Effects of chronic job insecurity on Big Five personality change

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Abstract

Drawing on Cybernetic Big Five Theory, we propose that chronic job insecurity is associated with an increase in neuroticism and decreases in agreeableness and conscientiousness (the three traits that reflect stability). Data collected from 1,046 employees participating in the Household, Income and Labor Dynamics in Australia survey over a nine-year period were analyzed. Job insecurity and the other job-related variables (i.e., job control, time demand and job stress) were measured in all years, and personality was measured at the first, fifth and ninth years. We applied latent trait-state-occasion (TSO) modelling and specified models using variables across two timeframes (from Time 1 to Time 4 and from Time 5 to Time 9). Results showed that chronic job insecurity over four or five preceding years predicted a small increase in neuroticism and a small decrease in agreeableness in both timeframes, and a small decrease in conscientiousness in the first timeframe. We also found that chronic job stress explained the association between chronic job insecurity and the increase in neuroticism, but not changes in other personality traits, in the first timeframe. Similar results were obtained when the entire nine-year timeframe was examined. The results generally showed null effects of chronic job insecurity with regard to extraversion and openness (the traits that reflect plasticity). This study suggests that job insecurity has important implications for one's personality when experienced over a long-term period.

Keywords: Chronic Job insecurity; Personality development; Big Five personality; Longitudinal study; Trait-State-Occasion model

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Pressure from market competition, together with other forces such as labor market deregulation, has led to the extensive use of cost-saving practices such as outsourcing, offshoring, restructuring, downsizing and nonstandard work practices in organizations throughout the world (e.g., Kalleberg, 2011). Patterns of employment have become increasingly unstable and insecure, or "precarious", with temporary and contract-based employment becoming mainstream. Because these work practices are used for "the planned elimination of positions or jobs" (De Vries & Balazs, 1997, p. 11), they can cause employees to have a heightened perception of job insecurity, defined as a "concern about the future permanence of the job" (van Vuuren & Klandermans, 1990, p. 133). The growing prevalence of job insecurity is recognized as a key psychosocial risk of future work (e.g., Lee, Huang, & Ashford, 2018). Job insecurity not only reflects the potential financial risks associated with losing one's job but also implies the potential loss of key social and psychological resources such as the structure of time in daily life and social participation (Jahoda, 1984). Thus, it is unsurprising that job insecurity is associated with low levels of employee job satisfaction, organizational commitment, and job performance as well as poor physical and mental health (see Cheng & Chan, 2008; Jiang & Lavaysse, 2018; Lee et al., 2018; Sverke, Hellgren, & Näswall, 2002, for reviews) and reduced optimism about the future (Li, Li, Fay, & Frese, 2019).

Recent evidence suggests that job insecurity is becoming more chronic; that is, more individuals are exposed to job insecurity over the long term (De Witte, 2005; Roskies & Louis-Guerin, 1990). This trend is likely to continue as more employees worry about the threat of digital computing and artificial intelligence (e.g., World Economic Forum, 2016). Studies have examined the effects of chronic job insecurity,

showing negative consequences on employee health, psychiatric morbidity, and physical symptomatology (e.g., Ferrie, Shipley, Stansfeld, & Marmot, 2002; Heaney, Israel, & House, 1994; Rocha, Crowell, & McCarter, 2006). Some evidence has also revealed the negative effect of chronic job insecurity after controlling for the effects of job insecurity for a given time. For example, Heaney et al. (1994) examined the differences in job satisfaction and physical symptomatology among employees who experienced high job insecurity across two time points over 14 months and those who did not during the same time period (including those who consistently experienced low job insecurity at both time points and those who experienced high job insecurity at only one time point). They found that chronic job insecurity produces negative consequences beyond job insecurity at a given time.

We theorize that the consequences of chronic job insecurity likely extend beyond health and well-being to include effects on one's personality development. Personality, though typically assumed to be static, changes in meaningful ways throughout the lifespan (e.g., Bleidorn, Kandler, & Caspi, 2014; Caspi, Roberts, & Shiner, 2005; Roberts, Wood, & Caspi, 2008). Personality can change through a self-regulation process in which individuals consider the value of, or have a desire for, change and thus intentionally change who they want to be (Hennecke, Bleidorn, Denissen, & Wood, 2014). Personality can also change through an environment-evoked process in which environmental influences repeatedly shape one's thoughts, feelings, and behaviors and, over time, drive personality change in the long term (e.g., Wrzus & Roberts, 2017). We propose that chronic job insecurity induces personality change via an environment-evoked process, a change process that occurs when an environmental influence lasts a sufficient length of time.

Specifically, drawing on Cybernetic Big Five Theory (DeYoung, 2015), we theorize that chronic job insecurity disrupts normative adult development by increasing neuroticism and reducing conscientiousness and agreeableness. Cybernetic Big Five Theory (DeYoung, 2015) conceptualizes the five key personality traits as cybernetic systems that entail different goal-directed functions. In doing so, this theory identifies two higher-order factors of the Big Five traits: a stability factor that reflects one's tendency to maintain stability and avoid disruption (including neuroticism, agreeableness, and conscientiousness), and a plasticity factor that reflects one's tendency to engage in flexibility and novelty (including extraversion and openness) (Allen & DeYoung, 2017; DeYoung, 2006). As elaborated upon shortly, we argue that chronic job insecurity in particular impairs the goal-directed functioning governed by the traits that reflect stability (neuroticism, agreeableness, and conscientiousness, which involve emotional, social and motivational stability, respectively), such that chronic job insecurity increases individuals' neuroticism and decreases their agreeableness and conscientiousness.

Our research contributes to the literature in important ways. First, research on the effects of job insecurity to date has primarily focused on proximal outcomes such as employee work attitude, behavior and well-being and has relied heavily on cross-sectional designs to examine these relationships (see Lee et al., 2018, for a review). Our study helps gain a more comprehensive understanding of the consequences of chronic job insecurity including effects that cannot be revealed by studies using cross-sectional or short-term longitudinal designs.

Second, our study broadens the scope of the research on how work experiences affect personality development. Unlike recent studies that have focused on how job satisfaction might affect personality (e.g., Scollon & Diener, 2006; Wu & Griffin,

2012), one's level of investment in the jobs (Hudson & Roberts, 2016; Hudson, Roberts, & Lodi-Smith, 2012) or task characteristics (e.g., Wu, 2016; Wu, Griffin, & Parker, 2015), our study suggests that individuals' perceptions of the secure nature of their job can also drive personality change, which is in line with Li et al.'s (2019) recent finding. More importantly, our study extends the results of earlier studies by considering the unique exposure effect when individuals are continuously exposed to certain job characteristics (e.g., job insecurity) for a long period of time.

Third, our study provides important insights into human development over time. Considerable research has indicated that individuals tend to become less neurotic, more agreeable, and more conscientious as they age (e.g., Klimstra, Hale Iii, Raaijmakers, Branje, & Meeus, 2009; Roberts, Walton, & Viechtbauer, 2006; Roberts et al., 2008; Robins, Fraley, Roberts, & Trzesniewski, 2001; Soto, John, Gosling, & Potter, 2011; Specht, Egloff, & Schmukle, 2011), which is referred to as the maturity principle of personality development (Caspi et al., 2005). Our study reveals how the development of social maturity is disrupted by chronic job insecurity, with potentially related consequences for success, health, and even longevity. Thus, our study links macroeconomic changes with critical intraindividual lifespan development.

Cybernetic Big Five Theory

Cybernetic Big Five Theory suggests that "personality traits are probabilistic descriptions of relatively stable patterns of emotion, motivation, cognition, and behavior, in response to classes of stimuli that have been present in human cultures over evolutionary time" (DeYoung, 2015, p.35). Consistent with Fleeson's personality-as-a-distribution model (2001; Fleeson & Gallagher, 2009), Cybernetic Big Five Theory conceptualizes traits as the tendency to be in certain emotional, motivational, cognitive, and behavioral states in response to experienced situational

stimuli, with such states being manifested in behavior. As such, each Big Five trait governs the association between trait-relevant stimuli and responses (i.e., trait expression), serving different goal-directed functions (DeYoung, 2010). With respect to each trait, neuroticism captures the tendency to experience negative emotions such as anxiety and depression, as well as governs emotional and defensive responses to uncertainty, punishment and threat. Conscientiousness captures the tendency to set goals and strive for them in an organized manner, thereby protecting ones' goals and actions from disruption. Agreeableness reflects the tendency to achieve and maintain stable social relationships as well as governs one's altruism, cooperation, and coordination of goals to be in line with those of others. Extraversion reflects sensitivity to reward and the tendency to experience positive affect; it governs one's reward pursuit/exploration. Finally, openness reflects the tendency to cognitively engage with information and governs one's exploration of abstract and sensory information.

Cybernetic Big Five Theory further indicates that the Big Five traits can be subsumed into two higher-order factors, or "meta-traits", that serve two broader goal-directed functions. One factor, termed "stability", concerns the tendency to maintain goal directedness, or a "general tendency to regulate or restrain potentially disruptive emotion and behavior" (DeYoung, 2010, p. 1170), and serves to maintain emotional, motivational, and social stability. Within the stability meta-trait, neuroticism reflects lower emotional stability because of its function of intensifying emotional arousal in responding to unpleasant events and stressors. Conscientiousness reflects motivational stability because of its function to set goals and strive for them in an organized manner. Agreeableness reflects social stability because of its function to achieve and maintain stable social relationships. The second meta-factor, termed

"plasticity", concerns the tendency to develop new goal directions or "a general tendency to explore and engage with possibilities" (DeYoung, 2010, p. 1170). This meta-factor is composed of extraversion and openness to experience. Extraversion reflects behavioral exploration and engagement with specific rewards, whereas openness reflects cognitive exploration and engagement with information.

As Grossberg (1987) suggested, to function well in a changing environment, a complex information-processing system must have a stability subsystem that maintains consistency between encoding and responses as well as a plasticity subsystem that engages with novelty and adjustment. Therefore, the two meta-traits reflect two fundamental needs of human beings in response to a changing environment: "to maintain the stability of ongoing goal-directed functioning" and "to engage in exploration that integrates novel or anomalous information with existing knowledge" (DeYoung, 2006; 2015, p. 47). Although it seems that these meta-traits are conceptually opposed, they are complementary because it is impossible to maintain stability without plasticity when individuals are faced with environmental change.

Following Cybernetic Big Five Theory, we propose that chronic job insecurity affects the stability traits (i.e., neuroticism, conscientiousness, and agreeableness). The perceived threat of a potential job loss intensifies the function of neuroticism by evoking strong emotional arousal, undermines the function of conscientiousness by diluting attention and effort for goal striving, and impairs the function of agreeableness by disrupting one's interest in maintaining stable social relationships. If continued over a long time period, these negative effects can result in a self-reinforcing negative loop that forms an environment-evoked process through

which short-term change eventually turns into long-term change (Wrzus & Roberts, 2017).

The effect of job insecurity is less clear on the plasticity traits (extraversion and openness to experience). On the one hand, plasticity might become important when stability is challenged (DeYoung, 2015), such that job insecurity evokes the psychological functions associated with these traits. For example, studies of job insecurity have shown that people can actively respond to job insecurity by exploring options and searching for alternative jobs (Ashford, Lee, & Bobko, 1989), changing their work relationships with others to increase person-job fit (Lu, Wang, Lu, Du, & Bakker, 2014), and engaging in impression management to decrease insecurity and increase the possibility of staying in the organization (Huang, Zhao, Niu, Ashford, & Lee, 2013). Although these studies did not examine extraversion or openness directly, their findings suggest that job insecurity heightens one's extraversion and openness, at least temporarily, to cope with potential changes. On the other hand, job insecurity might also undermine plasticity and cause individuals to become introverted and conservative. The threat induced by job insecurity can lead individuals to become more rigid by focusing on their own fate and potential loss (Staw, Sandelands, & Dutton, 1981), thereby minimizing one's goal pursuit and exploration. As such, the effect of job insecurity on extraversion and openness is less clear. Consequently, we do not have a strong theoretical foundation or evidence to create a hypothesis regarding the effects that chronic job insecurity might have on extraversion and openness. Nevertheless, we include these traits in our examination to be comprehensive and to examine differential validity.

Chronic job insecurity and increases in neuroticism

Because neuroticism is responsive to uncertainty, threat, and punishment (DeYoung, 2015), it is reasonable to expect that job insecurity evokes psychological and behavioral responses related to neuroticism (e.g., Sverke et al., 2002). Below we propose potential mechanisms that underpin such an effect. Because job insecurity reflects the perceived threat to one's important financial and psychosocial resources, it acts as a major stressor that elicits strong negative emotional responses such as anxiety, tension, irritability and depression (e.g., Callero, 1985; Linderbaum & Levy, 2010; Mishima, Kubota, & Nagata, 2000) as well as stress-related physiological reactions such as elevated heart rate and increased catecholamine secretion (Heaney et al., 1994). These responses are consistent with the behavioral expression of neuroticism, which describes individuals' tendency to experience negative emotions such as anxiety and irritability (e.g., Digman, 1990).

We speculate that continued job insecurity repeatedly produces these negative emotional/stress-related responses, thereby impairing individuals' emotional stability over time and causing individuals to become more neurotic in general. Supporting this idea, evidence has shown that increased daily negative affect led to an increase in neuroticism over 6 years (Wrzus, Luong, Wagner, & Riediger, 2016), and an increase of job stress over 5 years predicted an increase in neuroticism over the same time period (Wu, 2016). In addition, chronic job insecurity can lead to learned helplessness (Maier & Seligman, 1976). When individuals cannot avoid an aversive form of chronic uncertainty, the resulting emotional instability further undermines their ability to overcome this uncertainty. For example, negative emotions due to job insecurity such as anxiety can lead individuals to pay more attention to the uncertain aspects of their job and less attention to tasks and performances that might help reduce job insecurity, thereby creating a self-reinforcing loop that exaggerates the detrimental

effect of job insecurity on their emotional stability over time and subsequently increasing neuroticism. In sum, we argue that chronic job insecurity produces repeated negative emotional responses to continuously experienced stress. This stress-evoked mechanism forms a self-reinforcing loop that increases one's neuroticism. Our specific hypothesis is as follows:

Hypothesis 1: Chronic job insecurity will be associated with an increase in neuroticism over time.

Chronic job insecurity and reduced conscientiousness

Next, we propose that job insecurity challenges individuals' motivational stability, thereby resulting in lower levels of conscientiousness over time. To willingly take the initiative to set and pursue goals in a persistent and organized manner, individuals must feel assured that their efforts will lead to desirable outcomes (e.g., Vroom, 1964). However, this assurance is lacking under conditions of job insecurity, which involve a high level of doubt about the continued existence of one's job. As a result, one's motivational stability is reduced because job insecurity makes it less clear that an individual's sustained effort will lead to positive outcomes at work. Furthermore, employees often perceive insecurity as a breach of the psychological contract with their employers (Bleidorn, Hopwood, & Luca, 2018) and can consequently reduce their commitment to the organization and lead to less effort exerted (Bleidorn, 2012; Flynn, Reagans, Amanatullah, & Ames, 2006). Overall, job insecurity can potentially reduce effort, a behavior expression of low conscientiousness.

This negative process might be magnified by feedback from the environment. For example, individuals who become less motivated at work due to job insecurity might also lose opportunities to perform well and acquire resources (e.g., support

from one's organization, supervisors and colleagues) that might have otherwise enhanced their job security. Consequently, these individuals might become confined to an aversive and uncertain situation in which the same responses are evoked repeatedly (Maier & Seligman, 1976), thereby further undermining motivational stability. When such patterns of behavior are repeated over long periods of time because of chronic job insecurity, one's general level of conscientiousness can be affected. In sum, we propose that job insecurity will impair one's general conscientiousness as it likely reduces one's exertion of effort, a behavioral manifestation of conscientiousness, which can generalize and become self-reinforcing over time. In brief, we propose that chronic job insecurity can decrease conscientiousness over time, potentially due to motivational relinquish. Our hypothesis is as follows:

> Hypothesis 2: Chronic job insecurity is associated with a decrease in conscientiousness over time.

Chronic job insecurity and reduced agreeableness

We propose that job insecurity challenges individuals' social stability by impairing the function of agreeableness and therefore reduces agreeableness over time. The threat of losing resources impairs the desire to get along with others and maintain positive, cooperative and harmonious social relationships (Hobfoll, 1989, 2011). In this situation, individuals become more self-focused and are less likely to direct attention to others and the external world (Bleidorn et al., 2013). For example, individuals tend to focus narrowly on their personal concerns during organizational change (Scandura & Ragins, 1993). Furthermore, under high levels of job insecurity, individuals tend to engage in a more transactional approach toward the organization and consequently engage in fewer citizenship behaviors such as supporting and

helping others (Gong, Wang, Huang, & Cheung, 2017). Overall, we expect that job insecurity reduces individuals' tendencies to pay attention to others and maintain stable and positive social relationships, which are behavioral expressions of low agreeableness.

We assert that these behavioral expressions of low agreeableness generalize and become more habitual and self-perpetuating over time due to chronic job insecurity, thereby resulting in lowered agreeableness overall. Building harmonious social relationships requires self-regulatory effort, and prosocial behaviors such as helping others are less likely to occur when one's resources are limited (e.g., DeWall, Baumeister, Gailliot, & Maner, 2008). As a major stressor, job insecurity significantly consumes resources, causing individuals to avoid engaging in additional resource-consuming activities such as prosocial behaviors. In turn, because employees become less sympathetic and cooperative at work, they might experience a lack of support from important others in the organization, which might further perpetuate job insecurity. These reductions in caring for others and expressing prosocial behaviors over time (due to long-term job insecurity) reinforce the enactment of fewer prosocial behaviors and reduce agreeableness in the long run. In sum, we propose that chronic job insecurity reduces individuals' tendency to pay attention to, care for and help others, which over time leads to reduced agreeableness. In brief, we suggest that chronic job insecurity can decrease agreeableness over time, possibly due to social withdrawal.

Hypothesis 3: Chronic job insecurity is associated with decreased agreeableness over time.

The mediating role of chronic job stress

Job insecurity has been understood as a job stressor. As elaborated earlier, job insecurity can evoke stress-related reactions and consequently reinforce neuroticism if such experiences persist over time. As job stress has been found to predict changes in neuroticism (Wu, 2016), we seek to examine whether chronic job insecurity can drive changes in neuroticism via a stress mechanism, or, alternatively, whether the effect of job insecurity on the change in neuroticism is independent of any effect of job stress in predicting such change. This examination should help clarify the relationship between job insecurity, job stress and change in neuroticism. As we focus on chronic job insecurity in this study, we propose that chronic insecurity experiences will result in chronic job stress, or enduring and uncomfortable experiences in responding to work-related pressure for a prolonged period of time (Heaney et al., 1994), which in turn will enhance one's level of neuroticism. We do not expect that chronic job stress will explain the effect of chronic job insecurity on the decreases in conscientiousness or agreeableness because we speculate that changes in these two traits are driven by different mechanisms (i.e., motivational relinquish and social withdrawal, respectively).

Hypothesis 4: Chronic job stress mediates the association between chronic job insecurity and an increase in neuroticism.

The present study

We used nine years of longitudinal data from the Household, Income and Labor Dynamics in Australia (HILDA) Survey (Summerfield, 2010) to test our hypotheses. As will be presented shortly, this dataset enabled us to examine the effect of chronic job insecurity on Big Five personality change over two five-year timeframes using a sample of participants from diverse backgrounds. Having two timeframes enabled us to assess the reliability of the findings.

In our examination, we took the role of proximal job insecurity into account when examining the effect of chronic job insecurity for several reasons. First, as reported by Heaney et al. (1994), chronic job insecurity has a unique predictive effect on well-being, over and above the effect of recent job insecurity experiences. We thus seek to examine if chronic job insecurity have a predicitive effect on personality change when effects of proximal job insecurity are taken into account. Such an analysis provides a more rigorous test of the effect of chronic job insecurity. Second, from a measurement perspective, proximal job insecurity experiences may affect how an individual responds to personality assessment. For example, those who are experiencing higher job insecurity might tend to report a higher level of neuroticism due to an induced negative mood, reflecting a state effect in survey responses (Krosnick, 1999). Controlling for the effect of proximal job insecurity when gauging the association between chronic job insecurity and personality change will help to alleviate confounding factors resulting from a state effect on responses.

We also examined the effect of chronic job insecurity after controlling for the effects of chronic job control and chronic time demand. These control variables were included for three reasons. First, to demonstrate that job insecurity, or one's feelings regarding holding a job, can be as important for personality development as the factors representing what is involved in performing the job, it is important to control for the job characteristics that have been associated with Big Five personality change in previous studies (Wu, 2016). Second, similar to job insecurity, time demand has also been regarded as a job stressor; thus, controlling it helps examine the unique effect of job insecurity. Finally, job control and job insecurity have been regarded as the two central indicators of job quality (Esser & Olsen, 2012; Gallie, 2003). Therefore, accounting for job control helps us precisely examine the effect of job

insecurity, thereby providing a more nuanced understanding of this aspect of job quality.

Method

The HILDA Survey

The HILDA Survey has been conducted annually since 2001 with a nationally representative sample. We used the data from 2005 to 2013 (denoted Time 1 to Time 9) because the Big Five personality traits have been assessed only three time points since the beginning of this survey: in 2005, 2009 and 2013 (denoted Time 1, Time 5 and Time 9, respectively). Job-related variables (i.e., job insecurity, job control, time demand and job stress) were assessed every year. This approach allowed us to divide the data into two five-year timeframes to test the effect of job insecurity on personality changes (Time 1 to Time 5 and Time 5 to Time 9). The HILDA Survey included both face-to-face interviews and self-completed questionnaires (please see Watson & Wooden, 2007, for details). The variables used in this study were assessed via self-report questionnaires.

Data from the HILDA survey has been widely used in earlier research, including some of our own studies (Tian, Wang, & Chia, 2018; Wu, 2016; Wu et al., 2015) in which similar variables (though with different waves of data) were used as compared to the current study. However, the current study addresses a new research question that has not been investigated either in our own publications, or in other published studies using HILDA. In fact, as mentioned earlier, the job-related variables that were found to impact personality change in earlier studies (e.g., Wu, 2016) have been controlled for in the current study, to identify the unique effect from job insecurity.

Following the same approach adopted by previous studies using the HILDA Survey data (Wu, 2016; Wu et al., 2015), we selected participants who (a) were

employees (i.e., self-employed and unemployed participants were not included), (b) provided complete data for the variables we used, and (c) reported complete gender and age demographic data. Based on these criteria, 1,046 participants were included in the analysis; of these participants, 585 were male (55.9%), and 461 were female (44.1%). The ages of the participants in 2005 ranged from 16 to 71 years, with a mean of 40.37 years and a standard deviation of 9.78 years. In 2005, 4 participants were more than 65 years old (0.4%). We kept these older participants in the analyses because they worked (primarily in part-time jobs) during the survey period. Excluding these participants did not change the results.

Measures

Job insecurity. Three items were used: "I have a secure future in my job" (reverse scored), "The company I work for will still be in business 5 years from now" (reverse scored), and "I worry about the future of my job". These items have been used in previous studies (e.g., Bosma et al., 1997; Karasek, 1979; Tian et al., 2018). Responses were assessed on a 7-point scale, where 1 indicates strongly disagree, and 7 indicates strongly agree.

Big Five personality traits. The descriptive adjectives from Saucier (1994) were used to measure the Big Five traits. Neuroticism was measured using the words "envious," "moody," "touchy," "jealous," "temperamental," and "fretful." Extraversion was measured using the words "talkative," "bashful" (reverse scored), "quiet" (reverse scored), "shy" (reverse scored), "lively," and "extroverted." Agreeableness was measured using the words "sympathetic," "kind," "cooperative," and "warm." Conscientiousness was measured by "orderly," "systematic," "inefficient" (reverse scored), "sloppy" (reverse scored), "disorganized" (reverse scored), and "efficient." Openness to experience was measured using the words "deep,"

"philosophical," "creative," "intellectual," "complex," and "imaginative." Participants

used a 7-point scale, ranging from 1 (does not describe me at all) to 7 (describes me

very well) to rate their personality on the general life domain items.

Job stress. Two items employed by Wu (2016) were used: "My job is more

stressful than I had ever imagined" and "I fear that the amount of stress in my job will

make me physically ill." A 7-point scale from 1 (strongly disagree) to 7 (strongly

agree) was used.

Control variables. We included job control and time demand as control variables

and used the same items employed by Wu (2016). For job control, six items were

used: "I have a lot of freedom to decide how I do my own work," "I have a lot of say

about what happens at my job," "I have a lot of freedom to decide when I do my

work," "I have a lot of choice in deciding what I do at work," "My working times are

flexible," and "I can decide when to take a break." For time demand, three items were

used: "I have to work fast at my job," "I have to work very intensely at my job," and

"I don't have enough time to do everything at my job." A 7-point scale from 1

(strongly disagree) to 7 (strongly agree) was used for all the items.

Measurement invariance analysis

Table 1 presents the descriptive statistics, including the intercorrelations among

the study variables and Cronbach's alphas reported along the diagonal. Before

examining our hypotheses, we first examined the longitudinal invariance of the factor

loadings and the item intercepts of the measures over time to ensure that the change

phenomena captured in this study related to the changes in the constructs (true or

alpha changes (Golembiewski, Billingsley, & Yeager, 1976). The models were

estimated using Mplus (Muthén & Muthén, 2012), and the model fit results are

presented in Table 2.

Using job insecurity as an example, we built a model including nine factors of job insecurity for the nine years of data. Each factor was indicated by items assessing the construct in a given year. The errors of the same items repeated over time were allowed to correlate. The errors of different items were not allowed to correlate. The factors were allowed to correlate. This model fit well, supporting configural invariance. We then estimated a model with the invariance of factor loadings over time (i.e., factor loadings of the same item across the nine years were imposed as equal), and the model fit well, supporting weak invariance. Next, we estimated a model with the additional invariance of item intercepts over time and obtained a similar model fit, supporting strong invariance. We conducted the same analysis for job control, time demand and job stress, and the obtained results supported the strong invariance of these measures. We also performed the same analysis for each Big Five personality trait individually using data from three years (Time 1, Time 5 and Time 9).

Regarding model evaluations, in addition to relying on fit indices (Hu & Bentler, 1999), including the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) to judge each model, we used the differences in CFI (ΔCFI) to evaluate the acceptance of invariance at different stages. Following Cheung and Rensvold's suggestion (2002, p. 251) that "a value of ΔCFI smaller than or equal to $-$0.01 indicates that the null hypothesis of invariance should not be rejected" (see Table 2), our findings suggest that all measures qualified for strong invariance. To reduce model complexity and remove measurement errors from the following analysis, we computed factor scores of all constructs from the strong invariance models and used factor scores directly to build models for hypothesis testing.

Insert Table 1 and 2 Here

Operationalization of chronic job insecurity

Modeling chronic job insecurity requires us to capture the continuous experience of job insecurity over time (Heaney et al., 1994). To do so, we applied a latent trait-state-occasion (TSO) model (Cole, Martin, & Steiger, 2005)[1] to create a latent factor for chronic job insecurity across four years within the first timeframe and five years within the second timeframe (i.e., chronic job insecurity during Time 1 to Time 4 and chronic job insecurity during Time 5 to Time 9)[2].

Like other latent state-trait models (e.g., Kenny & Zautra, 1995; Steyer, Mayer, Geiser, & Cole, 2015), a TSO model aims to capture stable traits or an invariant component of longitudinal measures from the same individual (Steyer, Ferring, & Schmitt, 1992; Usami, Murayama, & Hamaker, 2019). Briefly, a TSO model estimates the latent state variable (S_t) of a construct at a given time and explains the variance of latent state variables via a stable trait factor (T) that captures the stable component across measurement points, and an occasion-specific factor (O_t) that captures occasion-related circumstances that affect the state at a given time beyond the influence of the trait. In the current TSO model, occasion-related circumstances were allowed to be related over time to capture the persistence of occasion-related circumstances over time. Cole et al. (2005, p.13) indicated that in a TSO model, "the correlation of a psychological construct with itself over time is seen as a function of both an underlying stable trait and occasion-specific circumstances that may persist over time". Thus, TSO modeling enables us to differentiate the stable component of job insecurity over time from the variations that are unique to each time point.

When applying the TSO modeling approach to capture chronic job insecurity, we first computed the factor scores of job insecurity derived from the strong invariance model of job insecurity to remove the measurement errors associated with its measurement. We then used the factor scores of job insecurity (i.e., yearly job insecurity) to build a model decomposing the variances of yearly job insecurity into a time-invariant component over time (i.e., chronic job insecurity) and a time-variant component at a given time (i.e., momentary job insecurity). We specified a latent factor representing chronic job insecurity during Time 1 to Time 4 to predict yearly job insecurity at Times 1, 2, 3 and 4, and another latent factor representing chronic job insecurity during Time 5 to Time 9 to predict yearly job insecurity at Time 5, 6, 7, 8 and 9 (see the lower part of Figure 1).

We set the factor loadings to 1 to capture the chronic job insecurity that endures from Time 1 to Time 4 and from Time 5 to Time 9. The variances of yearly job insecurity that cannot be explained by chronic job insecurity during the specific timeframe were captured by momentary job insecurity at a given year. All momentary job insecurity factors were uncorrelated with the two chronic job insecurity latent factors. In this way, we partitioned the variances of yearly job insecurity into two orthogonal, independent parts: chronic job insecurity and momentary job insecurity. The residual variances of yearly job insecurity were set as zero because we used factor scores of yearly job insecurity computed from the strong invariance measurement model of job insecurity. Thus, measurement errors of yearly job insecurity were removed[3]. We also included the effects of momentary job insecurity in a given year on momentary job insecurity in the next year to consider the first-order autoregressive effects of the longitudinal measures (Cole et al., 2005). Finally, we used chronic job insecurity during Time 1 to Time 4 to predict chronic job insecurity

during Time 5 to Time 9 to capture the stability of chronic job insecurity over the two timeframes. This modeling approach helped us to capture individuals' enduring job insecurity experiences over years (i.e., chronic job insecurity) while recognizing the changeability of job insecurity across years via the function of momentary job insecurity.

Operationalization of personality change

Regarding personality changes shown in the upper part of Figure 1, we used a latent change score (i.e., latent difference score) modeling approach (McArdle, 2009; McArdle & Grimm, 2010; McArdle & Hamagami, 2001) to capture the changes in the Big Five personality traits within the two timeframes. Latent change score modeling focuses on the within-individual changes in the variables between two adjacent time points and enables the identification of between-individual differences in within-individual changes (Little, Bovaird, & Slegers, 2006; McArdle, 2009; Selig & Preacher, 2009). We used this approach to capture the between-individual differences in within-individual changes in personality across the two timeframes (i.e., between Time 1 and Time 5 as well as between Time 5 and Time 9). For example, following McArdle's specification (2009, Figure 2C), the latent change score for neuroticism between Time 1 and Time 5 was created by setting (a) the predictive effect of Time 1 neuroticism on Time 5 neuroticism as 1, (b) the factor loading of Time 5 neuroticism on the latent change score as 1, and (c) the variance in Time 5 neuroticism as 0. The same specification was applied to create all latent change scores for the Big Five personality traits across the two timeframes[4]. Finally, for each personality trait, we used the change score in the first timeframe to predict the change score in the second to control for the effect of the change during the previous time period. As mentioned earlier, we computed the factor scores of the Big Five personality traits and used the

factor scores to create the latent change scores. In this way, we removed measurement errors when examining changes in the Big Five personality traits.

Results

We examined the model illustrated in Figure 1 (Model 1) that used the Time 1 Big Five personality traits to predict chronic job insecurity during Time 1 to Time 4, which in turn predicted the latent change scores of the Big Five personality traits between Time 1 and Time 5. Time 5 Big Five personality traits predicted chronic job insecurity during Time 5 to Time 9, which in turn predicted the latent change scores of the Big Five personality traits between Time 5 and Time 9. To recognize concurrent associations between job insecurity and personality in the longitudinal processes, associations between job insecurity and Big Five personality traits were specified between Time 1 momentary job insecurity and Time 1 Big Five personality traits; between Time 5 momentary job insecurity and the latent change scores of the Big Five personality traits between Time 1 and Time 5; and between Time 9 momentary job insecurity and the latent change scores of the Big Five personality traits between Time 5 and Time 9[5]. The fit of this model was acceptable (MLM -χ^2 = 543.26, df = 195; CFI = .985; TLI = .979; RMSEA = .041, 90% CIs = .037 -.045; SRMR = .029).

As Table 3 shows, we found that chronic job insecurity during Time 1 to Time 4 predicted an increase in neuroticism between Time 1 and Time 5 (b = .06, S.E. = .02, β = .12, p < .01), a decrease in conscientiousness (b = -.04, S.E. = .02, β = -.10, p < .01) and a decrease in agreeableness (b = -.04, S.E. = .02, β = -.09, p < .05), but not changes in openness and extraversion. Chronic job insecurity during Time 5 to Time 9 predicted an increase in neuroticism between Time 5 and Time 9 (b = .04, S.E. = .01, β = .10, p < .01) and a decrease in agreeableness (b = -.03, S.E. = .01, β = -.06, p

< .05), but not a decrease in conscientiousness (b = -.02, S.E. = .01, β = -.06, p = .07).

Chronic job insecurity during Time 5 to Time 9 also predicted a decrease in openness

(b = -.01, S.E. = .01, β = -.06, p < .05), but not changes in extraversion. Our

hypothesis regarding neuroticism (H1) and agreeableness (H3) were consistently

supported across both timeframes and the hypothesis regarding conscientiousness (H2)

was only supported in the first timeframe.

We next tested a model (Model 2) to examine the effect of chronic job insecurity

in driving personality change while a predictive effect from proximal job insecurity

onto personality change is purposefully specified and controlled for. In this model, we

used Time 5 momentary job insecurity to predict the latent change scores for the Big

Five personality traits between Time 1 and Time 5; and Time 9 momentary job

insecurity to predict the latent change scores for the Big Five personality traits

between Time 5 and Time 9. This analytical approach has a strong

assumption such that it imposes a predictive relationship only from momentary job

insecurity to participants' responses to personality items, but not the other way round.

However, given job insecurity and personality measures were collected together at T5

and T9, it is likely that personality can also influence participants' response to job

insecurity items. As such, we regard the analysis in Model 2 as a stringent test for our

hypotheses. This model had an acceptable fit (MLM -χ^2 = 535.58, df = 195; CFI

= .985; TLI = .980; RMSEA = .041, 90% CIs = .037 -.045; SRMR = .029).

For the first timeframe, we found that chronic job insecurity during Time 1 to

Time 4 still predicted an increase in neuroticism (b = .06, S.E. = .02, β = .12, p < .01),

a decrease in conscientiousness (b = -.04, S.E. = .02, β = -.10, p < .01) and a decrease

in agreeableness (b = -.04, S.E. = .02, β = -.08, p < .05) between Time 1 and Time 5,

but not changes in openness and extraversion, even when the predictive effect from

proximal job insecurity were taken into account. Momentary job insecurity at Time 5 did not predict the latent change scores for the Big Five personality traits between Time 1 and Time 5. For the second timeframe, chronic job insecurity during Time 5 to Time 9 still predicted an increase in neuroticism between Time 1 and Time 5 (b = .04, S.E. = .01, β = .09, p < .01) with the prediction from proximal job insecurity included, but its effect on the decreases in conscientiousness (b = -.02, S.E. = .01, β = -.05, p = .10) and agreeableness (b = -.02, S.E. = .01, β = -.05, p = .09) did not reach the significance level. Chronic job insecurity during Time 5 to Time 9 did not predict changes in openness and extraversion. Momentary job insecurity at Time 9 predicted an increase in neuroticism (b = .04, S.E. = .01, β = .09, p < .01), a decrease in conscientiousness (b = -.02, S.E. = .01, β = -.09, p < .05) and a decrease in agreeableness (b = -.04, S.E. = .01, β = -.09, p < .01) between Time 5 and Time 9.

Overall, taking proximal job insecurity into account, we found that chronic job insecurity was associated with an increase in neuroticism and decreases in conscientiousness and agreeableness. Effects from the first timeframe were particularly strong, and effects from the second timeframe, despite weaker, were also in line with the hypotheses. These effects were reasonably held even when a more stringent test was conducted. Chronic job insecurity, in general, was not associated with changes in openness and extraversion.

Insert Table 3 and Figure 1 & 2 Here

Analysis controlling for job control and time demand

To examine the effect of chronic job insecurity on Big Five personality change beyond the effects of job control and time demand, we tested a model (Model 3) by

additionally including chronic job control and chronic time demand as control variables. Similarly, we used computed factor scores of yearly job control and yearly time demand to build this model. We used the same modeling approach to create chronic job control and chronic time demand in both timeframes, and then used all three chronic job variables to predict the change scores of the Big Five personality traits for each timeframe. In this model, except for the first-order autoregressive effects, momentary job insecurity, momentary job control, and momentary time demand were uncorrelated for all years; thus, these momentary job experiences were independent. These momentary variables were also uncorrelated with the chronic factors of job insecurity, job control and time demand because the TSO model partitions the time-invariant component and the time-variant component into independent, orthogonal factors. The residual variances of yearly job insecurity, yearly job control and yearly time demand were set as zero due to the use of factor scores. The three chronic factors were allowed to correlate. Associations of momentary job insecurity, job control, and time demand with Big Five personality traits or latent change variables of Big Five personality traits were also specified as we did for Model 1. This model was acceptable (MLM -χ^2 = 1480.14, df = 688; CFI = .981; TLI = .976; RMSEA = .033, 90% CIs = .031 -.035; SRMR = .045).

After controlling for chronic job control and chronic time demand, we still found that chronic job insecurity during Time 1 to Time 4 predicted an increase in neuroticism (b = .06, S.E. = .02, β = .12, p < .01), a decrease in conscientiousness (b = -.05, S.E. = .02, β = -.10, p < .01) and a decrease in agreeableness (b = -.04, S.E. = .02, β = -.10, p < .01) between Time 1 and Time 5. Chronic job insecurity during Time 5 to Time 9 predicted an increase in neuroticism (b = .04, S.E. = .01, β = .09, p < .01) and a decrease in agreeableness (b = -.03, S.E. = .01, β = -.07, p < .05) between Time

5 and Time 9, but its effect on the decrease in conscientiousness did not reach the significance level (b = -.02, S.E. = .01, β = -.04, p = .15). Chronic job insecurity did not predict changes in extraversion and openness in either timeframes. This finding overall supports Hypotheses 1, 2 and 3 and indicates the unique effect chronic job insecurity beyond the effects of chronic job control and chronic time demand in driving personality change.

The mediating role of chronic job stress in predicting changes in neuroticism

We next performed an analysis introducing chronic job stress as a mediator linking chronic job insecurity, job control and time demand with the change scores of the Big Five personality traits. This analysis helped examine whether stress-related mechanisms, as theorized, explain the link between chronic job insecurity and changes in neuroticism, controlling for other job characteristics. We built a model (Model 4) by adding chronic job stress to Model 3. Similarly, we used factor scores of yearly job stress to build this model.

For each timeframe, we used chronic job insecurity, chronic job control and chronic time demand to predict chronic job stress, which in turn predicts the change scores of the Big Five personality traits. We also allowed chronic job insecurity to directly predict the change scores of the Big Five personality traits for each timeframe. The specifications of momentary job insecurity, job control and time demand were the same as those in Model 3. We also included the first-order autoregressive effect of momentary job stress over time, and we used momentary job insecurity, job control and time demand to predict momentary job stress for each year because job insecurity, job control and time demand can all shape stress experiences (e.g., D'Souza, Strazdins, Lim, Broom, & Rodgers, 2003; Landsbergis, 1988). Again, the residual variances of yearly job measures were set as zero. Associations of momentary job insecurity, job

control, time demand and job stress with Big Five personality traits or latent change variables of Big Five personality traits were also specified as we did for Model 1. This mediation model showed an acceptable fit (MLM $-\chi^2$ = 2072.81, df = 1023; CFI = .979; TLI = .974; RMSEA = .031, 90% CIs = .029 -.033; SRMR = .041).

In this model, chronic job insecurity during Time 1 to Time 4 predicted an increase in neuroticism (b = .05, S.E. = .02, β = .10, p < .01), a decrease in conscientiousness (b = -.04, S.E. = .02, β = -.09, p < .01), and a decrease in agreeableness (b = -.05, S.E. = .02, β = -.11, p < .01) between Time 1 and Time 5. Chronic job insecurity during Time 5 to Time 9 predicted an increase in neuroticism (b = .03, S.E. = .01, β = .08, p < .01), a decrease in agreeableness (b = -.03, S.E. = .01, β = -.06, p < .05), as well as a decrease in openness (b = -.01, S.E. = .01, β = -.07, p < .05), but not a decrease in conscientiousness (b = -.01, S.E. = .01, β = -.04, p = .24) between Time 5 and Time 9. These findings reveal that the direct effect of chronic job insecurity on personality change generally held.

More importantly, we found that chronic job insecurity positively predicted chronic job stress in the first timeframe (b = .16, S.E. = .04, β = .16, p < .01) but not the second timeframe (b = .00, S.E. = .03, β = .00, p = .97). Regarding the predictive effect of chronic job stress on personality change, we found that chronic job stress during Time 1 to Time 4 predicted an increase in neuroticism between Time 1 and Time 5 (b = .05, S.E. = .02, β = .10, p < .05). Chronic job stress during Time 5 to Time 9 did not predict personality change between Time 5 and Time 9. Using bootstrapping, we found that the indirect effect of chronic job insecurity on the increase in neuroticism via chronic job stress for the first timeframe was significant (unstandardized indirect effect = .01, 95% CIs = .002 to .016)[6]. Overall, Hypothesis 4 was supported only in the first timeframe but not in the second timeframe.

We did not find that chronic job insecurity indirectly affected changes in agreeableness and conscientiousness via chronic job stress for either timeframe. Although we do not have evidence to support our theory regarding the mechanisms that underlie the changes in agreeableness and conscientiousness, our current findings at least suggest that chronic job insecurity evokes different mechanisms towards change for different personality traits.

Analyses for the nine-year timeframe

We further tested models using data over the entire timespan (Time 1 to Time 9) to gauge whether the effects of chronic job insecurity still hold if a longer timeframe was used. We did not include the Big Five personality traits assessed at Time 5 in these analyses.

We firstly estimated a model (Model 5) over the entire timespan in which we used Time 1 Big Five personality traits to predict chronic job insecurity over the nine years (Time 1 to Time 9), which in turn predicted the latent change scores of the Big Five personality traits between Time 1 and Time 9. We followed the same specification approach as we did in Model 1. This model fit well (MLM -χ2 = 301.85, df = 117; CFI = .987; TLI = .981; RMSEA = .039, 90% CIs = .033 -.044; SRMR = .031). We found that chronic job insecurity during Time 1 to Time 9 predicted an increase in neuroticism between Time 1 and Time 9 (b = .09, S.E. = .02, β = .15, p < .01), a decrease in conscientiousness (b = -.05, S.E. = .02, β = -.11, p < .01), and a decrease in agreeableness (b = -.06, S.E. = .02, β = -.11, p < .01), supporting Hypothesis 1, 2 and 3. We also found that chronic job insecurity during Time 1 to Time 9 predicted a decrease in openness between Time 1 and Time 9 (b = -.02, S.E. = .01, β = -.07, p < .05).

We then estimated a model (Model 6) in which the predictive effect from Time 9 momentary job insecurity was purposefully specified, in addition to the chronic effect of job insecurity, in predicting the latent change scores of the Big Five personality traits between Time 1 and Time 9 (i.e. as we did in Model 2). The model fit well (MLM -χ2 = 297.92, df = 117; CFI = .987; TLI = .982; RMSEA = .038, 90% CIs = .033 -.044; SRMR = .031). Results show that higher chronic job insecurity from Time 1 to Time 9 still predicted an increase in neuroticism between Time 1 and Time 9 (b = .09, S.E. = .02, β = .15, p < .01), a decrease in conscientiousness (b = -.04, S.E. = .02, β = -.10, p < .01), and a decrease in agreeableness (b = -.05, S.E. = .02, β = -.10, p < .01), but not changes in openness and extraversion, even when the effects of proximal job insecurity were taken into account. Time 9 momentary job insecurity predicted an increase in neuroticism (b = .04, S.E. = .01, β = .07, p < .05), a decrease in agreeableness (b = -.04, S.E. = .02, β = -.07, p < .05), as well as extraversion (b = -.04, S.E. = .01, β = -.09, p < .01) and openness (b = -.02, S.E. = .01, β = -.09, p < .01), but not conscientiousness (b = -.03, S.E. = .02, β = -.09, p = .06). The findings, again, support Hypothesis 1, 2 and 3.

We also obtained findings supporting Hypothesis 1, 2 and 3 when we additionally include chronic job control and chronic time demand into a model (Model 7) for the nine-year timeframe analysis. The results showed that the effect from chronic job insecurity held even after these control variables were included. Finally, we examined the mediation effect of chronic job stress in the nine-year timeframe (Model 8). Using bootstrapping, we found that the indirect effect of chronic job insecurity on the increase in neuroticism via chronic job stress in the nine-year timeframe was significant (unstandardized indirect effect = .01, 95% CIs = .002 to .018), supporting Hypotheses 4[7,8,9].

Discussion

This study examined the effect of chronic job insecurity on personality change. Using longitudinal, nationally representative data over nine years, we found that chronic job insecurity predicted a small change in the personality traits that reflect stability (i.e., neuroticism, conscientiousness and agreeableness) but not in those traits that reflect plasticity (i.e., extraversion and openness).

Theoretical implications

Our study expands the scope of job insecurity research by highlighting the role of chronic job insecurity and its long-term effects on individuals. The increasing level of temporary and casual work across industries and throughout the world has made many jobs insecure (Kalleberg, 2011; Lepisto & Pratt, 2017). Therefore, longitudinal studies such as the current one are urgently needed to understand how unstable jobs affect individuals. By influencing change in stable personality traits, job insecurity can fundamentally affect the way individuals interact with others and their environment. Specifically, we found that chronic job insecurity was associated with a small increase in neuroticism and small decreases in conscientiousness and agreeableness, indicating its imparing effect on individuals' emotional, motivational and social stability. Thus, job insecurity is more than a psychosocial risk factor; it significantly influences adult development. Importantly, we are not arguing that job insecurity always becomes chronic because people can find ways to reduce it, such as exploring their options and searching for alternative jobs (Ashford et al., 1989), changing their work relationships with others to increase their person-job fit (Lu et al., 2014), and engaging in impression management to improve the prospect of securing a job (Huang et al., 2013).

Our findings are especially important from the perspective of the maturity principle of personality development (Caspi et al., 2005, p.469). This principle suggests that over time, an individual becomes "a productive and involved contributor to society, with the process of becoming more planful, deliberate, and decisive, but also more considerate and charitable", attributes that are encompassed by higher levels of emotional stability, conscientiousness, and agreeableness. Similarly, based on Freud's socioanalytic theory of personality that defines maturity in terms of the capacity to love and work, Hogan and Roberts (2004) suggested that higher emotional stability (or lower neuroticism), conscientiousness and agreeableness are characteristics that reflect one's maturity, especially from the observer's viewpoint because these characteristics render an individual as positive, consistent and collegial. These traits collectively enable him or her to be liked, admired, and respected within his or her community. In fact, studies have found that people generally increase their levels of emotional stability, conscientiousness, and agreeableness with age (e.g., Klimstra et al., 2009; Roberts et al., 2006; Robins et al., 2001; Soto et al., 2011; Specht et al., 2011). Our findings suggest that experiencing chronic job insecurity can impair one's maturity with respect to becoming a productive and involved contributor to society. As patterns of work have become more precarious due to macroeconomic changes, it is likely that the threat to individual maturity will become further heightened. Thus, one future research avenue is to examine how workforce characteristics at the macro level influence individual personality development over time.

Although we observed the negative effect of chronic job insecurity on traits that reflect stability or maturity, we did not find strong links between chronic job insecurity and the two traits that reflect plasticity (i.e., extraversion and openness).

From the viewpoint of Cybernetic Big Five Theory, chronic job insecurity seems to have an asymmetrical effect on the stability and plasticity of the personality system. This finding has implications for the dynamics of stability-plasticity personality systems. It is possible that when chronic job insecurity impairs the stability subsystem of personality, individuals must activate the plasticity subsystem to explore and engage with possibilities through which they might re-establish and maintain goal directedness, thereby restoring the stability subsystem. This notion suggests that the stability and plasticity subsystems can have a dynamic, complementary interaction over time. However, as we generally obtained null or unreliable associations between chronic job insecurity and the two plasticity traits, it is likely that some people enhance their plasticity when facing chronic job insecurity, whereas others decrease their plasticity and become more rigid, as threat-rigidity theory suggests (Staw et al., 1981). Those who decrease both stability and plasticity might withdraw from social interactions and the external environment and develop negative symptoms such as psychological and physical stress. Future studies should explore whether the behaviors governed by plasticity subsystems (e.g., networking and information seeking) help to address job insecurity by blocking or buffering the function of chronic job insecurity on changes in personality stability. Identifying situational factors such as the resources related to training, job opportunities and career advice (which can help individuals increase their plasticity in response to job insecurity) is also an important direction for future studies.

Our research also broadens the scope of the work experience variables that have been studied within the personality development literature (see Woods, Wille, Wu, Lievens, & De Fruyt, 2019, for a review). By examining the role that job insecurity plays in facilitating personality change, we extended previous research that primarily

focused on the content of jobs (i.e., task characteristics) or one's purposeful investment in their jobs (i.e., job involvement) by examining a job attribute that reflects the sustainable nature of the employment relationship between employees and employers, which might play a more fundamental role than other work-experience variables. Moreover, our study specifically modeled and investigated the chronic effect of one's job; that is, when individuals continuously experience certain job characteristics over a long period of time. This important extension highlights the exposure effect of job design, which has rarely been studied in previous research.

Because job insecurity has been viewed as a job stressor, other job stressors such as role conflict might also engender the same personality changes as job insecurity. Here, we elaborate why it is important to study job insecurity in its own right. First, job insecurity has different antecedents compared to other job stressors and therefore requires different solutions. Unlike job stressors such as role conflict, which primarily results from the internal organizational factor of improper role design, job insecurity is related to precarious employment or psychological contract, which is related to employment relationships as well as economic and labor conditions more broadly. Accordingly, solutions for job insecurity should differ from those for job stressors caused by internal organizational factors and therefore should have different implications for organizations and government. It is also reasonable to expect that different job stressors would result in different reactions and drive personality changes in ways that differ from those evoked by job insecurity. In essence, insecurity might be more than a "job stressor". If insecurity was simply a job stressor, then it would manifest its effects entirely through stress. However, our theory and findings on the mediation effects suggest other nonstress-related processes. Thus, labeling job

insecurity purely as a job stressor would overlook some of the other critical functions and psychological processes engendered by this variable.

Importantly, the psychological state of job insecurity differs from one's objective employment status because employed individuals vary in their feelings toward holding their jobs, regardless of the actual likelihood of job loss. Boyce et al. (2015) examined the effect of employment status on personality change and showed that unemployed individuals experience reduced agreeableness, conscientiousness, and openness over the long term. In our study, we found that neuroticism, conscientiousness and agreeableness are the three traits affected by subjective perceptions of job insecurity. Together, these findings suggest that both objective unemployment status and subjective perceptions of job insecurity are detrimental to conscientiousness and agreeableness, whereas objective unemployment status can additionally undermine one's openness, and subjective perceptions of job insecurity can additionally increase neuroticism. One potential reason for these different findings is that job insecurity involves uncertainty about losing one's current job, whereas unemployment is an objectively negative status about which people are certain. Uncertainty about one's prospective employment status might be the factor that leads to heightened negative emotional arousal, thereby increasing neuroticism. By contrast, when people are certain about an unpleasant condition such as being unemployed, they might experience low emotional arousal (e.g., sadness) and have less motivation to change, which might then reduce their openness. Our speculation should be examined in future studies.

Practical implications

In practical terms, our study shows that individuals' continuously experienced uncertainty about holding a job affects their personality, which raises a significant

policy concern regarding the widespread increase in precarious employment. We suggest that organizations and governments can help mitigate the negative effect of chronic job insecurity on employees' neuroticism, conscientiousness and agreeableness. For organizations, in addition to considering the use of less precarious forms of employment, organizations and managers can offer emotional, social, and career support to employees to buffer their negative work experiences and attitudes resulting from job insecurity (e.g., Lee & Peccei, 2007; Lim, 1997). Such targeted interventions can alleviate employees' negative emotional responses to their jobs, reduce withdrawal from work, and decrease self-focused attention (which hinders their willingness to maintain positive relationships with others), thereby preventing a downward spiral toward personality change.

Governments that offer a strong social safety net might combat the negative effect of job insecurity at the societal level. Debus, Probst, König, and Kleinmann (2012) found that the social safety net at the national level (or "the extent of government regulation of the labor market and governmental social protection programs designed to protect workers from job loss and significant income declines", p. 692) buffers the negative link between job insecurity and work attitudes at the individual level. Essentially, a strong social safety net protects employees from the economic shocks and threats due to job loss, which helps alleviate their reactions to job insecurity and prevents the negative effect of job insecurity on long-term personality change. Governments can also play a role in setting labor market and employment policies such as "flexicurity", a policy strategy that provides flexibility for the labor market while simultaneously enhancing employment and social security (e.g., Wilthagen & Tros, 2004).

Limitations and future studies

Our study has several limitations. First, we did not have relevant measures in the dataset to further examine the proposed mechanisms that underlie the relationship between chronic job insecurity and Big Five personality change. This limitation is common when using an archival dataset that has few variables for an in-depth examination. However, this dataset has the strength of enabling an investigation of long-term effects. Future studies should purposefully build a long-term plan for data collection to provide a more nuanced understanding of the process of personality change.

Second, although we managed to model the effect of different durations of job insecurity (i.e., 4, 5, and 9 years) in our analyses, our study cannot fully answer the question of how long job insecurity would need to last before it would have a detrimental effect on personality. However, we are certain that people do not become used to job insecurity even if they experience it for a long time because our analysis over a 9-year timeframe yielded significant effects of chronic job insecurity on increased neuroticism as well as decreased agreeableness and conscientiousness.

Third, although our examination contains two timeframes, which allowed us to gauge the reliability of our findings, validating our findings across different samples would provide additional confidence in our results. Cross-validation is particularly valuable because it is possible that people from different cultural (e.g., uncertainty avoidance or individualism) and societal (e.g., the existence of social safety net) backgrounds have different reactions to job insecurity (Debus et al., 2012; Probst & Lawler, 2006). In addition, economic conditions and job markets can change significantly over time (World Economic Forum, 2016). Our current sample was taken from a national survey collected from 2005–2013; thus, it will be of value to examine whether our findings generalize to current and future economic contexts.

Fourth, because a standardized coefficient reflects the effect size of each path (Kline, 2011), the observed effects of chronic job insecurity on personality change are small, which is not unusual in longitudinal studies that "control for past levels on the outcome (i.e., stability effects) to predict change in levels of the outcome over time" (Adachi & Willoughby, 2015, p.116). For our hypothesized effects in Table 3, the absolute values of the standardized coefficients ranged between .06 to .12, which are in line with similar previous studies. Specifically, we compared our findings with the results reported by Sutin and Costa (2010), Wu (2016) and Wu et al. (2015) who used similar research designs (i.e., with both job characteristics and personality data across multiple waves), similar modeling approaches (i.e., studying the lagged effect of job characteristics on personality change), and who reported standardized estimates for the parameters. The reported significant standardized coefficients ranged from .04 to .17 across these studies and our obtained effect size falls within this range.

We also reviewed studies that used multiwave designs to unpack the lagged effect of job insecurity on different outcomes (e.g., well-being, health, and self-esteem) instead of personality (e.g., De Cuyper, Mäkikangas, Kinnunen, Mauno, & Witte, 2012; Hellgren & Sverke, 2003; Huang, Niu, Lee, & Ashford, 2012; Kinnunen, Feldt, & Mauno, 2003; Vander Elst, Van den Broeck, De Cuyper, & De Witte, 2014). The absolute values of the standardized coefficients of the lagged effects of job insecurity in those studies ranged from .05 to .18, which are also similar to those reported in our study. Moreover, these job insecurity studies had a time lag ranging from only 6 months to 1 year, whereas our study encompassed job insecurity measured up to 5 years prior to the measurement of the outcome variable; yet, we found effect sizes that are comparable with these studies using shorter timespan. Therefore, our observed effects are not trivial.

Importantly, the small effects that we observed can be meaningful. They reveal phenomena that cannot be observed or assessed using a cross-sectional design and reflect "an ongoing process of cumulative effects and thus may have a substantial impact on the outcome over time" (Adachi & Willoughby, 2015, p.119). When we performed the same analysis across nine years of data, we found that the standardized coefficients of the hypothesized lagged effects of job insecurity on personality change were higher (.10 to .15 in absolute values), showing that the cumulative effect of job insecurity is stronger over the long term.

Future studies can also explore whether other job attributes jointly shape personality change by moderating the effects of chronic job insecurity. We have explored whether chronic job control buffers the negative effect of job insecurity and did not find such an effect (see Footnote 7). One potential reason is derived from the matching hypothesis (e.g., Cohen & McKay, 1984; Wall, Jackson, Mullarkey, & Parker, 1996), which suggests that job resources (e.g., job control) are most likely to buffer the negative effect of job stressors when specific types of job resources are matched with specific types of job stressors. Whether job control is the most relevant resource to buffer the effect of job insecurity is debatable because job control is a resource for performing tasks, and job insecurity is a stressor related to the sustainability of employment relationships. Future studies should explore whether other job features such as social support from supervisors and colleagues, or training opportunities, can buffer the negative effect of chronic job insecurity.

Footnotes

1. The term "trait" in TSO model does not strictly refer to a personality trait; it refers to an invariant component of the longitudinal measures from the same individual (Steyer et al., 1992; Usami et al., 2019). TSO modeling has been applied by previous studies capturing the stability of anxiety (Olatunji & Cole, 2009), negative interpersonal behaviors (Hatton et al., 2008), temperament (Naragon-Gainey, Gallagher, & Brown, 2013), and well-being (Luhmann, Schimmack, & Eid, 2011) as well as contextual variables such as environmental stress (Conway, Rutter, & Brown, 2016) and income (Luhmann et al., 2011).

2. As we have an odd number in terms of the total number of years of job-related variables (i.e., 9 years), we can only split the job-related data into a 4-year timeframe and a 5-year timeframe in order to generate two timeframes. In our current analysis, we used Time 1 to Time 4 as the first timeframe and then Time 5 to Time 9 as the second timeframe so that we can ensure the second timeframe to be symmetric in terms of the timespan of personality and job-related variables (i.e. both encompassing 5 years). We consider that having the second timeframe to be symmetric is more desirable, as this way we can take into account prior measures of job insecurity and personality traits, and thus offer a better examination of the cross-lagged effects between chronic job insecurity and the latent change scores of personality traits. In addition, we encountered a convergent problem in estimation when we used Time 1 to Time 5 as the first timeframe and then Time 6 to Time 9 as the second timeframe to capture chronic job insecurity.

3. Setting the variance of a single indicator to zero has been used when a trait-state-occasion model is built based on single indictor of the measures for each year (see Luhmann et al., 2011).

4. Because difference scores are estimated as latent variables, latent change scores do not suffer from the issues associated with measurement error, nor are they subject to highly restrictive assumptions when difference scores are computed by directly subtracting an observed score from another (Little et al., 2006).

5. We cannot specify the correlation between T5/T9 momentary job insecurity and T5/T9 personality directly due to the application of latent change score modelling. To create the T1-T5 and T5-T9 latent change scores of personality traits, we need to specify the factor loadings of T5/T9 personality traits on the latent change score as 1, and the variances of T5/T9 personality traits as 0. As such, information (i.e., variances) of T5/T9 personality traits are reflected in the latent change scores of personality traits. For this reason, by including the association between T5/T9 momentary job insecurity and T1-T5/T5-T9 latent change scores of personality, we are able to effectively acknowledge the association between momentary job insecurity and personality change process.

6. We also found that chronic job stress during the first timeframe predicted a decrease in extraversion between Time 1 and Time 5 (b = -.03, S.E. = .01, β = -.08, p < .05) and that the indirect effect of chronic job insecurity on the decrease in extraversion via chronic job stress was significant during this first timeframe (unstandardized indirect effect = -.004, 95% CIs = -.011 to -.001).

7. We examined whether an increase in job insecurity over time triggers personality change. To test this idea, we used only yearly job insecurity and personality traits in the analysis. We encounter an estimation problem when we freely estimate the growth function. We thus took a conservative approach by specifying a linear growth function for job insecurity directly within each timeframe (i.e., we set the factor loadings as 0, 1, 2, and 3 for the latent slope factors in the first timeframe

and 0, 1, 2, 3, 4 for the second one), and then used the latent slope factors to predict changes in personality traits in each time frame accordingly. The model fit well (MLM-χ^2 = 798.65, df = 207; CFI = .975; TLI = .967; RMSEA = .052, 90% CIs = .048-.056; SRMR = .087). We found that the increase in job insecurity from Time 1 to Time 4 predicted an increase in neuroticism (b = .29, S.E. = .09, β = .14, p < .01) and a decrease in conscientiousness (b = -.28, S.E. = .08, β = -.15, p < .01) and agreeableness (b = -.27, S.E. = .08, β = -.14, p < .01) between Time 1 and Time 5, but not changes in openness and extraversion. The increase in job insecurity from Time 5 to Time 9 predicted an increase in neuroticism (b = .25, S.E. = .07, β = .13, p < .01) and a decrease in conscientiousness (b = -.22, S.E. = .06, β = -.13, p < .01), and agreeableness (b = -.16, S.E. = .08, β = -.08, p < .05), as well as extraversion (b = -.23, S.E. = .06, β = -.14, p < .05) between Time 5 and Time 9, but not changes in openness. These findings should be interpreted with great caution because of the imposed linear growth function of job insecurity on our data. The assumption that participants can only increase their job insecurity experiences over time is a very strong assumption and may not be appropriate.

8. We examined whether chronic job insecurity and chronic job control within a specific time period interact to predict changes in the Big Five personality traits because job control (as a job resource) might buffer the negative effect of job insecurity. We used yearly job insecurity, yearly job control and the Big Five personality traits to build a model in which we created a latent interaction effect between chronic job insecurity during Time 1 to Time 4 and chronic job control during Time 1 to Time 4 to predict the latent change scores for personality between Time 1 to Time 5 (first timeframe); we did the same for the second timeframe. We estimated the model using the latent moderated structural (LMS) equations (Klein

& Moosbrugger, 2000) implemented in Mplus (Muthén & Muthén, 2012). We encountered estimation problems when all parameters were freely estimated. As such, we set the parameters of the first-order autoregressive effects of momentary job insecurity and momentary job control to the coefficients we obtained in the model without these latent interaction effects. This approach helped reduce the demand on the model estimation to avoid an estimation problem. Results showed a null interaction effect between chronic job insecurity and chronic job control in predicting personality changes in both timeframes, suggesting that higher job control over the same time period did not help buffer the negative effect of chronic job insecurity on the changes in the Big Five personality traits.

9. The syntaxes of all of the models are available on request.

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Table 1

Descriptive Statistics (n = 1,046)

	Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
				Coefficient Cronbach's alpha and Correlations																				
1	Neuroticism T1	2.84	1.04	.82																				
2	Neuroticism T5	2.72	0.99	.67	.81																			
3	Neuroticism T9	2.69	1.02	.62	.70	.82																		
4	Conscientiousness T1	4.34	1.07	-.18	-.15	-.18	.81																	
5	Conscientiousness T5	4.28	1.10	-.13	-.16	-.17	.80	.81																
6	Conscientiousness T9	4.25	1.12	-.12	-.12	-.20	.77	.81	.83															
7	Agreeableness T1	5.32	0.85	-.15	-.19	-.18	.18	.16	.19	.79														
8	Agreeableness T5	5.32	0.87	-.19	-.20	-.21	.18	.16	.18	.71	.82													
9	Agreeableness T9	5.43	0.87	-.19	-.20	-.24	.21	.17	.19	.66	.72	.81												
10	Extraversion T1	5.20	0.96	-.26	-.19	-.25	.19	.16	.17	.27	.21	.22	.79											
11	Extraversion T5	5.26	0.96	-.24	-.26	-.28	.16	.17	.16	.21	.28	.23	.73	.80										
12	Extraversion T9	5.34	0.97	-.25	-.24	-.32	.16	.14	.15	.19	.21	.28	.73	.76	.81									
13	Openness T1	4.18	0.99	.19	.08	.06	.01	.01	.04	.21	.13	.14	.05	.03	.01	.74								
14	Openness T5	4.12	1.01	.11	.18	.08	.00	.01	.05	.13	.21	.15	.03	.05	.01	.74	.76							
15	Openness T9	4.21	0.99	.09	.09	.13	.02	-.01	.03	.12	.12	.20	.03	.04	.06	.72	.77	.74						
16	Job insecurity T1	2.52	1.16	.20	.19	.20	-.16	-.12	-.11	-.15	-.12	-.13	-.15	-.13	-.14	.05	.05	.01	.66					
17	Job insecurity T2	2.46	1.17	.21	.21	.22	-.13	-.12	-.12	-.15	-.17	-.18	-.15	-.17	-.19	.03	.01	-.04	.61	.69				
18	Job insecurity T3	2.38	1.10	.18	.20	.18	-.15	-.14	-.14	-.19	-.17	-.18	-.15	-.15	-.16	.01	.00	-.04	.52	.61	.66			
19	Job insecurity T4	2.48	1.20	.19	.21	.22	-.11	-.12	-.11	-.13	-.16	-.16	-.13	-.16	-.16	.04	.04	.02	.51	.56	.59	.74		
20	Job insecurity T5	2.45	1.16	.17	.24	.22	-.14	-.13	-.12	-.17	-.20	-.21	-.14	-.16	-.16	.01	.03	-.01	.44	.50	.51	.61	.74	
21	Job insecurity T6	2.45	1.14	.19	.22	.24	-.15	-.13	-.14	-.17	-.19	-.18	-.14	-.15	-.17	.04	.07	.02	.43	.50	.48	.55	.63	.71
22	Job insecurity T7	2.47	1.18	.18	.21	.24	-.14	-.13	-.14	-.14	-.19	-.19	-.14	-.16	-.20	.02	.02	.00	.44	.52	.47	.56	.59	.62
23	Job insecurity T8	2.65	1.24	.16	.18	.21	-.13	-.11	-.15	-.12	-.13	-.15	-.13	-.14	-.19	.03	.05	.01	.38	.45	.40	.49	.55	.57
24	Job insecurity T9	2.71	1.30	.19	.21	.27	-.08	-.06	-.12	-.15	-.17	-.24	-.16	-.17	-.20	.03	.01	-.01	.35	.41	.38	.42	.48	.47
25	Job control T1	4.08	1.39	-.08	-.07	-.07	.13	.12	.07	-.01	.00	-.03	.08	.07	.07	.12	.14	.12	-.07	-.10	-.08	-.09	-.03	-.05
26	Job control T2	4.03	1.36	-.06	-.03	-.05	.08	.08	.05	-.02	-.05	-.05	.05	.05	.05	.11	.13	.14	-.07	-.15	-.12	-.07	-.03	-.06
27	Job control T3	4.14	1.38	-.04	-.03	-.05	.08	.09	.07	-.01	-.03	-.04	.04	.05	.05	.12	.14	.13	-.04	-.11	-.13	-.06	-.03	-.06

#	Variable	M	SD																					
28	Job control T4	4.21	1.38	-.07	-.04	-.06	.10	.09	.07	-.03	-.03	-.02	.08	.08	.09	.12	.16	.15	-.08	-.12	-.13	-.09	-.05	-.07
29	Job control T5	4.15	1.44	-.04	-.02	-.03	.10	.10	.06	-.04	-.04	-.05	.04	.05	.06	.11	.16	.15	-.03	-.10	-.09	-.03	-.08	-.06
30	Job control T6	4.15	1.39	-.03	-.02	-.03	.08	.09	.06	-.03	-.05	-.04	.03	.02	.04	.12	.16	.17	-.05	-.11	-.11	-.05	-.06	-.08
31	Job control T7	4.23	1.43	-.05	-.06	-.06	.09	.08	.06	-.03	-.04	-.04	.02	.03	.07	.15	.17	.18	-.06	-.13	-.12	-.08	-.07	-.09
32	Job control T8	4.17	1.44	-.03	-.03	-.03	.06	.06	.04	-.07	-.07	-.05	.00	.01	.07	.13	.16	.17	-.01	-.09	-.08	-.06	-.05	-.09
33	Job control T9	4.12	1.45	-.06	-.04	-.06	.09	.10	.09	-.04	-.05	-.03	.03	.05	.08	.11	.12	.15	.00	-.09	-.10	-.04	-.04	-.08
34	Time demand T1	4.68	1.27	.06	.07	.04	-.01	-.01	.01	.02	.02	.03	.05	.06	.09	.10	.10	.10	.01	.02	-.01	-.02	-.01	.00
35	Time demand T2	4.73	1.25	.09	.08	.04	-.01	-.02	-.02	.05	.03	.06	.03	.05	.07	.17	.16	.17	-.01	.01	-.01	-.01	-.01	.02
36	Time demand T3	4.72	1.29	.05	.04	-.01	.01	.01	.03	.09	.07	.09	.05	.04	.05	.15	.12	.12	-.01	-.01	-.03	-.01	-.02	-.01
37	Time demand T4	4.75	1.27	.00	.02	-.01	-.03	-.04	-.01	.08	.07	.08	.06	.05	.09	.11	.10	.12	-.04	-.03	-.03	-.03	-.05	-.03
38	Time demand T5	4.70	1.30	.04	.09	.02	.01	.00	.02	.06	.08	.08	.05	.06	.10	.12	.14	.14	.02	.00	.00	-.02	-.02	.00
39	Time demand T6	4.75	1.26	.02	.03	-.02	.02	.02	.05	.07	.08	.09	.06	.05	.08	.13	.12	.13	.01	-.01	.00	-.02	-.02	-.01
40	Time demand T7	4.77	1.27	-.03	.03	.01	.05	.01	.05	.04	.06	.08	.05	.07	.10	.07	.10	.12	-.03	-.03	-.03	-.04	-.01	-.01
41	Time demand T8	4.75	1.26	.02	.03	.02	.04	.04	.07	.02	.03	.09	.05	.05	.09	.11	.13	.17	.00	.01	.01	.00	.00	.01
42	Time demand T9	4.74	1.29	.06	.07	.06	.03	.02	.05	.07	.05	.10	.04	.01	.04	.15	.15	.19	.01	.02	.01	.01	.01	.03
43	Job stress T1	3.02	1.40	.27	.20	.16	-.10	-.10	-.08	-.07	-.06	-.07	-.12	-.10	-.08	.10	.08	.10	.20	.17	.14	.16	.17	.14
44	Job stress T2	2.95	1.38	.24	.22	.21	-.10	-.10	-.11	-.08	-.11	-.11	-.10	-.11	-.10	.09	.04	.07	.18	.28	.19	.21	.15	.14
45	Job stress T3	2.79	1.41	.18	.19	.14	-.06	-.09	-.06	.00	-.03	-.04	-.04	-.05	-.07	.10	.09	.08	.14	.18	.21	.20	.14	.14
46	Job stress T4	3.03	1.39	.18	.19	.19	-.08	-.12	-.09	-.09	-.06	-.07	-.08	-.10	-.10	.11	.09	.11	.09	.15	.15	.23	.15	.16
47	Job stress T5	2.90	1.45	.20	.25	.20	-.07	-.12	-.05	-.07	-.03	.00	-.10	-.11	-.09	.13	.15	.13	.16	.18	.20	.22	.20	.17
48	Job stress T6	3.01	1.39	.16	.15	.15	-.11	-.10	-.08	-.06	-.03	-.03	-.09	-.09	-.09	.11	.12	.13	.12	.15	.15	.15	.17	.23
49	Job stress T7	2.93	1.45	.20	.20	.21	-.10	-.12	-.08	-.09	-.08	-.06	-.10	-.08	-.11	.09	.10	.11	.14	.15	.19	.19	.19	.20
50	Job stress T8	2.93	1.40	.15	.18	.18	-.06	-.09	-.04	-.06	-.04	-.03	-.10	-.07	-.10	.08	.10	.10	.11	.16	.18	.18	.19	.18
51	Job stress T9	2.88	1.46	.16	.21	.23	-.06	-.06	-.07	-.10	-.07	-.08	-.08	-.10	-.14	.08	.09	.13	.12	.14	.17	.14	.19	.17

Coefficient Cronbach's alpha estimates are reported along the diagonal of the table.

Table 1 (Count.)
Descriptive Statistics (n = 1,046)

	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Coefficient Cronbach's alpha and Correlations																														
22 Job insecurity T7	.72																													
23 Job insecurity T8	.67	.72																												
24 Job insecurity T9	.51	.62	.72																											
25 Job control T1	-.09	-.04	-.03	.86																										
26 Job control T2	-.08	-.04	-.02	.74	.86																									
27 Job control T3	-.07	-.03	-.01	.68	.74	.86																								
28 Job control T4	-.10	-.07	-.03	.67	.71	.76	.87																							
29 Job control T5	-.08	-.03	.02	.65	.70	.73	.77	.87																						
30 Job control T6	-.09	-.03	-.01	.61	.66	.71	.74	.79	.88																					
31 Job control T7	-.14	-.06	-.03	.61	.66	.70	.73	.77	.79	.87																				
32 Job control T8	-.10	-.08	-.01	.59	.62	.66	.69	.72	.74	.79	.88																			
33 Job control T9	-.08	-.05	-.06	.58	.61	.65	.67	.69	.70	.74	.80	.88																		
34 Time demand T1	.01	-.01	.03	.01	.02	.01	.01	-.01	-.02	.00	.00	.00	.74																	
35 Time demand T2	.06	.04	.05	.01	.05	.03	.03	.05	.05	.05	.07	.07	.63	.73																
36 Time demand T3	.03	.02	-.01	-.06	.00	.01	-.01	.00	.02	-.01	.00	.01	.58	.63	.71															
37 Time demand T4	-.01	-.03	-.02	-.02	.03	.02	.02	.02	.04	.02	.03	.04	.55	.60	.65	.75														
38 Time demand T5	.01	.01	.02	.01	.04	.04	.03	.01	.04	.02	.01	.04	.56	.57	.62	.67	.74													
39 Time demand T6	.02	.01	.01	-.05	.01	.02	.00	.00	.03	.00	.00	.01	.50	.56	.59	.65	.68	.75												
40 Time demand T7	-.02	.00	-.02	-.03	.01	.03	.00	.01	.02	.00	.01	-.01	.49	.48	.55	.60	.64	.72	.73											
41 Time demand T8	.00	.01	-.01	-.01	.01	.02	.02	.02	.04	.01	.02	.00	.51	.50	.56	.61	.62	.65	.69	.73										
42 Time demand T9	.01	.04	.04	-.05	-.01	.02	.01	.01	.05	.01	.00	.00	.44	.50	.52	.56	.58	.64	.61	.67	.75									
43 Job stress T1	.16	.16	.19	-.10	-.03	-.06	-.06	-.04	-.06	-.07	-.06	-.07	.46	.35	.27	.26	.25	.28	.21	.23	.20	.79								
44 Job stress T2	.19	.15	.16	-.09	-.09	-.07	-.10	-.08	-.06	-.10	-.06	-.09	.34	.43	.32	.28	.25	.27	.18	.22	.20	.56	.86							
45 Job stress T3	.15	.15	.13	-.13	-.09	-.15	-.13	-.10	-.11	-.12	-.11	-.13	.30	.33	.43	.33	.29	.28	.23	.26	.23	.49	.56	.79						
46 Job stress T4	.16	.16	.17	-.08	-.06	-.09	-.12	-.08	-.11	-.11	-.10	-.13	.30	.35	.37	.47	.35	.36	.31	.32	.29	.44	.47	.58	.81					
47 Job stress T5	.17	.17	.15	-.11	-.08	-.11	-.13	-.15	-.14	-.16	-.14	-.14	.26	.29	.29	.32	.42	.33	.30	.28	.27	.42	.46	.51	.59	.78				
48 Job stress T6	.17	.18	.12	-.10	-.08	-.10	-.13	-.13	-.17	-.15	-.14	-.11	.27	.31	.33	.31	.36	.47	.37	.34	.33	.42	.44	.46	.55	.59	.79			
49 Job stress T7	.23	.20	.17	-.10	-.05	-.09	-.11	-.11	-.12	-.17	-.12	-.12	.24	.27	.30	.30	.31	.41	.43	.35	.31	.45	.44	.53	.57	.58	.66	.83		

50 Job stress T8	.17	.23	.19	-.08	-.05	-.09	-.10	-.11	-.12	-.13	-.14	-.12	.25	.26	.27	.27	.29	.35	.36	.43	.34	.43	.42	.48	.49	.53	.57	.65	.79	
51 Job stress T9	.14	.22	.28	-.09	-.06	-.07	-.11	-.09	-.08	-.09	-.08	-.16	.24	.26	.25	.27	.30	.37	.36	.39	.46	.40	.40	.43	.49	.48	.56	.59	.62	.82

Coefficient Cronbach's alpha estimates are reported along the diagonal of the table.

Table 2
Results of Measurement Invariance Tests (n = 1,046)

Job security [a]	
Configural invariance	MLM-χ^2 = 311.70, df = 216; CFI = .991; TLI = .986; RMSEA = .021 (90% C.I. = .015-.025); SRMR = .031
Weak invariance	MLM-χ^2 = 328.37, df = 232; CFI = .991; TLI = .987; RMSEA = .020 (90% C.I. = .015-.025); SRMR = .032; ΔCFI = .000
Strong invariance	MLM-χ^2 = 430.19, df = 256; CFI = .984; TLI = .978; RMSEA = .026 (90% C.I. = .021-.030); SRMR = .037; ΔCFI = -.007.
Job control	
Configural invariance	MLM-χ^2 = 2731.07, df = 1125; CFI = .960; TLI = .949; RMSEA = .037 (90% C.I. = .035-.039); SRMR = .093
Weak invariance	MLM-χ^2 = 2806.20, df = 1165; CFI = .959; TLI = .950; RMSEA = .037 (90% C.I. = .035-.038); SRMR = .093; ΔCFI = -.001
Strong invariance	MLM-χ^2 = 2944.41, df = 1213; CFI = .957; TLI = .949; RMSEA = .037 (90% C.I. = .035-.039); SRMR = .093; ΔCFI = -.002
Time demand	
Configural invariance	MLM-χ^2 = 545.35, df = 216; CFI = .977; TLI = .963; RMSEA = .038 (90% C.I. = .034-.042); SRMR = .066
Weak invariance	MLM-χ^2 = 568.24, df = 232; CFI = .977; TLI = .965; RMSEA = .037 (90% C.I. = .033-.041); SRMR = .068; ΔCFI = .000
Strong invariance	MLM-χ^2 = 601.00, df = 256; CFI = .976; TLI = .967; RMSEA = .036 (90% C.I. = .032-.040); SRMR = .069; ΔCFI = -.001
Job stress [a]	
Configural invariance	MLM-χ^2 = 77.89, df = 63; CFI = .998; TLI = .996; RMSEA = .015 (90% C.I. = .000-.025); SRMR = .011
Weak invariance	MLM-χ^2 = 89.81, df = 71; CFI = .998; TLI = .996; RMSEA = .016 (90% C.I. = .000-.025); SRMR = .016; ΔCFI = .000
Strong invariance	MLM-χ2 = 158.89, df = 87; CFI = .993; TLI = .987; RMSEA = .028 (90% C.I. = .021-.035); SRMR = .022; ΔCFI = -.005
Neuroticism	
Configural invariance	MLM-χ^2 = 551.76, df = 114; CFI = .939; TLI = .918; RMSEA = .061 (90% C.I. = .056-.066); SRMR = .050
Weak invariance	MLM-χ^2 = 565.44, df = 124; CFI = .938; TLI = .924; RMSEA = .058 (90% C.I. = .054-.063); SRMR = .051; ΔCFI = -.001
Strong invariance	MLM-χ^2 = 622.51, df = 136; CFI = .932; TLI = .924; RMSEA = .058 (90% C.I. = .054-.063); SRMR = .053; ΔCFI = -.006
Extraversion	
Configural invariance	MLM-χ^2 = 654.04, df = 114; CFI = .942; TLI = .922; RMSEA = .067 (90% C.I. = .062-.072); SRMR = .062
Weak invariance	MLM-χ^2 = 674.52, df = 124; CFI = .941; TLI = .927; RMSEA = .065 (90% C.I. = .060-.070); SRMR = .064; ΔCFI = -.001
Strong invariance	MLM-χ^2 = 721.80, df = 136; CFI = .937; TLI = .929; RMSEA = .064 (90% C.I. = .060-.069); SRMR = .064; ΔCFI = -.004
Agreeableness	
Configural invariance	MLM-χ^2 = 68.07, df = 39; CFI = .994; TLI = .989; RMSEA = .027 (90% C.I. = .016-.037); SRMR = .023
Weak invariance	MLM-χ^2 = 81.59, df = 45; CFI = .992; TLI = .988; RMSEA = .028 (90% C.I. = .018-.037); SRMR = .031; ΔCFI = -.002
Strong invariance	MLM-χ^2 = 119.00, df = 53; CFI = .985; TLI = .982; RMSEA = .035 (90% C.I. = .026-.043); SRMR = .036; ΔCFI = -.007
Openness	
Configural invariance	MLM-χ^2 = 1002.94, df = 114; CFI = .901; TLI = .867; RMSEA = .086 (90% C.I. = .081-.091); SRMR = .129
Weak invariance	MLM-χ^2 = 1019.61, df = 124; CFI = .900; TLI = .877; RMSEA = .083 (90% C.I. = .078-.088); SRMR = .130; ΔCFI = -.001
Strong invariance	MLM-χ^2 = 1059.98, df = 136; CFI = .897; TLI = .884; RMSEA = .080 (90% C.I. = .076-.085); SRMR = .129; ΔCFI = -.003
Conscientiousness	
Configural invariance	MLM-χ^2 = 656.30, df = 114; CFI = .930; TLI = .905; RMSEA = .067 (90% C.I. = .062-.072); SRMR = .054
Weak invariance	MLM-χ^2 = 670.13, df = 124; CFI = .929; TLI = .912; RMSEA = .065 (90% C.I. = .060-.070); SRMR = .055; ΔCFI = -.001
Strong invariance	MLM-χ^2 = 731.72, df = 136; CFI = .923; TLI = .913; RMSEA = .065 (90% C.I. = .060-.069); SRMR = .057; ΔCFI = -.006

a: Errors of one item of these constructs were not allowed to be correlated over time to avoid estimation problems.

Table 3

Unstandardized (S.E.) /Standardized Estimates in Model 1

Independent variables	Dependent variables		Independent variables	Dependent variables
Chronic job insecurity T1-T4	**Personality changes between T1 and T5**		**Personality T1**	**Chronic job insecurity over T1-T4**
	Neuroticism	.06(.02)/.12**	Neuroticism T1	.19(.05)/.15**
	Conscientiousness	-.04(.02)/-.10**	Conscientiousness T1	-.11(.04)/-.09*
	Agreeableness	-.04(.02)/-.09*	Agreeableness T1	-.22(.05)/-.18**
	Extraversion	.01(.01)/.01	Extraversion T1	-.10(.04)/-.10**
	Openness	-.01(.01)/-.03	Openness T1	.01(.08)/.01
Chronic job insecurity T5-T9	**Personality changes between T5 and T9**		**Personality T5**	**Chronic job insecurity over T5-T9**
	Neuroticism	.04(.01)/.10**	Neuroticism T5	.01(.03)/.00
	Conscientiousness	-.02(.01)/-.06†	Conscientiousness T5	-.01(.03)/-.01
	Agreeableness	-.03(.01)/-.06*	Agreeableness T5	-.03(.03)/-.03
	Extraversion	-.01(.01)/-.04	Extraversion T5	-.02(.02)/-.02
	Openness	-.01(.01)/-.06*	Openness T5	.06(.05)/.03

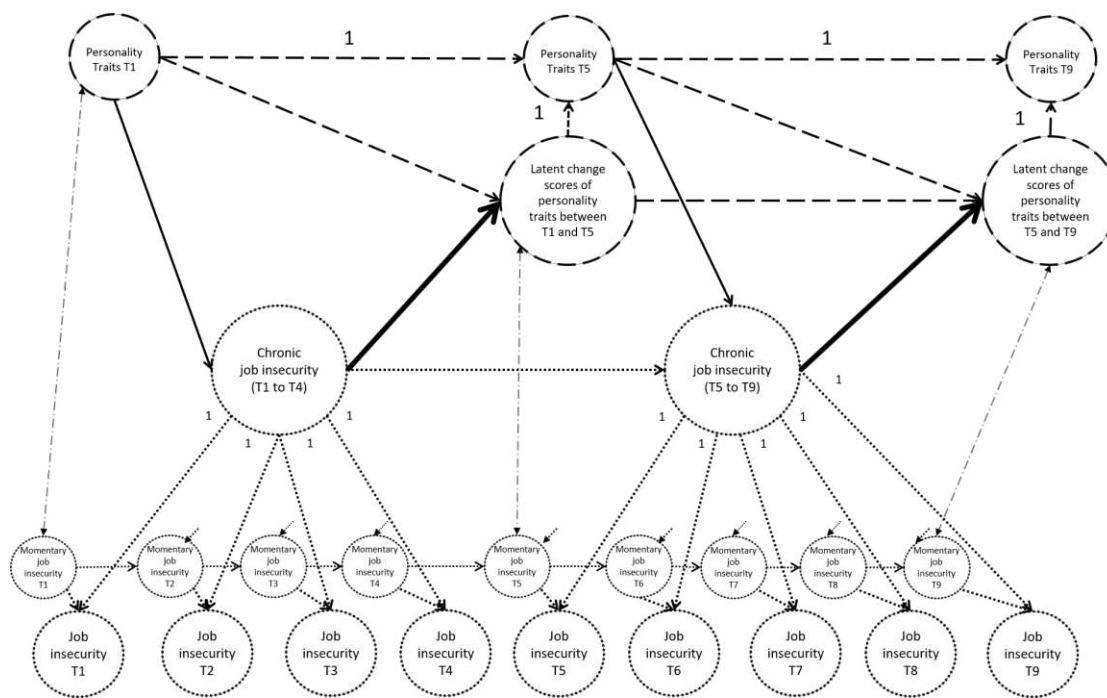† p < .10, * p < .05, ** p < .01.

Figure 1. Illustration of Model 1.

Note. Personality traits incorporate the Big Five personality traits simultaneously. We built the model based on factor scores of Big Five personality traits and yearly job insecurity computed from their strong invariance models and thus use circles to represent those variables. Dot lines represents specification for chronic job insecurity, yearly job insecurity and momentary job insecurity. Dash lines represent specification for Big Five personality traits and their latent change scores. The bold solid lines represent effects of chronic job insecurity on change scores of Big Five personality traits. The thin solid lines represent effects of personality traits on chronic job insecurity in each time frame. The long-dash-dot lines represent concurrent associations of momentary job insecurity (in the same years where personality traits were assessed) with scores of Big Five personality traits or the latent change scores of Big Five personality traits.
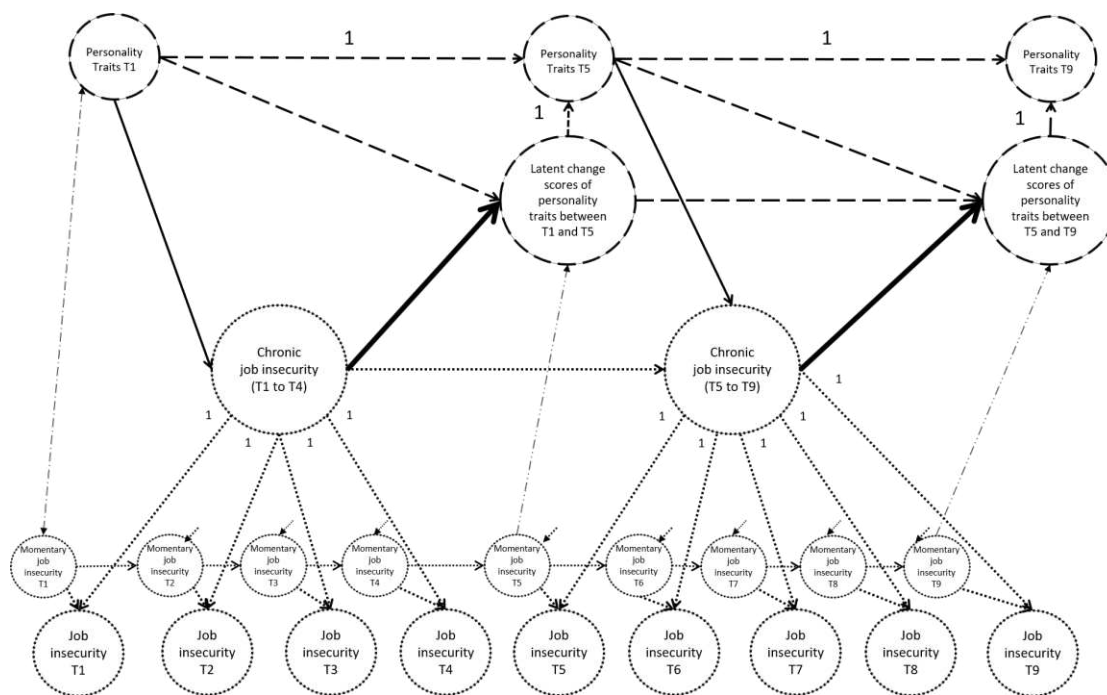
Figure 2. Illustration of Model 2.

Note. Personality traits incorporate the Big Five personality traits simultaneously. We built the model based on factor scores of Big Five personality traits and yearly job insecurity computed from their strong invariance models and thus use circles to represent those variables. Dot lines represents specification for chronic job insecurity, yearly job insecurity and momentary job insecurity. Dash lines represent specification for Big Five personality traits and their latent change scores. The bold solid lines represent effects of chronic job insecurity on change scores of Big Five personality traits. The thin solid lines represent effects of personality traits on chronic job insecurity in each time frame. The long-dash-dot lines represent concurrent associations of Time 1 momentary job insecurity with Time 1 Big Five personality traits. Finally, the long-dash-dot-dot lines represent effects of Time 5 and Time 9 momentary job insecurity on the latent change scores of Big Five personality traits in each time frames, the only difference between Model 1 and Model 2.