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Conceptualizing and Measuring Subjective Career Lock

ORIGINAL ARTICLE

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ABSTRACT

In today's rapidly changing working life, employees may end up in career lock, that is, not satisfied with their jobs but unable to change their career situation. Being in career lock has shown to have detrimental effects on employees, but so far, it has been difficult to measure and identify individual perceptions of it. Our aim was to construct and validate a scale for measuring subjective career lock (SCL). We expected SCL to be closely related to various occupational health outcomes. We defined SCL as a psychological state in which individuals have an internal sense of being stuck in their careers. We constructed a three-item scale to measure this phenomenon, refining the measures of prior career lock constructs. For scale validation, we conducted an online survey of employees (N = 3,281) whom we contacted via four trade unions in Finland. The results showed that SCL is related to yet a construct distinct from job dissatisfaction and inability to change one's career situation and demonstrated satisfactory nomological and discriminant validity with related constructs. The SCL scale demonstrated good incremental validity and added a unique variance to the estimation of occupational health and well-being outcomes over prior measures of locked-in.

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In today's working life, employees are expected to be proactive and adapt to changes in their employment environment and occupational roles, maintain their employability, and develop their occupational skills (e.g., Hirschi & Koen 2021). Also, working careers have shifted toward different forms of employment and individual career orientations, highlighting the meaning of sustainable careers and personally meaningful and subjectively defined work experiences (De Vos, Van der Heijden & Akkermans 2020; Hirschi & Koen 2021; Nagy, Froidevaux & Hirschi 2019). Maladjustment to this changing working life, as well as a range of personal and contextual factors, may lead to a perceived inability to make career-related changes, ultimately resulting in career lock. In the work context, this means that employees remain in unsatisfying jobs, against their own preferences and efforts (e.g., Allen, Peltokorpi & Rubenstein 2016; Böckerman et al. 2013; Huysse-Gaytandjieva, Groot & Pavlova 2013a). This career lock situation may become a dilemma in an individual's career if they have no means of dealing with it.

Although previous research has discussed the detrimental effects of career lock, no scales exist for measuring subjective career lock (SCL) to enable us to understand individuals' own perceptions of their current career situations. Previous research has used various, closely related terms to refer to and measure similar phenomena, such as *job lock* (e.g., Fisher et al. 2016; Huysse-Gaytandjieva, Groot & Pavlova 2013a; Madrian 1994; Kapur 1998), *workplace and occupational locked-in* (Aronsson et al. 2019; Aronsson & Göransson 1999; Bernhard-Oettel et al. 2020; Fahlén et al. 2009; Muhonen 2010; Stengård et al. 2016), *being stuck at work* (Allen, Peltokorpi & Rubenstein 2016), *reluctant staying* (Hom et al. 2012; Sheridan et al. 2019), and *staying unwillingly in a job* (Böckerman et al. 2013). These prior studies have often utilized self-reports and sometimes longitudinal register data to combine one or multiple attitudinal (e.g., job dissatisfaction) and behavioral (e.g., job search, job immobility) attributes to define whether individuals are in a career lock position or not. Existing measures of career lock have mostly been applied to the workplace context, and measurement has generally emphasized the externally defined *status* of job immobility on the basis of categorical methods or using indirect and objective approaches. For example, some previous studies have measured job dissatisfaction and employability and used the information to create dichotomized categorical measures of locked-in status (being dissatisfied with one's job but perceiving low employability to find another job, see for example, Stengård et al. 2016). Other studies have measured only specific domains related to career lock (e.g., limited job opportunities), which has resulted in narrow, inadequate operationalization of the phenomenon (see Feenstra-Verschure et al. 2023a). Thus, previous measures have used subjective scales (e.g., dissatisfaction), but have not directly captured employees' subjective experience of career lock. This lack has been acknowledged, and the development of a measure of subjective perceptions of the locked-in phenomenon has been called for (e.g., Aronsson et al. 2019; Bernhard-Oettel et al. 2020; Stengård et al. 2019).

Measuring and understanding the subjective experience of career lock is important for several reasons. First, individuals' own interpretations of their poor career situation and lack of subjective success can lead to feelings of frustration and a sense of purposelessness, despite objectively favorable career circumstances (see Abele, Spurk & Volmer 2011). Thus, a measure that captures the subjective experience of career lock rather than a top-down defined status could be more strongly associated with, and more precisely predict, the individual experience of well-being at work. This direct measure of SCL takes into account a person's own awareness of their (unsatisfactory) career situation. Furthermore, a direct measure could more accurately identify individuals with working career-related challenges and would thus also be better adapted to behavioral research on occupational health.

Second, using a continuous scale would enable a better understanding of how individual differences and experiences vary, and lead to increased sensitivity in measurements (MacCallum et al. 2002). By measuring SCL directly, we can acquire content-related insights of the relationships between this phenomenon and the associated constructs. Moreover, using multiple items enables us to treat the concept as a latent construct, and thus use statistical analysis to isolate measurement error, which adds to the accuracy of measurement.

The current study aimed to fill this gap in research, and develop and validate a scale that measures SCL, as well as to address previous suggestions and reach a better understanding of the subjective experience of career lock. As part of the validation, we aim to show that the subjective perception of being in career lock is related to but separate from previous conceptualizations of locked-in. Finally, we analyze the relationship between SCL and some key occupational health and work-related concepts.

DEFINING CAREERS

Although the terms 'job,' 'vocation,' 'occupation' and 'career' are often used interchangeably in popular discourse (Lent & Brown 2013), scholars have presented various distinctive definitions of a career. Traditionally, careers have been defined as advancing in the status hierarchy of an organization, but this understanding may be too limited in a labor market in which individuals change jobs more often and may find other ways to advance and develop their careers (Baruch & Sullivan

2022). In this study, we theoretically approach the definition of a career on the basis of career construction theory, which posits that a career has both objective and subjective aspects (Savickas 2013). The objective career 'denotes the sequence of positions that an individual occupies from school through retirement,' while the subjective career 'steers and carries individuals across job changes and occupational transition' (Savickas 2013). Using these definitions as a framework, we consider individuals' current jobs a key factor in their career and a critical part of how they perceive their career, while taking into account that a career is something that individuals construct subjectively.

CONCEPTUALIZING SUBJECTIVE CAREER LOCK

In the career context, the definition of career lock varies, partly due to differing viewpoints in different research fields. In the career literature, concepts such as *career paralysis* (McInnes 2016), *career inaction* (Rogiers et al. 2022; Verbruggen & De Vos 2020), *career stagnation* (Abele, Volmer & Spurk 2012), and *mid-career stuckness* (Treebak & Thomsen 2022) have been used to define a situation in which an individual fails to do enough, is unable to make changes to their career, or their career development has ended involuntarily. Studies of the individual perceptions of career lock have by far been qualitative in nature and, to the best of our knowledge, no validated scales exist.

Other research areas, for example, career entrenchment, job embeddedness, and organizational commitment, have conceptualizations and empirical studies detailing different reasons for individuals not making career-related changes (e.g., Allen, Peltokorpi & Rubenstein 2016; Carson, Carson & Bedeian 1995; Crossley et al. 2007; Hom et al. 2012; Meyer & Allen 1991; Sinclair et al. 2005; Zacher, Ambiel & Noronha 2015). Although conceptually related to career lock, the aforementioned concepts do not measure it per se—they measure individuals' dependency on their job or career. However, employees with high job embeddedness in an adverse work environment (e.g., Allen et al. 2016) or those with high normative and continuance commitment combined with low affective commitment to their organization (e.g., Hom et al. 2012) have been studied as examples of staying reluctantly or being stuck in the workplace.

Another closely related concept of career lock is that of career plateau, research on which has introduced several categories, most of which involve a lack of promotion opportunities or job challenges (Yang et al. 2019). While career plateau may entail subjective perceptions of stagnation, the literature has mostly focused on hierarchical and job content plateau. In the job mobility and turnover literature, the measurement of remaining in a dissatisfactory job situation stems from the concept of *job lock*, which is associated with external factors that discourage turnover such as employer-sponsored health insurance in the US labor market context (e.g., Fisher et al. 2016; Madrian 1994; Kapur 1998). In contrast, psychology and the health sciences see career lock situations as being related to internal and personal determinants (Huysse-Gaytandjieva, Groot & Pavlova 2013a).

In sum, prior studies of career lock seem to have some common attributes: First, *job dissatisfaction*, measured in previous research by workplace non-preference (Aronsson et al. 2019; Bernhard-Oettel et al. 2020; Fahlén et al. 2009; Fisher et al. 2016; Kapur 1998; Madrian 1994; Muhonen 2010; Stengård et al. 2016); job dissatisfaction (Huysse-Gaytandjieva, Groot & Pavlova 2013a); and turnover intentions (Böckerman et al. 2013; Sheridan et al. 2019). Second, several prior studies have included the *inability to change one's career situation* as part of the conceptualization, measured in previous research by low perceived employability/limited job alternatives (Bernhard-Oettel et al. 2020; Fahlén et al. 2009; Furåker, Nergaard & Saloniemi 2014; Sheridan et al. 2019; Stengård et al. 2016), job immobility (Böckerman et al. 2013; Huysse-Gaytandjieva, Groot & Pavlova 2013a), or job embeddedness (e.g., Allen, Peltokorpi & Rubenstein 2016). Feenstra-Verschure and colleagues (2023a) also provide a comprehensive overview of similar concepts related to career lock, referring to the aforementioned operationalization as *locked at the job*.

However, although lock situations can be related to a person's occupation or place of work, we focus on their reflection of their current *career situation* as a whole and include both their current experience at work and their overall work career and occupational situation. Individuals experience and interpret their career situations differently on the basis of, for example, their personal values, career prospects, and alternative priorities in career and life (Nagy, Froidevaux & Hirschi 2019). Previous research has argued that career lock is characterized by a sense of 'stuckness' and an individual's own awareness of desiring a career change (McInnes 2016; Rogiers et al. 2022; Treebak & Thomsen 2022; Verbruggen & De Vos 2020). Prior qualitative studies have discussed the subjective perception of career lock as an outcome fueled by job dissatisfaction, an inability to change one's situation or perceived barriers to change (e.g., Feenstra-Verschure et al. 2023b; McInnes 2016). These studies have shown that individuals describe their career lock situations in various, yet congruent terms, such as 'rusting in place' or 'stuck' (Feenstra-Verschure et al. 2023b), 'stagnation,' 'feeling out of place' (Treebak & Thomsen 2022), and a 'sense of stuckness' or 'being in a rut' (McInnes 2016). In this study, we defined the concept of SCL as a psychological state in which individuals have an internal sense of being stuck in their career, and this definition served as the basis for the development of the SCL scale.

As part of the validation of the SCL measure, we aimed to understand its relationship with previously utilized career lock constructs (job dissatisfaction and inability to change one's career situation). However, this validation may have been hampered by the lack of nuance in the prior measures. Prior conceptualizations of inability to change one's career situation have predominantly focused on employees' opportunities to change workplaces and on external barriers to change (e.g., lack of available job positions). This is a rather narrow view, as one's career situation can also be improved within one's current workplace (e.g., by changing roles or job crafting, see e.g., Wrzesniewski & Dutton 2001). Furthermore, qualitative studies also suggest that internal barriers play a prominent role (e.g., uncertainty, loss of perspective). In this study, we took the aforementioned factors into account when measuring a person's inability to change their career situation. We also created a job dissatisfaction measure, because earlier conceptualizations have mainly used single items of job satisfaction and low satisfaction for classifying the locked-in phenomenon. However, this may be imprecise, as low satisfaction may not fully capture the experience of dissatisfaction, and dissatisfaction is believed to drive feelings of career lock.

CAREER LOCK, OCCUPATIONAL HEALTH AND WORK CHARACTERISTICS

Being in a career lock situation can be harmful for the continuity of an individual's career and create health-related issues that may also impair their work ability. Studies have shown that, at the workplace level, being stuck in an unsatisfactory job is associated with a higher level of subjective health problems, including depressive symptoms, fatigue, headaches and lower self-rated health, and a higher risk of developing personal and work-related burnout (Aronsson & Göransson 1999; Huysse-Gaytandjieva, Groot & Pavlova 2013a; Muhonen 2010; Li et al. 2016; Stengård 2019; Tsai et al. 2021). Relationships have also been observed with lower life satisfaction, a higher prevalence of long-term sick leaves (Fahlén et al. 2009; Fisher et al. 2016) and increased mental health symptoms or poor mental health (Böckerman et al. 2013; Huysse-Gaytandjieva, Groot & Pavlova 2013b).

Regarding work-related characteristics and attitudes, lock situations have shown to be related to lower affective commitment to one's organization (Fisher et al. 2016). In addition, workplace boredom might diminish employees' motivation to remain in their workplace and at the same time, they may have fewer learning opportunities to keep their competence up to date and remain employable (e.g., Bernhard-Oettel et al. 2020; Carson, Carson & Bedeian 1995; Stengård et al. 2016). Lower job autonomy, together with high quantitative demands, may also inhibit workplace learning and lead to lower employability, thus increasing the odds of getting into a locked-in situation (Bernhard-Oettel et al. 2020). Despite these negative health- and work-related antecedents and outcomes of career lock, it is still not well understood whether subjective perceptions of the phenomenon are similarly related to these characteristics.

RESEARCH QUESTIONS AND HYPOTHESES

In this study we conceptualized and developed an SCL measure. For a more nuanced validation, we also refined and broadened the measurement of job dissatisfaction and inability to change one's career situation. Furthermore, we examined the relationships between the SCL measure and employee health and well-being outcomes.

PSYCHOMETRIC PROPERTIES

On the basis of prior qualitative insights, we expected the SCL scale and the scales of job dissatisfaction and inability to change one's career situation to represent three related but distinct constructs. Thus, we hypothesized:

> *Hypothesis 1:* The SCL is a unidimensional measure that reflects individuals' feelings and perceptions of career lock and is related to, although a distinct factor from, job dissatisfaction and the inability to change one's career situation.

CONSTRUCT VALIDITY

To establish the discriminant validity of the related measures, we examined the relationship between the SCL scale and prior measures of locked-in. We expected the SCL scale to be strongly related to locked-in measures, and not to be redundant.

> *Hypothesis 2:* The SCL scale is positively correlated but does not show redundancy in locked-in measures.

As a part of construct validity, we tested nomological validity, that is, whether the structural relationship with the construct and other variables in the nomological network were consistent with theoretical frameworks. To do this, we examined the associations between SCL and the constructs that we could expect to be theoretically or empirically related to it. In addition to hypothesizing that SCL is related to employees' health and well-being, on the basis of previous literature, we also assumed SCL would be associated with work-related factors: affective commitment, job boredom, and job autonomy. According to the three-component model of commitment (Meyer & Allen 1991), affective commitment is when someone wants to remain in an emotional attachment to one's

organization. Being in job lock has been associated with less positive feelings about remaining a part of one's organization (Fisher et al. 2016).

Furthermore, workplace boredom has been defined as a negative emotional experience that arises from the under-stimulating or under-challenging nature of work (Van Wyk et al. 2016). Experiencing workplace boredom might lead to a career lock situation and vice versa, because employees' motivation to remain in their workplace might diminish and at the same time, they may have less learning opportunities to keep their competence up to date and to remain employable (e.g., Bernhard-Oettel et al. 2020; Carson, Carson & Bedeian 1995; Stengård et al. 2016). Career lock may also relate to underqualification, when employees are unable to advance their careers because they lack certain skills. The locked-in phenomenon has also previously been associated with low job autonomy, when employees have little control over their work situation (Bernhard-Oettel et al. 2020). Thus, we expected SCL to be associated with higher workplace boredom as well as with less job autonomy and affective commitment to one's organization.

Hypothesis 3: The SCL scale correlates positively with job burnout and job boredom, and negatively with self-reported health, work ability, affective commitment, and job autonomy.

INCREMENTAL VALIDITY

Finally, we expected the SCL measure to have stronger associations with job burnout and employees' health and work ability than previous locked-in scales. We also expected the SCL scale to show relatively high associations with these well-being indicators. We suggested employees' own subjective experience of a career lock to be a key influence on health and well-being. Furthermore, as stated above, we believed that a continuous, validated scale would better capture the examined concept and consequently show that the well-being indicators have incremental validity in comparison to the previous categorical variables.

Hypothesis 4: The SCL measure can better explain the variance in job burnout, self-reported health, and work ability than prior locked-in measures.

METHODS

ITEM DEVELOPMENT

To adhere to best practices for developing and validating scales, we followed the guidelines and steps provided by Boateng and colleagues (2018) to ensure a systematic execution of item and scale development as well as scale evaluation. To create the SCL scale and new measures for the previously used career lock constructs—job dissatisfaction and inability to change one's career situation—we first developed items for the scale based on prior conceptualizations of the phenomenon, as well as expert and employee interviews, thus combining deductive and inductive approaches. We then developed the first set of the items based on the definitions by five experts/researchers in the field of occupational health. To have a continuous measure, we chose to use a five-point Likert response scale ranging from 1 (totally disagree) to 5 (totally agree).

To continue item generation, we conducted target population (N = 7) interviews to better understand the underlying factors of career lock and the aspects of the construct. The target population interview participants were recruited via social media platforms. We invited individuals who experienced career lock and barriers in career development to participate. The interviewees were expected to be over 35 years of age due to the need for career development being especially evident in mid and late career, where the individual already has several years of work experience (see Nagy, Froidevaux & Hirschi 2019). The participants (five women and two men) had varying degrees of education and were currently employed (one participant was on leave from their job due to COVID-19 pandemic-related temporary layoffs). The interview topics covered current and past career situation, competence development, underlying reasons for feeling stuck in one's career, and factors hindering career development. The interviews were transcribed, and themes and individuals' experiences related to career lock were subsequently identified. Based on the interviews, the interviewees described career lock as an internalized sense of stuckness and stagnation, where the current job is not satisfactory, and they perceive limited options to proceed in their career. Moreover, we identified distinct themes of job dissatisfaction related to dissatisfaction over time, mismatch between job and own preferences, and unmet expectations, as well as themes of one's inability to change the career situation that were related to internal (e.g., career decision-making difficulties) and external (e.g., low employability, lack of competence) barriers. Thus, we generated scale items that were complementary to the items initially created based on theoretical understanding.

Finally, to evaluate the appropriateness of the items and to ensure that the questions were understood as intended, we first asked researchers and experts working in the field of occupational health research (N = 14) to fill out the SCL questionnaire online and provide written feedback (e.g., on the clarity of the items). As a final step, we conducted cognitive interviews with the same participants as those who were involved in the target population interviews (N = 5), following the general guidelines for cognitive interviews (Willis 2005). After the interviews and expert feedback, we finalized the

measures, which consisted of three items for measuring subjective experience, six for measuring dissatisfaction, and eight for measuring the inability to change.

PARTICIPANTS

For scale validation, we conducted an online survey in the summer of 2021 via four trade unions in Finland. The link to the survey was sent to all union members who were employed and above 35 years of age (n = 43,495). The link to the survey was sent by the contact person in each trade union who had access to the registry of the union members in line with guidelines ensuring the confidentiality of personally identifiable information. The participants were invited to take part in a survey regarding their experiences of their current career situation, occupational well-being, and job satisfaction. Overall, after one reminder, 3,414 people completed the survey (response rate: 7.8%). A total of 133 individuals were excluded from the analyses due to missing age data, the participant being under 35 years and/or not currently working. Thus, 3,281 participants were included in the final dataset. The participants received written information on the purpose of the study and were informed that their answers were confidential and of data protection guidelines before answering. No financial or non-financial compensation was offered in this study. The research protocol was reviewed and approved by the research ethics committee of our research institution.

Our full sample was primarily women (84%), and the average age was 51.4 (range: 35–67 years, SD = 8.0). Most participants were highly educated (58.4% with a bachelor's or higher degree). Thus, the participants were more often female and were more highly educated than the general population in Finland. Altogether 43.7% of the participants had worked more than 10 years in their current jobs. Most worked full-time (94.3%) and 15.6% worked in a supervisory position. Only 5.8% responded that their job did not match their educational field.

To cross-validate the results across samples, our full sample (Sample 5) was split to four sub-samples (Samples 1–4) based on participants trade union membership for certain analyses confirming the factor-structure. Table 1 presents the background characteristics for each sub-sample (Samples 1–4) and full sample.

MEASURES

The reliability estimates (Cronbach's Alpha) of the measures are reported in Table 4.

Subjective career lock

Subjective career lock was measured with the SCL scale that consists of three items. The participants rated the items on a five-point scale, ranging from 1 (*totally disagree*) to 5 (*totally agree*). Table 2 shows the items included in the SCL scale. The scale was created and validated in Finnish. For the purpose of reporting the scale in this manuscript, it was translated from Finnish into English by a linguistic professional. The scale was then translated back into Finnish in order to further confirm the accuracy of the translation.

Prior measures of career lock and locked-in

Based on the prior conceptualizations of career lock, job dissatisfaction and inability to change one's career situation were measured with items created for this study (see Table 2). The participants rated the items on a five-point scale, ranging from 1 (*totally disagree*) to 5 (*totally agree*). Similarly to the SCL scale, the measures were translated from Finnish into English.

Of the prior locked-in measures, we first included the locked-in measure used by Stengård et al. (2016). Their measure combined one item of non-preference for one's workplace ('Is your current workplace the place you wish to work at in the future?'; 1 = *Yes*, 2 = *No, but I'm satisfied right now*, 3 = *No*), and one item of perceived employability ('How easy would it be for you to get a similar job without having to change residence?'; ranging from 1 = *Very easy* to 4 = *Very hard,* or *I don't know*). Respondents were grouped into categories of being locked-in, risk of locked-in, or not being locked-in following Stengård and colleagues (2016). After this, we created two dummy-coded variables: locked-in (0 = no

	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5
N	483	1918	509	371	3281
Female (%)	68	91	78	76	84
Average age (*SD*)	48.0 (*7.9*)	54.7 (*6.6*)	47.2 (*7.3*)	44.6 (*6.1*)	51.4 (*8.0*)
% with Bachelors degree or higher	99.6	29.0	100	100	58.4
Sample description	Experts in natural, environmental and forestry sciences	Employees of several occupational fields (e.g. secretarial, administrative, ICT work, social and health care work)	Professionals and experts in social sciences	Graduates and experts in business administration	Full sample

Table 1 Sample Characteristics.

locked-in or risk of locked-in, 1 = in a locked-in position) and risk of locked-in (0 = no locked-in or locked-in, 1 = in a risk of locked-in position). This was done to avoid suggesting a linear relationship between the categories in the analyses.

The second prior measure included was the measure of being in a locked-in position by Fahlén and colleagues (2009). They measured both workplace locked-in position ('How do you like your present place of work?' and 'Do you have opportunities to change your place of work?') and occupational locked-in position ('Do you like your occupation?' and 'Do you have opportunities to find employment in another occupation?') with two items (1 = *not at all*, 5 = *very much* or *1 = no opportunities, 5 = good opportunities*). We followed the categorization of Fahlén and colleagues (2009) when grouping the respondents into being in a workplace or occupational locked-in position.

Affective commitment to organization

Affective commitment was measured by three items (Item 1: Part of QPS Nordic-ADW; Items 2 and 3 adapted from Meyer & Allen 1991). A sample item is 'This organization really inspires me to give my best job performance'. The participants rated the items on a five-point scale, ranging from 1 = *totally disagree* to 5 = *totally agree*.

Job boredom

Job boredom was measured using three items from the Dutch Boredom Scale (DUBS; Reijseger et al. 2013). A sample item is 'At work time goes by very slowly'. The participants rated the items on a seven-point scale, ranging from 'never' to 'every day'.

Health, well-being, and work ability outcomes

Job burnout was measured with 12 items using the short version of the Burnout Assessment Tool (BAT; Schaufeli, Desart & De Witte 2020) which is composed of four dimensions: exhaustion, mental distance, cognitive impairment, and emotional impairment. A sample item is 'At work I feel mentally exhausted'. The participants rated the items on a five-point scale, ranging from 1 = *never* to 5 = *always*. *Work ability* was measured with a single self-assessment item of present overall level of work ability compared with lifetime best (part of the Work Ability Index, WAI), thus depicting a Work Ability Score (WAS; Tuomi et al. 1998). The participants rated the item on scale of 0 (*completely unable to work*) to 10 (*work ability at its best*). *Self-reported health* was measured with a single item of self-assessment of current health status in general (Robine & Jagger 2003). The participants rated the item on a scale of 0 (*very bad*) to 10 (*very good*).

Job autonomy

Job autonomy was measured with five items (Items 1–4: Part of QPS Nordic-ADW; Item 5: adapted from the Psycones questionnaire). A sample item is 'I can set my own work pace'. The participants rated the items on a five-point scale, ranging from 1 = *very seldom or never* to 5 = *very often or always*.

STATISTICAL ANALYSES

The statistical analyses were conducted using SPSS version 29 and Mplus version 8 (Muthén & Muthén 2017). First, exploratory factor analysis (EFA) was conducted for item reduction and to assess the preliminary factor structure using Sample 1. For item reduction, items with factor loadings above .45 were considered adequate and were retained. Second, the factor structure was confirmed using confirmatory factor analysis (CFA) in Mplus in Samples 2–4. The CFAs were used to confirm the hypothesized factor structure and was estimated using maximum likelihood with robust standard errors (MLR). As we used the MLR estimator in Mplus, we used the Satorra-Bentler scaled χ^2 difference test to compare different CFA models. We also used the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), and the Standardized Root Mean Square Residual (SRMR) to estimate model fit. Values greater than .95 for the CFI and TLI, smaller than .06 for the RMSEA, and smaller than .08 for the SRMR indicate a good model fit (Hu & Bentler 1999).

The internal consistencies of the scales were examined with Cronbach's alphas where alpha values between 0.80 and 0.95 are preferred and indicate high reliability (Boateng et al. 2018). Further validity testing was completed using the full sample (Sample 5). For these analyses, the mean score of the SCL scale was calculated. Discriminant validity was examined using bifactor correlations, correlations higher than .80 being interpreted as showing redundancy (Kline 2005). Please note that we were unable to conduct CFAs to further establish discriminant validity among prior dichotomized locked-in constructs. Similarly, nomological validity was examined using bifactor correlations. Finally, incremental validity relative to prior locked-in measures was established using hierarchical multiple regression models where the following were set as dependent variables: a) job burnout, b) self-reported health, and c) work ability. We ran separate regression models for each prior locked-in measure and entered the variables in two steps: in Step 1 the locked-in measure and in Step 2 the SCL scale. The change in ΔR^2 from Step 1 to Step 2 in these models was used to assess incremental validity.

RESULTS

PSYCHOMETRIC PROPERTIES

We ran an EFA to determine the final set of items for SCL as well as job dissatisfaction and inability to change one's career situation using Sample 1. The extracted

eigenvalues (using a cut-off of >1) and the break in the scree plot supported the three-factor model. Initially, EFA was performed with 17 items using Geomin rotation where the factors are allowed to correlate to ease the interpretation of the factor structure (Appendix 1). Two items, item 14 ('...I would find it hard to leave my present job, no matter how much I'd like to') and item 15 ('... it would not be easy in my current life situation') were excluded from the final scale measuring inability due to low factor loadings (.41 and .42; Appendix 1). Moreover, item 8 ('For a long time now I've felt that my career is not going in the right direction') in the dissatisfaction scale (Appendix 1) had a quite high cross-loading to two factors and was subsequently excluded. Consequently, we retained 14 items out of the initial 17 items (three items for the SCL; five items for the job dissatisfaction; six items for the inability to change career situation). All the standardized factor loadings ranged from .54 to .91 on their primary factor. Reliabilities were high across all the samples for the SCL, dissatisfaction, and inability, with the lowest reliability being .85 for the inability in Sample 3 and the highest reliability being .94 for the dissatisfaction factor in Sample 4.

To proceed with the three-factor model to the next phase, we confirmed the hypothesized three-factor structure using CFA in Samples 2–4. Table 2 shows the item-level factor loadings in Samples 2–4. We compared the three-factor solution to alternative two-factor and one-factor solutions. The tested two-factor solution combined the subjective experience of career lock and

ITEM	SCL			DISSATISFACTION			INABILITY		
	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 2	SAMPLE 3	SAMPLE 4
1. I feel stuck in my present job.	.91	.90	.92						
2. I have ended up in a dead end in my career.	.91	.90	.90						
3. I am stagnating in my career.	.84	.86	.89						
4. I've been dissatisfied with my work for a long time.				.89	.90	.92			
5. My present job does not fulfill my wishes.				.88	.91	.91			
6. I do my work even though I don't like it.				.86	.85	.90			
7. The nature of my job does not correspond to what I would like to do.				.85	.86	.88			
8. I would like to work doing something other than my current work.				.83	.87	.83			
There are some moments during their careers when people think about other job roles or changing workplaces. When answering the following questions, imagine you are in a situation in which you're planning this kind of change. Think about how much the following statements reflect your own experience in this situation.									
If I wanted to change workplaces or roles within my organization...									
9. ...I'd have no real means to do so.							.71	.67	.69
10. ...it wouldn't be easy because I put off decisions concerning my career.							.68	.67	.71
11. ...I wouldn't be able to decide what new job to pursue.							.68	.61	.68
12. ...I would not have sufficient skills for other job roles or jobs that interest me.							.69	.67	.71
13. ...I would not be able to get other suitable work.							.74	.68	.71
14. ...getting a new job would take too much effort.									

Table 2 Factor Loadings from Confirmatory Factor Analyses.

Note. CFA factor loadings were calculated using Samples 2–4, N = 371–1918.

job dissatisfaction dimensions, given that the correlation between these two factors was the highest of the between-factor correlations. The Satorra-Bentler scaled χ^2 difference test showed that the three-factor model fit the data better than the alternative two- and one-factor models. Additionally, the fit indices (RMSEA, CFI, TLI, and SRMR) supported the three-factor model over the two- and one-factor models in all the samples, thus supporting hypothesis 1. In Samples 3 and 4 the model fit indices suggested a suboptimal fit. Based on the modification indices, allowing some error terms to correlate would increase the model fit, however, we wanted to avoid the overfitting of the models, and approached the factor structure more theoretically. Table 3 shows the corresponding results.

The correlations between SCL, dissatisfaction, and inability—in Sample 5 were .75 and .42, respectively (Table 4), further supporting Hypothesis 1.

CONSTRUCT VALIDITY

The bivariate correlations among all the study variables used to test discriminant and nomological validity are shown in Table 4 for Sample 5. Sample 5 was used in all the subsequent analyses to utilize the full sample size. Any results for Samples 1–4 are available upon request from the authors.

Discriminant validity

We tested the discriminant validity between SCL and prior locked-in measures using. SCL was positively associated with prior locked-in measures: being locked-in (r = .39, p < .001; Stengård et al. 2016), risk of being locked-in (r = .21, p < .001; Stengård et al. 2016) as well as workplace locked-in and occupational locked-in positions (r = .49 and r = .41, all p < .001; Fahlén et al. 2009). Furthermore, all the correlations between the SCL and prior locked-in measures were positive and significant, although none of them crossed the .80 threshold for potential redundancy. Thus Hypothesis 2 stating discriminant validity between the SCL scale and career lock and locked-in measures was supported.

Nomological Validity

As expected, the SCL showed significant correlations with the related constructs: a positive correlation with job boredom (r = .43) and job burnout (r = .54), and negative correlations with affective commitment (r = –.60), job autonomy (r = –.33), workability (r = –.32), and self-reported health (r = –.25). Therefore, Hypothesis 3 was supported, as the SCL scale demonstrated nomological validity with related constructs.

INCREMENTAL VALIDITY RELATIVE TO PRIOR LOCKED-IN MEASURES

In support of Hypothesis 4, the SCL increased the explanation rate over locked-in measures when health and well-being outcomes were predicted. Based on the change in the R^2 values, the SCL accounted for additional variance in comparison to being locked-in or risk of locked-in by the categorization of Stengård and colleagues (2016) and the workplace and occupational locked-in positions of Fahlén and colleagues (2009).

MODEL	$\chi^2(df)$	SCALING CORRECTION[1]	SATORRA-BENTLER SCALED χ^2 DIFFERENCE TEST[1]	RMSEA	CFI	TLI	SRMR
Sample 2 (N = 1918)							
Three-factor	812.29(74)	1.24		.07	.95	.94	.05
Two-factor (SCL and dissatisfaction combined)	2181.62(76)	1.26	$\Delta\chi^2(2) = 870.80^{***}$	.12	.85	.82	.07
One-factor (all combined)	4958.40(77)	1.27	$\Delta\chi^2(3) = 2631.81^{***}$	.18	.65	.59	.16
Sample 3 (N = 509)							
Three-factor	406.77(74)	1.25		.09	.92	.90	.06
Two-factor (SCL and dissatisfaction combined)	890.12(76)	1.26	$\Delta\chi^2(2) = 376.13^{***}$	.15	.80	.76	.12
One-factor (all combined)	1019.20(77)	1.28	$\Delta\chi^2(3) = 394.12^{***}$	.16	.77	.73	.12
Sample 4 (N = 371)							
Three-factor	311.84(74)	1.19		.09	.93	.91	.05
Two-factor (SCL and dissatisfaction combined)	564.41(76)	1.20	$\Delta\chi^2(2) = 195.03^{***}$	.13	.85	.82	.07
One-factor (all combined)	1076.44(77)	1.22	$\Delta\chi^2(3) = 480.70^{***}$	.19	.70	.64	.15

Table 3 CFA Model Fit Comparisons in Samples 2–4.

[1] *Note*. Scaling correction = Scaling correction used for the Chi-square difference test in models estimated with maximum-likelihood with robust standard errors (MLR). RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual.

$^{***}p$ < .001.

	M/%	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SCL	2.80	1.26	*.92*												
2. Dissatisfaction	2.47	1.19	.75**	*.94*											
3. Inability	2.84	0.90	.42**	.27**	*.85*										
4. Affective commitment	2.54	0.97	−.60**	−.70**	−.20**	*.86*									
5. Job boredom	2.63	1.57	.43**	.49**	.23**	−.40**	*.81*								
6. Job burnout	2.29	0.59	.54**	.60**	.36**	−.51**	.53**	*.88*							
7. Self-reported health	7.75	1.54	−.25**	−.24**	−.25**	.27**	−.21**	−.44**	—						
8. Work ability	7.97	1.60	−.32**	−.32**	−.26**	.33**	−.27**	−.52**	.75**	—					
9. Job autonomy	3.39	0.86	−.33**	−.34**	−.24**	.40**	−.06**	−.32**	.27**	.28**	*.82*				
10. Locked-in[1] (Stengård et al., 2016)	11.9%	–	.39**	.49**	.13**	−.45**	.27**	.36**	−.16**	−.22**	−.19**	—			
11. Risk of locked-in[2] (Stengård et al., 2016)	18.6%	–	.21**	.21**	.17**	−.15**	.09**	.13**	−.06**	−.06**	−.07**	−.18**	—		
12. Workplace locked-in[3] (Fahlén et al., 2009)	27.0%	–	.49**	.54**	.28**	−.55**	.29**	.42**	−.23**	−.27**	−.29**	.47**	.25**	—	
13. Occupational locked-in[3] (Fahlén et al., 2009)	20.0%	–	.41**	.53**	.27**	−.40**	.31**	.37**	−.19**	−.22**	−.21**	.28**	.20**	.48**	—

Table 4 Correlations in Sample 5.

Note. Prior locked-in measures: [1]0 = not locked-in or risk of locked-in, 1 = locked-in; [2]0 = not locked-in or locked-in, 1 = risk of locked-in; [3]0 = not locked-in, 1 = locked-in.

**$p < .01$; Cronbach's Alphas on diagonal.

	JOB BURNOUT				SELF-REPORTED HEALTH				WORKABILITY			
	B	***SE***	**β**	**ΔR^2**	***B***	***SE***	**β**	**ΔR^2**	***B***	***SE***	**β**	**ΔR^2**
Model 1												
Step 1				.17***				.04***				.06***
Intercept	2.16	.01			7.91	.03			8.17	.04		
Locked-in (Stengård et al.)[1]	.73	.03	.40***		−.86	.09	−.18***		−1.20	.09	−.24***	
Risk of locked-in (Stengård et al.)[2]	.31	.03	.20***		−.36	.07	−.09***		−.43	.08	−.11***	
Step 2				.15***				.03***				.05***
Intercept	1.66	.02			8.52	.07			8.99	.07		
Locked-in (Stengård et al.)[1]	.37	.03	.21***		−.43	.10	−.09***		−.62	.10	−.13***	
Risk of locked-in (Stengård et al.)[2]	.12	.03	.08		−.13	.08	−.03		−.12	.08	−.03	
SCL	.20	.01	.44***		−.25	.03	−.21***		−.34	.03	−.27***	
Total R^2				.32***				.07***				.12***
Model 2												
Step 1				.22***				.06***				.08***
Intercept	2.11	.01			8.00	.03			8.27	.03		
Workplace locked-in (Fahlén et al.)[3]	.43	.02	.32***		−.62	.07	−.18***		−.77	.07	−.21***	
Occupational locked-in (Fahlén et al.)[3]	.31	.03	.21***		−.38	.07	−.10***		−.48	.08	−.12***	
Step 2				.12***				.02***				.04***
Intercept	1.67	.02			8.48	.07			8.95	.07		
Workplace locked-in (Fahlén et al.)[3]	.22	.02	.17***		−.40	.07	−.12***		−.45	.07	−.12***	
Occupational locked-in (Fahlén et al.)[3]	.18	.02	.12***		−.24	.08	−.06***		−.28	.08	−.07***	
SCL	.19	.01	.40***		−.20	.02	−.17***		−.29	.03	−.23***	
Total R^2				.33***				.08***				.12***

Table 5 Incremental Validity Analyses with Prior Locked-in Measures.

Note. [1]0 = not locked-in or risk of locked-in, 1 = locked-in; [2]0 = not locked-in or locked-in, 1 = risk of locked-in; [3]0 = not locked-in, 1 = locked-in. $2826 < n < 3249$.

* $p < .05$; ** $p < .01$; *** $p < .001$.

When modeling for job burnout, the respective values for ΔR^2 were .15 and .12 ($p < .001$), when modeling for self-reported health, the respective values for ΔR^2 were .03 and .02 ($p < .001$), and when modeling for work ability, the respective values for ΔR^2 were .05 and .04 ($p < .001$). The SCL has significant associations with job burnout, self-reported health, and work ability after prior measures were entered into the models (see Table 5 for detailed results).

DISCUSSION

In our study, we constructed and validated a scale to continuously measure the concept of SCL using a multi-item measure. We also studied its relations with occupational health-related variables in accordance with previous suggestions to assess the subjective perceptions of being in a locked-in situation in the career context. To develop the scale, we also refined the previously utilized constructs of career lock on the basis of a literature review and a qualitative study of the phenomenon.

Our results supported the claim that SCL is a unidimensional measure related to, yet distinct from, job dissatisfaction and inability to change one's career situation. Examination of the hypothesized factor structure, factor loadings, and internal consistency of the scale of the SCL scale demonstrated adequate psychometric properties across all the samples. This finding might partly answer the suggestions by Stengård and colleagues (2019) and Bernhard-Oettel and colleagues (2020), who have underlined the need to evaluate the subjective and individual perceptions of being locked-in.

Our results indicate that SCL is positively associated with job dissatisfaction and inability to change one's career situation, as well as locked-in measures, but they also provide evidence that it is not redundant. The results suggest that SCL is associated with job dissatisfaction in particular, which might stem from negative affective and/or cognitive experiences in job and career contexts related to both of these domains. Similarly, our analysis demonstrated that the SCL measure had nomological validity, as it showed that SCL was associated with work and health-related concepts: It had a negative relationship with job autonomy, affective commitment, self-reported health, and work ability; and a positive relationship with job burnout and job boredom. These findings corroborate the assumption and results of previous studies that experiencing SCL is associated with negative work and health-related outcomes (e.g. Aronsson & Göransson 1999; Bernhard-Oettel et al. 2020; Böckerman et al. 2013; Fahlén et al. 2009; Fisher et al. 2016; Huysse-Gaytandjieva, Groot & Pavlova 2013a; Huysse-Gaytandjieva, Groot & Pavlova 2013b; Muhonen 2010; Li et al. 2016; Stengård et al. 2016; Stengård et al. 2019). Our results, which show associations between the three-item SCL scale and these related concepts, confirm the validity of the SCL scale for measuring career lock. However, in future research, other statistical methods of examining nomological validity (e.g., structural equation modeling) would be of value.

Finally, our results provide evidence of unique variance in self-reported health, work ability, and job burnout, which the SCL scale explained above and beyond previous locked-in measures: When these outcomes were predicted using the SCL scale after each locked-in measure had first been entered as a predictor into the models, the explanation rate increased statistically significantly. All in all, our results indicate that the SCL scale we developed might even be considered a better predictor of health, well-being, and work ability outcomes than previously used measures, mainly because it is 1) a continuous measurement that considers individual variation in more detail than categorical measures, and 2) a subjective measure, which is more applicable when assessing occupational health attributes. However, although the subjective perceptions of career lock seem important for explaining variance in occupational well-being, it would be useful to also consider what internal (e.g., low self-efficacy, career goals issues) and external (e.g., lack of career opportunities) barriers, as well as factors creating job dissatisfaction, are the most relevant explanations for SCL in individuals' personal life-career contexts. It would be beneficial for future research to study whether job dissatisfaction and inability to change one's career situation are related, yet different phenomena to SCL, or whether they serve as antecedents that could lead to subjective perceptions of career lock.

LIMITATIONS OF THE STUDY

Despite our multi-step approach to scale development and validation, as well as our large sample size, our study has some limitations. First, the data were collected, and the scale validated, in a cross-sectional setting, and the cross-sectional design meant that no causal inferences could be made. The relationships between SCL and health-related factors might be bidirectional, and a longitudinal design would explain the predictive validity of our measure as well as test the consistency of the scale scores over time. Second, to ensure the robustness of the SCL measure, future studies should analyze measurement invariance across different samples to confirm that the scale operates equivalently across diverse populations. Third, the response rate of the study was low (7.8%) which may have led to a sampling bias and may affect the generalizability of the findings. One reason for the low response rate might be a general indifference toward answering long surveys received from trade unions, compounded by the absence of incentivization for the respondents. However, despite this challenge, recruitment via trade unions yielded a larger and more diverse sample than recruitment through work organizations. Consequently, external validity may be greater than by relying on convenience samples, such as MTurk, which is commonly used in high quality measure validation studies in psychology (e.g., Clark et al. 2020). Although the validity of the scale was examined across multiple trade unions, encompassing varying educational backgrounds and professional fields, we cannot rule out that the sample may not fully reflect the broader population needed to investigate the SCL phenomenon. Furthermore, the proportion of more highly educated women and individuals among the participants was overly representative of the Finnish population. It would be valuable to determine whether SCL occurs similarly among less highly educated employees, especially men, but as such, we cannot guarantee the validity of this measure across all respondents.

Fourth, in our conceptualization, we have utilized the terms *career* and *job* to examine the phenomenon of SCL on a more holistic level. However, individuals may perceive these terms differently, and in future studies, they could be distinguished. Fifth, due to practical reasons, we were unable to recruit new participants for the cognitive interviews. Although we assert that the cognitive interviewees were not influenced by their prior participation in interviews on their career-life situation, future research could include a distinct sample to complement the robustness of the qualitative insights.

CONCLUSIONS

We created and validated a scale for measuring SCL to understand whether a subjective perception of career lock would sufficiently measure its previously defined constructs. The new scale, with its emphasis on subjective experience could be especially suitable in behavioral research and practice in the occupational health field. It provides a promising basis for evaluating individuals' career lock situations and for differentiating this phenomenon from other work- and career-related attitudes and behaviors. Identifying individuals who experience high levels of SCL enables appropriate interventions to be conducted at workplaces to support individuals' career continuity and work ability.

APPENDIX

ITEM	SCL	DISSATISFACTION	INABILITY
1	**.75***	.21*	–.03
2	**.78***	.18*	.02
3	**.91***	–.01	<.01
4	.14*	**.82***	–.04
5	.19*	**.76***	<.01
6	–.04	**.88***	.09*
7	.02	**.86***	.05
8	.37*	**.56***	.04
9	.22*	**.71***	–.05
10	.22*	.02	**.58***
11	.11	<.01	**.54***
12	–.02	<.01	**.64***
13	–.01	.15*	**.66***
14	.07	–.19*	**.41***
15	.04	–.01	**.42***
16	.18*	–.02	**.61***
17	–.02	–.01	**.69***

Appendix 1 Results from Exploratory Factor Analysis in Sample 1.

Note. Geomin rotated factor loadings. The asterisk indicates a loading significant at 5% level.

$\chi^2(df)$ = 286.11 (88), RMSEA = .07, CFI = .97, TLI = .95, SRMR = .03.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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