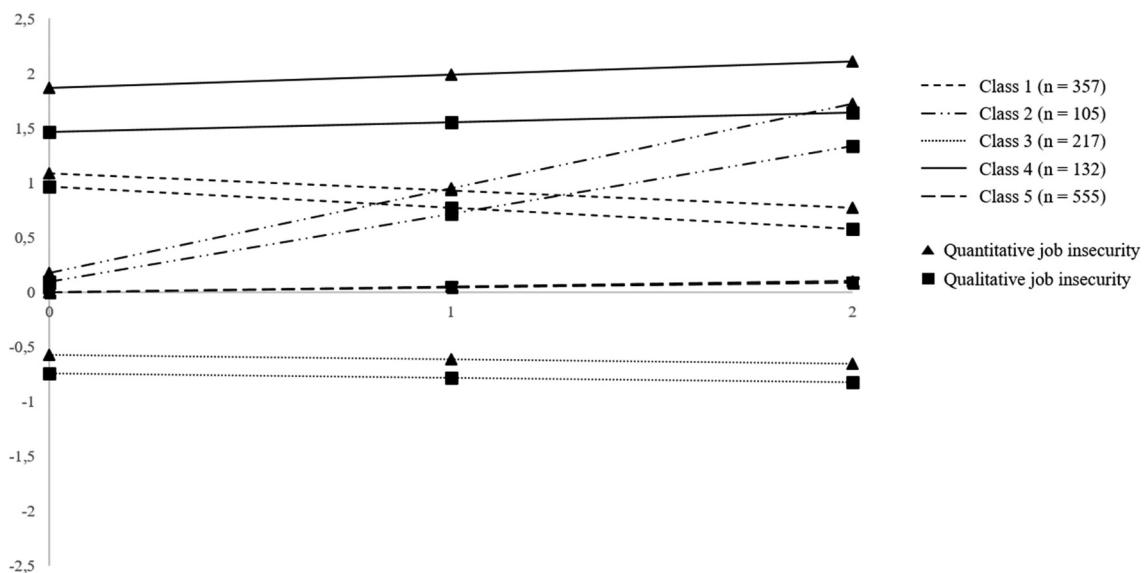


Figure 1. Trajectories of quantitative and qualitative job insecurity. 0, 1 and 2 on the x-axis refer to T1, T2 and T3, respectively.

**Table 4.** Growth factors of work-related learning aspects in relation to job insecurity trajectories.

Job insecurity trajectories	Occupational self-efficacy				Learning from colleagues			
	Intercept M (SE)	Slope M (SE)	Wald test intercept (df)	Wald test slope (df)	Intercept M (SE)	Slope M (SE)	Wald test intercept (df)	Wald test slope (df)
1) Decreasing	-.28** (.05)	.00 (.01)	91.08** (4)	16.71** (4)	.27** (.07)	.00 (.01)	25.58**	3.36 (4)
2) Increasing	-.16* (.06)	.01 (.01)	<2*, 3**, 5**	<3**, <5**	.38** (.10)	.00 (.02)	<3**	
3) Low stable	.05 (.05)	.02** (.01)	>1*, <3*	<3**	.50** (.07)	-.01 (.01)	>4*	
4) High stable	-.24** (.06)	.01 (.01)	>1**, 2**, 4**, 5**	>1**, >2**	.15 (.09)	-.02 (.02)	>1**, 4**, 5**	
5) Moderate-low stable	-.13*** (.04)	.01* (.01)	<3**, 5*	>1**	.35** (.07)	-.01 (.01)	<2*, 3**, 5**	
			>1**, 4*, <3**	>1**			<3**, >4**	
Job insecurity trajectories	Learning from supervisors				KSAOs			
	Intercept M (SE)	Slope M (SE)	Wald test intercept (df)	Wald test slope (df)	Intercept M (SE)	Slope M (SE)	Wald test intercept (df)	Wald test slope (df)
1) Decreasing	.18* (.08)	.00 (.02)	76.76** (4)	6.71 (4)	.35** (.07)	.00 (.01)	25.74** (4)	.97 (4)
2) Increasing	.40** (.12)	-.05 (.03)	<2*, 3**, 5**	>4**	.40** (.10)	-.01 (.02)	<3**	
3) Low stable	.56** (.09)	-.01 (.02)	>1*, 4**		.50** (.08)	.00 (.01)	>4*	
4) High stable	-.07 (.11)	-.04 (.02)	>1**, 4**		.22* (.09)	.00 (.01)	>1**, 4**, 5**	
5) Moderate-low stable	.40** (.08)	-.02 (.02)	<1**, 2**, 3**, 5**		.47** (.06)	.00 (.01)	<2*, 3**, 5**	
			>1**, 4**	<3*			<3**, >4**	

## Discussion

Our first research question pertained to the identification of different developmental patterns of quantitative and qualitative job insecurity. Five distinct job insecurity trajectories were established, which differed in their mean-level and mean-level changes of job insecurity. We found that the majority of our respondents belonged to a stable class (66%), which is in line with prior research that found that approximately 75% of the participants had a stable job insecurity trajectory (Kinnunen et al., 2014; Klug et al., 2019). More than half of the respondents experienced little to no job insecurity, as they scored below the middle of the scale (see Appendix C): 41% were barely worried about future job changes and 16% of the participants were not concerned at all about their future job situation. Approximately 10% experienced chronically high levels of job insecurity, while about 8% of our sample had increasing worries about the continuity of their job in the future, with similar job insecurity levels as the high stable group at time point 3 (T3). One quarter of our sample experienced decreases in their levels of job insecurity over time, with job insecurity levels that remained higher than the sample mean at T3.

To the best of our knowledge, our study is the first to combine trajectories of quantitative and qualitative job insecurity. Our results indicate that both types of job insecurity develop comparably across time, as each group was characterized by a similar change pattern for quantitative and qualitative job insecurity. This aligns with previous research that suggests that perceptions of quantitative and qualitative job insecurity frequently go hand in hand (De Cuyper et al., 2019). Although both forms of job insecurity are theoretically and empirically distinct constructs, they may arise from shared causes such as organizational restructuring and changes (Greenhalgh & Rosenblatt, 1984; De Jong et al., 2016; Nikolova et al., 2019). In addition, it is possible that quantitative job insecurity also implies qualitative job insecurity, as worries about losing one's job might at the same time indicate concerns about losing the aspects which this job consists of (Chirumbolo et al., 2017). Conversely, insecurity about important job features could be generalized towards the job as a whole, in which qualitative job insecurity signify perceptions of quantitative job insecurity. Future studies should therefore focus on investigating the way in which these job insecurity dimensions influence each other.

The second and third research question set out to examine differences between job insecurity classes regarding initial levels and changes in work-related learning, respectively. Based on conservation of resources (COR) theory (Hobfoll, 1989), we theorized that individuals who experience job insecurity may withdraw from work-related learning behaviour. COR theory postulates that the experience of stress elicits a defensive mode, to preserve remaining resources (Hobfoll et al., 2018). As this defensive posture is energy-depleting, less energy may be directed towards engaging in learning behaviour. In contrast, employees with low levels of job insecurity may be more likely to invest in the acquisition of new resources (Hobfoll et al., 2018). For this, we focused on different dimensions of the learning process, namely, on occupational self-efficacy, which is an important attitude on which employees rely to engage in work-related learning, on the perceived

availability of feedback and help provided by one's colleagues and supervisor, and on the extent to which employees acquired new work-related competencies (i.e. KSAOs). The reported research findings indicate that job insecurity trajectories significantly differed concerning their levels of different aspects of the learning process, in which higher levels of job insecurity were related to lower levels of work-related learning outcomes, and lower levels of job insecurity were related to higher initial levels of learning aspects.

In addition to differences in baseline levels of work-related learning, we investigated differences in the development of learning over time. Concerning occupational self-efficacy, we found significant differences in the rate of change of occupational self-efficacy across time points. In line with COR, individuals who did not experience stress in the form of job insecurity were in a better position to accumulate further resources, as indicated by a slight increase in occupational self-efficacy over time in the low and stable job insecurity trajectories. Individuals who developed increasing levels of job insecurity did not encounter a decrease in occupational self-efficacy across time. This is in contrast with COR theory, which posits that these individuals become more vulnerable to ongoing loss of resources (Hobfoll, 2001). It is possible that it takes longer than 12 months for job insecurity to tax employees' resources and affect occupational self-efficacy. In addition, the decreasing job insecurity group did not experience improved levels of occupational self-efficacy. The lack of restored occupational self-efficacy levels despite decreases in job insecurity may be explained by the continuously high levels of job insecurity at T3, indicating that the experienced level of stress was still too high for an improvement in psychological functioning to occur.

When combining the job insecurity trajectories with the results regarding the baseline levels as well as the growth of occupational self-efficacy, the results suggest that the most vulnerable groups stagnate, while groups in an already more favourable position experience a slight growth. That is, individuals with high initial scores of job insecurity (i.e. high stable and decreasing trajectories) have the lowest occupational self-efficacy scores, and do not experience an amelioration over time, whereas workers with low initial levels of job insecurity (i.e. low and moderate-low trajectories) had the highest occupational self-efficacy scores combined with an advancement in occupational self-efficacy. The increasing difference between these groups' occupational self-efficacy scores across time hints towards a small Matthew effect (Merton, 1968), in which advantage accumulates into further advantage. This idea also underlies COR theory, which states that those who are endowed with resources (i.e. security about employment or valued job characteristics) are better able to invest resources for further resource improvement, and thus to expand their resources (i.e. gains in occupational self-efficacy) (Hobfoll, 2001).

We did not find any significant differences between the job insecurity classes regarding the development of learning from one's supervisor or colleagues, or the acquisition of knowledge, skills and competencies (KSAOs). It might be possible that a longer time frame is needed for changes in job insecurity to translate into changes in work-related learning behaviour. In line with this, Sverke et al. (2002) suggested that work-related attitudes (e.g. occupational self-efficacy) might



change closer in time to the stressor, whereas work-related behaviour may manifest itself after a longer period of time. While learning from colleagues and one's supervisor can be classified as learning behaviour in interaction with others, the acquisition of KSAOs can be viewed as the result of learning behaviour. Since both are tied to learning behaviour, they may be categorized under work-related behaviour. Consequently, changes in job insecurity may not be instantaneously reflected in changes in these learning behaviours. However, it has also been suggested that shorter time lags than those frequently employed in longitudinal research, are valid in a lot of studies (Dormann & Griffin, 2015). Future studies should investigate optimal time lags by conducting a "shortitudinal study"; a multiwave study using shorter intervals to provide information about the distribution of effect sizes over time (Dormann & Griffin, 2015). Furthermore, in the current study, the slopes of both job insecurity and work-related learning outcomes are based on the same time points, which entails that changes in the dependent and independent variable were simultaneously assessed. Future research might benefit from investigating whether changes in job insecurity (e.g. T1-T4) prompt a delayed response with respect to changes in work-related outcomes (e.g. T3-T6).

### **Limitations and future research**

A number of limitations of the current study need to be taken into account. A first limitation of our study is that our results do not allow to draw conclusions regarding causality, as we considered differences in baseline levels and changes in these levels of learning outcomes rather than causal effects. The aim of this study, however, was to adopt a person-oriented approach to identify meaningful trajectories of quantitative and qualitative job insecurity, and to investigate whether these differ in terms of work-related learning. Additionally, prior research has provided initial evidence that job insecurity influences work-related learning instead of vice versa (Van Hootegem & De Witte, 2019). Nonetheless, future studies could add to this research by further analysing the directionality of the relationship between job insecurity and learning at work.

A second shortcoming is that a three-wave longitudinal study design was employed to assess linear change across time. However, growth may also follow a quadratic form, in which the development of the study variables is not constant across all time points (Wickrama et al., 2016). Since four or more waves are needed to model non-linear patterns of change (Wickrama et al., 2016), future research should investigate these relationships with more time points.

A third concern is that we did not investigate the mechanisms that may underlie the relationship between quantitative and qualitative job insecurity and learning at work. It may be possible that the stress associated with job insecurity offsets a chain of resource losses, which ultimately results in the loss of resources tied to work-related learning. For instance, individuals experiencing stress due to job insecurity might be less likely to partake in learning at work because their cognitive resources or energy are consumed in dealing with the stressor. Future research should investigate whether the depletion of

cognitive or energy resources lies at the basis of reduced learning attitudes and behaviour.

A final potential limitation is related to the representativeness of our sample. Our attrition analysis indicated that individuals who had a lower educational degree, lower tenure and a supervisory position were more likely to only have participated in the first wave. Since these individuals were not included in any further analyses, it is important to be cautious when interpreting and generalizing the results of this study. For instance, individuals with a lower educational degree were more likely to drop-out in our sample. Since job insecurity perceptions tend to increase as one's educational level decreases (De Bustillo & De Pedraza, 2010), the drop-out of individuals with a degree of lower education might have contributed to a restriction of the range of job insecurity, possibly resulting in an underestimation of the associations between the study variables. Future research could therefore benefit from replicating the results in a more representative sample.

We encourage future research to investigate trajectories of quantitative and qualitative job insecurity in different samples. Both types of job insecurity were highly correlated in our sample (i.e. ranging from .72 to .75 at the same time point), which might explain why similar patterns were found. Investigating the trajectories in samples where quantitative and qualitative job insecurity are less highly related to each other would allow researchers to examine whether both forms of job insecurity predominantly evolve close to each other in time or whether, for instance, job insecurity trajectories might also develop in opposing directions or whether only one of the two types of job insecurity might change, and the consequences this has for employee responses.

### **Conclusion and implications**

To conclude, the current study demonstrates that individuals differ in the way in which job insecurity evolves over time, and that quantitative and qualitative job insecurity develop closely together over time. These developmental patterns of job insecurity differ in terms of their levels of work-related learning outcomes. Our research findings have important implications for employers and organizations. Interventions to reduce job insecurity may benefit from being aimed at both quantitative and qualitative job insecurity, as both forms of job insecurity appear to be strongly linked to each other. While previous research has demonstrated that interventions aimed at communication and participation are successful in reducing quantitative job insecurity (e.g. Abildgaard et al., 2017; Vander Elst et al., 2010), research on how to reduce qualitative job insecurity is lagging behind. Nevertheless, it may be important for organizations to not only communicate and involve employees in decision-making about possible job loss, but also concerning elements of the job that might change. Since our research findings suggest that job insecurity has negative implications in terms of work-related learning, employers may want to invest in the career management of their workers, for which interventions aimed at perceived employability may be useful (Hodzic et al., 2015). Perceived employability has been proven to function as a buffer in times of job insecurity (e.g. Berntson et al., 2010; Silla et al., 2009), and to provide individuals with a sense of control over their goals and their

career (Berntson et al., 2008). Hence, it would be helpful for future research and for organizations to consider the role of this personal resource in mitigating the negative consequences of job insecurity for employee learning.

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## Appendix A

Fit indices of job insecurity competing nested factor models. standardized maximum likelihood estimates

Model no.	Model	$\chi^2$	df	RMSEA	SRMR	CFI	$\Delta$ CFI	TLI	Comparison to model no.	Satorra-Bentler corrected $\Delta \chi^2$
Factorial structure of measurement model										
1	One-factor model	1989.476	225	.076	.052	.900		.877		
2	Two-factor model (hypothesized)	885.739	213	.048	.038	.962		.951	1	816.46***
Measurement invariance of two-factor measurement model										
3	Metric invariance	907.100	225	.047	.039	.961	.001	.953	2	17.90
4	Strong invariance	927.923	237	.046	.039	.961	0	.954	3	14.84
5	Strict invariance	909.520	253	.044	.040	.963	.002	.959	4	11.43
6	Full invariance	916.383	261	.043	.040	.963	0	.961	5	9.82

Note: all models fitted using a robust maximum likelihood estimator; \*  $p < .05$ ; \*\*  $p < .01$ ; Metric invariance = factor loadings equal across time; Strong invariance = factor loadings and intercepts equal across time; Strict invariance = factor loadings, intercepts, and residual variances equal across time; Full invariance = factor loadings, intercepts, residual variances and correlations between item residuals at adjacent time waves are fixed equal over time equal across time

## Appendix B

Fit indices of learning outcomes competing nested factor models. standardized maximum likelihood estimates

Model no.	Model	$\chi^2$	df	RMSEA	SRMR	CFI	$\Delta$ CFI	TLI	Comparison to model no.	Satorra-Bentler corrected $\Delta \chi^2$
Factorial structure of measurement model										
1	One-factor model	23,786.818	1320	.112	.170	.482		.438		
2	Three-factor model (occupational self-efficacy and KSAOs load on one factor)	9341.128	1287	.068	.130	.814		.793		8387.900**
3	Three-factor model (learning from colleagues and from supervisor load on one factor)	7577.924	1287	.060	.084	.855		.839		8539.917**
4	Four-factor model (hypothesized)	2259.622	1257	.024	.035	.977		.974		2245.557**
Measurement invariance of two-factor measurement model										
5	Metric invariance	2293.836	1285	.024	.036	.977	0	.975	4	33.773
6	Strong invariance	2324.532	1313	.024	.036	.976	.001	.975	5	27.131
7	Strict invariance	2367.717	1349	.024	.038	.976	0	.975	6	52.822*
8	Full invariance	2393.041	1367	.023	.038	.976	0	.975	7	26.467

Note: all models fitted using a robust maximum likelihood estimator; \*  $p < .05$ ; \*\*  $p < .01$ ; Metric invariance = factor loadings equal across time; Strong invariance = factor loadings and intercepts equal across time; Strict invariance = factor loadings, intercepts, and residual variances equal across time; Full invariance = factor loadings, intercepts, residual variances and correlations between item residuals at adjacent time waves are fixed equal over time equal across time

## Appendix C

Sample means weighted by estimated class probabilities

	QNJI												QLJI															
	T1				T2				T3				T1				T2				T3							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Decreasing	2.81	3.29	2.79	3.29	2.63	3.09	2.63	3.18	2.49	2.9	2.49	3.10	3.49	3.25	3.37	3.30	3.26	3.04	3.08	3.06	3.12	2.87	2.95	2.86				
2. Increasing	1.84	2.20	1.94	2.58	2.70	3.10	2.72	3.12	3.52	3.84	3.40	3.69	2.76	2.37	2.31	2.33	3.30	3.03	3.07	2.94	4.01	3.76	3.63	3.60				
3. Low stable	1.25	1.34	1.26	1.74	1.19	1.25	1.21	1.65	1.19	1.33	1.17	1.59	1.90	1.50	1.48	1.43	1.65	1.42	1.38	1.35	1.80	1.44	1.36	1.41				
4. High stable	3.53	4.11	3.51	4.01	3.74	4.24	3.72	3.98	3.79	4.16	3.80	4.22	4.03	3.77	3.76	3.86	4.07	3.89	3.87	4.13	4.02	4.06	3.96	4.02				
5. Moderate-low stable	1.78	2.08	1.80	2.28	1.76	2.02	1.80	2.34	1.90	2.17	1.90	2.40	2.62	2.27	2.27	2.25	2.57	2.27	2.28	2.24	2.70	2.41	2.35	2.33				

Note: QNJI = quantitative job insecurity; QLJI = qualitative job insecurity; numbers 1–4 refer to items 1–4; items rated on a five-point Likert scale; These sample descriptives per class are weighted by the estimated posterior probabilities of each class (i.e. the likelihood of class membership for each individual observation). Since the latent classes are not observed, Mplus takes into account respondents' estimated likelihood to belong to a certain class. The weighted means are provided per item, per latent class, per time point, per job insecurity type.