Proactivity at work

To John and David

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Proactivity at work

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Abstract

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Proactive behaviour implies taking initiative and mastering unexpected situations, and hence, is desirable in different situations. The present thesis includes three empirical studies intended to understand the consequences of proactive behaviour, as well as the factors that contribute to proactive behaviour at work and when facing unemployment. More specifically, whether job design, as measured by objective work task analysis, provides conditions conducive to proactivity in the workplace and when facing unemployment. The results of proactive behaviour during unemployment were also of interest. Study I focused on the influence of job design on individuals' personal initiative and confidence in their ability when facing unemployment. Participants were employees at a downsizing Swedish assembly plant. Confidence in one's ability mediated the relationship between job design and personal initiative, and personal initiative affected job search behaviour when advised to be dismissed. Study II, a longitudinal exploration, focused on the predictors of re-employment in the same group as in Study I. Men were more than nine times as likely as women to obtain jobs within 15 months. Individuals without children were more than seven times as likely as those with children to find work within 15 months. The desire to change occupation and willingness to relocate also increased the probability of being re-employed, whereas anonymous-passive job-search behaviour and work-related self-efficacy actually decreased the probability of re-employment. The number of job applications did not impact later re-employment. Study III analysed job design as a predictor of group initiative and self-organisational activities in semiautonomous industrial work groups. An input-process-output model showed that group processes such as reflexivity mediated the impact of job design on proactivity in work groups. Taken together, these studies suggest that work task analysis a useful tool, since it provides access to information that cannot be obtained with self-report measures. Job design indirectly affected proactivity both in the face of unemployment, and in industrial work groups. Further, it is worthwhile to continue identifying the antecedents and consequences of proactivity, as this seems to be an important factor regarding work and unemployment.

Keywords: Job design, work task analysis, proactivity, unemployment, attitudes, personal initiative, job-search behaviour, group initiative, group processes

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Eskilstuna, August 2015
Kin Andersson

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Introduction

The demands of today's work life are, in many ways, very different from those of 20–30 years ago. Globalisation, technological developments, and increased information rate and volume force employees to be more proactive, initiative-taking, and flexible (Näswall, Hellgren, & Sverke, 2008; Van den Broeck, Vansteenkiste, Lens, & De Witte, 2010). This applies at work, when faced with the threat of being laid off, and when actually being dismissed.

Being active rather than reactive at work may affect both the nature and content of work, as well as future employability (Fay & Frese, 2001; Frese & Fay, 2001). Proactivity allows individuals to address potential problems before they occur, as opposed to being reactive and 'saving' situations when they are already in effect.

As adults, we spend a considerable part of our waking hours at work. What we encounter at work affects both our health and well-being, and our learning and development. To be motivated to carry out our tasks in the best way possible is also important, both from an individual and organisational perspective. The majority of work life research has been based on individual's perceptions or experiences of specific situations. Using questionnaires and self-reports allows for fast, and therefore cost-effective, collection of data. However, because analyses are based on individual's *subjective* judgements, the solutions are often proposed at the individual level. In contrast, German work and organisational psychology has a long tradition of studying job design, i.e., the contribution of work characteristics to efficient and humanised work, focusing on the core of actions of work (Hacker, 2003). The focus is on analysing organisations and work itself to provide a more *objective* view. This approach also provides information about how working conditions can and should be adapted for more healthy and stimulating work. Healthy and motivated employees are also more productive and innovative (Parker, 2014).

Proactivity, as well as flexibility and motivation, are qualities often demanded in job adverts. *Consequences* of proactivity have been quite thoroughly examined (see for example, Mihail, 2008; Parker, Bindl, & Strauss, 2010; Saks, Gruman, & Cooper-Thomas, 2011). But questions remain regarding what contributes to proactivity.

This thesis is an extension of previous research on the link between job design and personal initiative. Earlier studies have focused on single work characteristics, e.g., complexity and autonomy (Frese, Fay, Hilburger, Lang,

& Tag, 1997), linked to initiative at work. In Study I we focus on the complete set of work characteristics related to initiative at work and when facing the threat of unemployment. Most earlier studies have studied initiative only in the work context (Fay & Frese, 2001; Fay & Kamps, 2006; Frese, 2001). In Study II, I focus on the relationship between self-reported personal initiative and attitudes related to re-employment after job loss. Earlier studies have studied initiative at the individual level (Fay & Frese, 2001; Fay & Kamps, 2006; Frese, 2001; Hacker, 1985). In Study III, the focus is extended to work characteristics related to initiative at the group level.

General aim

Proactive behaviour implies taking the initiative, and mastering unexpected situations, upcoming problems, and new tasks. Therefore, proactive behaviour in form of, for example, personal initiative (Fay & Frese, 2001; Frese et al., 1997) is desirable and positive in numerous different situations. The general aim of this thesis is to gain an understanding of the factors that contribute to proactive behaviour at work and when facing unemployment, as well as the consequences of proactive behaviour. More specifically, this thesis explores whether job design as measured by objective work task analysis, provides conditions conducive to proactivity among individuals and groups in the workplace, and how person-related variables and attitudes relate to proactive behaviour when people face unemployment. The results of proactive behaviour during unemployment are of additional interest

Given that job experiences not only affect behaviour at work, but also in other circumstances, there exist studies focusing on the impact of job design on, for example, initiative when people are at risk of becoming unemployed.

Work and proactivity in organised group labour requires that individuals communicate internal cognitive and behavioural processes. Therefore, the impact of job design on group processes such as reflexivity, cooperation, and social support are of interest when studying proactivity in groups.

The general aim was examined in three empirical studies:

Study I The first study focused on the impact of job design, captured by objective work task analysis, on proactive behaviour in the forms of personal initiative, and job search behaviour during notice of redundancy.

Study II — Study II is a longitudinal study that addressed the question of how attitudes, personal initiative, self-efficacy, job search behaviour, and demographic variables affect the chance of becoming re-employed, 15 months after dismissal.

Study III — Study III investigated job design as a predictor of initiative at the group level and self-organisational activities in work groups.

Proactivity in a work context

Parker et al. (2010) claimed that 'Being proactive is about making things happen, anticipating and preventing problems, and seizing opportunities' (Parker et al., 2010, p. 827). Proactive behaviour can be defined as 'taking initiative in improving current circumstances or creating new ones; it involves challenging the status quo rather than passively adapting to present conditions' (Crant, 2000, p. 436). The concept is similar to, or overlapping with, other constructs such as personal initiative (Frese et al., 1997; Frese, Kring, Soose, & Zempel, 1996), taking charge (Morrison & Phelps, 1999), and proactive personality (Bateman & Crant, 1993; Parker et al., 2010) to name a few. See Tornau and Frese (2013) for a meta-analysis on proactivity concepts.

Personal initiative is conceptualized as behaviours exhibited by people who are proactive, self-starting, and persistent (Fay & Frese, 2001; Frese et al., 1997; Frese et al., 1996). Self-organisation in teams can be linked to proactive behaviour, and the concept of group initiative has evolved from measures of personal initiative (Brav, Andersson, & Lantz, 2009).

Initiative in individuals and groups is beneficial not only for the individual or the group, but also for the organisation promoting it (Balluerka, Gorostiaga, & Ulacia, 2014). A work design that allows and encourages staff to be proactive can lead to changes in work characteristics over time (Frese, Garst, & Fay, 2007; Li, Fay, Frese, Harms, & Gao, 2014).

Regarding proactivity during unemployment, job search behaviour can be more or less proactive (Meyers & Houssemand, 2010). One can distinguish formal and informal job search sources (Mau & Kopischke, 2001; Saks & Ashforth, 2000), and active or passive job search behaviours (Andersson, 2015; Fugate, Kinicki, & Ashforth, 2004). Different job-search strategies are discussed in more detail below.

Personal and group initiative

In this thesis proactivity is captured through the concept of personal initiative, which according to Fay and Frese (2001) is theoretically the same as proactivity. The construct of personal initiative pertains to active effort (Hacker, 1985) and is seen as 'a behavioural syndrome, characterised by the individual's taking an active and self-starting approach to work, and going beyond what is formally required in a given job' (Frese & Zapf, 1994). The concept of personal initiative was first used to compare employees' initiative in the former East and West Germany after the country was reunited (Frese et al., 1996). Western managers operating in the East complained about the lack of initiative shown by Eastern employees (Frese, 2001).

Personal initiative has been found to be of value in a number of areas, mainly in the fields of work or education. People with high levels of personal initiative achieve better academic results (Fay & Frese, 2001), are more innovative (Balluerka et al., 2014), and entrepreneurial (Krauss, Frese, Friedrich, & Unger, 2005). Personal initiative has also been shown to be important for creativity and in fostering engagement in creative processes (Binnewies, Ohly, & Sonnentag, 2007).

Group initiative and self-organizational activities

Group initiative derives from the concept of personal initiative (Fay & Frese, 2001; Fay & Sonnentag, 2010) and can be designated as 'a group's proactive approach to work linked to work activities that go beyond the stipulated work in order to achieve meaningful change'(Brav et al., 2009) .

Self-organisation is viewed as a general competency (see, Brav et al., 2009) including proactive organisation, and self-starting behaviour in performing duties. Similar concepts include autonomous work groups (Rolfsen & Johansen, 2014; Thorsrud & Emery, 1970), empowered teams (Brower, 1995), and self-regulating teams (Antoni, 2005). When differentiating self-managing or self-organised teams from 'ordinary' teams, the focus is often on the level of task performance and the group's responsibilities (Rolfsen & Johansen, 2014).

Self-organising activities, is a related behaviour that presupposes a redefinition of the process of work through collective reflexivity and initiative (Brav et al., 2009; Engeström, 1999; Hacker, 2003; West & Farr, 1989). Self-organisational activities are guided by the task goal so that there is preparedness to handle the unpredictable (Frese & Fay, 2001; Hacker, 1985).

Proactivity and job design

A problem with analysing the psychosocial work environment via the subjective opinions of individuals is that the solutions are also proposed at the individual level. It is of critical importance to also study the organisational structures and strategies that create good work conditions, with the objective of making structural improvements.

The idea that we are influenced by how our environment is constituted is not new. Several theorists have questioned the behaviouristic view and its associated stimuli-response models as too simplistic. There exists comprehensive, published knowledge regarding the organisational context and its implications, primarily regarding health, but also with respect to learning opportunities and mental work load (see e. g. Levi et al., 2000; Parker, 2014; Rau, 2004). A number of different perspectives have contributed to the understanding of the impact of work organisation, including sociotechnical systems, the job characteristics model, and action theory or action regulation theory (see, Torraco, 2010).

Action regulation theory

With roots in the culture-historical school, action regulation theory emphasises people's cognitive capability, specifically that human behaviour is governed by plans and goals, and individuals can actively shape their environment (Frese et al., 2007; Hacker, 2003). Action regulation theory is a general psychological, work, and organisational theory that forms a basis for human-centred work-design. The theory focuses on goals, hinders and demands in work and work tasks (Frese & Zapf, 1994; Hacker, 2003). Hacker (1985) emphasises that human-centred job design should work toward three parallel goals; enhancing efficiency (which is beneficial for both enterprises and employees), optimisation of psycho-physiological strain, and enhancement of physical and mental health, including personality development due to the learning potential of the job.

A central object of study is how human behaviour is regulated by plans, goals, and sub-goals, and how behaviour and reasoning interact. An action contains all steps from goal-setting and planning, through execution, to feedback regarding whether the goal has been achieved (Frese & Zapf, 1994). That is, the relationship between the goals and the actions is regulated by a feedback system, constantly comparing the state in each sequence with the goals, in order to make changes to reach the goal. Goal-setting implies that individuals or groups re-define the given task into a goal of their own (Engeström, 1999; Hacker, 2003).

According to action regulation theory, a task or at least a job should include a certain amount of different levels of mental regulation. That is, the process should consist not only of automated responses, but also knowledge-based, and intellectual processes. A work task with all regulation levels is hierarchically complete. Frese and Zapf (1994) give an example of the four levels;

At the lowest, *sensorimotor* level, regulation occurs with little subjective effort and consists of automatic movements that are organised without conscious attention. An example is using a hammer to drive a nail into a wall.

The next level is called the *level of flexible action patterns*, and is synonymous with schemata; ready-made actions available in memory, which must be adjusted to the given situation. An example is to respond to a given signal.

The third level, the *intellectual level* of action regulation, is object-oriented and consists of complex analyses of situations and actions, e g., planning and problem solving.

The *heuristic level*, added later by Semmer and Frese (Frese & Zapf, 1994), is a metacognitive level, with generalised heuristics.

A sequentially complete task implies that the work not only involves execution of the task, but also planning, evaluation, and adjustment (Frese & Zapf, 1994). Thus, a complete task or job should be both hierarchically and sequentially complete (Hacker, 1985, 2003)

Research in work and organisational psychology makes a distinction between subjective and objective data collection methods. Instead of treating a working person's perceptions or behaviour as study object and relying on self-reported data, activity theories focus the activity per se as the analysis object, using observations and sometimes interviews for data collection. This focuses on the actual process wherein the person interact with others and the surrounding world (Torraco, 2010).

Job design and work task analysis

The interest in the design and characteristics of jobs can be traced back to Taylor's theory of scientific management at the beginning of the 20th century (Taylor, 1911). Taylor focused on how work can be organised to be most effective and gain wealth, not only for the employer, but also for the employees (Carson, 2005). The most important finding of the Hawthorn studies in the early 1930s (Turner, 1933) was that human relationships are important for motivation and satisfaction among workers. In the late 1950s and early 1960s, Herzberg's two-factor theory for job enrichment, and McGregor's Theory X and Theory Y on management styles, were based on

the belief that people's jobs are not merely a way to produce marketable products (Butterfield, Borgen, Amundson, & Maglio, 2005). Work is also an important way to satisfy human needs. Hertzberg's data collection consisted partly of asking workers to identify situations related to their jobs when they were feeling particularly good or bad (Carson, 2005). The critical incident technique (CIT), an interview and observation method focusing on the participant's perspective and created by Flanagan (1954) has developed has developed over several stages and has a wider range of applications today than it did initially. See Butterfield et al. (2005) for an overview. Some job diagnostic techniques, such as CIT, are not based on an underlying theory of what causes behaviour. The Job Diagnostic Survey (JDS), created by Hackman & Oldham (1975, 1976) was developed to assess the potential of jobs to be motivating, and to meet the employee's need to learn and grow. The JDS originates in theories of work motivation and collects survey data in terms of five core job characteristics.

The idea that work should be beneficial both for the employer and the employees is also evident in action regulation theory. A number of instruments for work task analysis, with theoretical roots in action regulation theory, have been developed in Germany, and some of the instruments have been translated into Swedish. VERA (In German: Verfahren zur Ermittlung von Regulationserfordernissen in der Arbeitstätigkeit) (Friedrich & Larsson, 1990, Volpert, Österreich, Gablenz-Kolokovic, & Resch, 1983) analyses the (cognitive) regulatory demands in industrial work, and RHIA (In German: Analyse Psychisher Belastung in der Arbeit) (Leitner, Volpert, Greiner, Weber, & Hennes, 1987) has been developed to analyse regulation obstacles (task-related mental psychological strain) in industrial work. TBS (In German: Tätigkeits-Bewertungsystem) is an instrument used for evaluation of opportunities for personality enhancement in a job (Hacker, Iwanowa, & Richter, 1983). See Frese and Zapf (1994) for further description of instruments.

REBA (Pohlant et al., 2007; Richter, Hemman, & Pohlant, 1999), the instrument used in Study I and Study III, is developed from the TBS and analyses five dimensions of job design that together meet the definition of a complete job (Richter et al., 1999). The dimensions are sequential and hierarchical job completeness, cognitive demands, and demands on cooperation, responsibility, and learning. See Methods and Appendix A for a more detailed description.

These instruments are aimed to be more objective, that is assessing the work task itself, unrelated to one specific individual's perception, as opposed to subjective methods that are linked to individuals' cognitive and emotional processes (Frese & Zapf, 1994). The objective instruments begin with detailed standardised observations. REBA and VERA were originally meant to capture industrial work characteristics. Some of the analytical instruments have been further developed; for example, REBA is currently used for analysing interactive jobs such as sales and marketing (Melzer, 2008). The use of REBA in Germany implies access to a database where the assessment of different tasks can be compared with each other both as validation and to see results after interventions where particular work characteristics are changed (Richter et al., 1999).

There is also an instrument based on the same theoretical tradition developed in Sweden. ARIA (ARbetsInnehållsAnalys, Swedish for work content analysis) (Waldenström, 2007, 2009) was developed from VERA and RHIA, and is described as having an 'external' perspective. The early German instruments indicate that the work is assessed by observation of the actual work, regardless of who performs it. ARIA is used to examine the work from 'an average' person's knowledge and experience (Waldenström, 2007). The main difference is probably that ARIA consists of interviews about the work, and the earlier instruments are based on of observations of work tasks, completed with interviews when difficulties. This makes data collection with ARIA significantly less resource intensive, especially in terms of time and training.

ARIA assesses the psychosocial work environment, focusing on goals, obstacles, and potentials in work. In ARIA, the method consists of initial interviews, instead of observations as in the instruments mentioned below.

Instruments for objective and externally assessed work task analysis have been used to, for example, classify high or low strain in work (Rau, 2004), psychosocial work characteristics related to a diagnosis of depression and anxiety (Waldenström et al., 2008), social support and mental illness (Waldenström, 2010), and analysing whether jobs lead to personal development (Rau, 2004). These instruments have also been used to compare externally assessed and self-reported data on job demand and control (Schuller, Roesler, & Rau, 2014; Waldenström & Härenstam, 2008). Waldenström and Härenstam (2008) found gender differences in the pattern of discrepancy between externally assessed and self-reported data. For example in active jobs (cf. Karasek & Theorell, 1990) external assessment

has different directions for men and women, with women having less influence and more hindrances.

The relationship between job design and other factors can be more complex than direct cause and effect. As mentioned above, Speier and Frese (1997) found that job design, captured as control and complexity, affects personal initiative, with self-efficacy as a mediating variable. The relationship between job design and personal initiative can also be reciprocal; work that is designed to provide scope for personal or group initiative also implies that work characteristics per se can be changed over time by proactive staff (Frese et al., 2007; Li et al., 2014). Work designed so that it provides conditions for proactivity is a good start, but not sufficient for proactive behaviour.

Prerequisites for proactivity

Confidence in one's own abilities, and the ability to master or learn is important in situations where proactivity is asked for.

Self-Efficacy

According to social-cognitive motivation theories, there are factors that interact to determine whether a behaviour one is motivated to carry out actually takes place. These include the impact of different degrees of self-efficacy on behaviour, but also the impact of earlier experiences on specific and general self-efficacy. General self-efficacy refers to a person's belief in their own competence to cope with an extensive variety of challenges. Specific self-efficacy is limited to a specific domain or a particular task (Luszczynska, Scholz, & Schwarzer, 2005).

Social cognitive theories, such as Bandura's theory of self-efficacy, describes the sources of this belief (Bandura, 1977, 1994). Self-efficacy beliefs are personal judgements of one's capabilities to organise and execute actions that are required to attain designated types of performance (Bandura, 1994). Belief in one's abilities is one prerequisite for exercising control and initiative in a number of varying situations, from job-seeking activities (Nesdale & Pinter, 2000), to exercise (Strachan, Brawley, Spink, Sweet, & Perras, 2015), stressful life transitions (Jerusalem & Mittag, 1995), and coping strategies (Kokkinos, Panagopoulou, Tsolakidou, & Tzeliou, 2015). The higher someone's self-rated efficacy regarding education fulfilment and occupation roles, the greater the range of career options that are considered (Bandura, 1995B). Raub and Liao (2012) found that proactive customer

service performance was positively related to general self-efficacy and initiative climate in hotel frontline service employees.

When facing the risk of becoming unemployed, there are more factors than self-efficacy that affect whether one is proactive or not. Based on the concept of self-efficacy, the concept of *competence efficacy* was created. This was intended to capture the individual's views of their own competence, with focus on its value and applicability in places other than the current workplace or sector (Lantz & Andersson, 2009).

Group processes affecting proactivity

Working in group-based organisations necessitates interactions with colleagues. Different types of group processes can mutually influence each other and impact, for example, the level of proactive group behaviour. Group processes can be labelled, such as based on whether they are instrumental or social in nature, and are often interrelated (see, Kozlowski & Bell, 2003).

Group behaviour differs from individual behaviour in that the iterative processes that are internal in the individual addressing motives, goals, and activities; (Hacker, 2003) are regulated by communication in groups (Gurtner, Tschan, Semmer, & Nägele, 2007). *Team reflexivity* is, according to (West, Hirst, Richter, & Shipton, 2004) 'the extent to which team members collectively reflect upon team's objectives, strategies, and processes as well as their wider objectives, and adapt them accordingly' (West et al., 2004, p. 285). Reflexivity is assumed to enhance performance (Gurtner et al., 2007), and was found to be an important predictor of innovation in teams, especially in a demanding work environment (Schippers, West, & Dawson, 2015).

Cooperation is an instrumental process that, together with a lack of social loafing, and successful communication about work task coordination, creates a well-structured and well-composed group (Kozlowski & Bell, 2003). Groups that cooperate are more effective and can spend time in reflexivity and discussions (West et al., 2004). Lantz (2011) did not confirm a direct impact of cooperation on reflexivity, although interrelated group processes still are important. Cooperation and a friendly climate enhances possibilities for reflexivity. Mutual cooperation and autonomy seem to be important in fostering sustainable, self-managing teams (Rolfsen & Johansen, 2014).

Social context and climate in groups are of interest since they may affect both reflexivity and initiative (De Dreu & West, 2001). Social support refers

to socio-emotional processes, such as informal interactions, and interpersonal understanding. Different forms of social support are given by group members that share and discuss upcoming problems and norms (Edmondson, 1999). Such social processes are essential for both reflexivity and learning processes. Instrumental and social processes are often interrelated. Cooperating fellow group members are perceived as more friendly and receive more respect for their efforts. In contrast, social loafers are unpopular, because they do not observe the group's social climate, which is supposed to be based on cooperation. According to Edmondson (1999) and West et al. (2004), a good climate allows members to criticise and challenge group issues and views. Psychological safety and trust enhances the chances for group reflexivity. Later findings have confirmed that cooperation and a friendly group climate improve reflexivity and also increase the motivation for self-organising activities (Lantz, 2011). Social support and personal initiative both have a strong relationship with work adjustment (Stroppa & Spieß, 2011).

Proactivity and re-employment

Structural and labour market changes force individuals and organisations to be proactive and prepared to meet new demands. From a psychological view, it is important to be proactive (i.e., initiative taking and mobile) in the labour market or within organisations (Näswall et al., 2008; Van den Broeck et al., 2010). Such an approach provides the individual with the opportunity to meet new situations, and face new job requirements that provide the possibility to not only earn a living, but also personal development, learning, and skills development. Being unemployed is often a stressful life event, leading to physical and mental symptoms such as psychological distress (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009), depression, anxiety (Paul & Moser, 2009), and even suicide (Wanberg, 2012). Another stressful result of unemployment can be financial strain (Dahling, Melloy, & Thompson, 2013).

Proactive job search behaviour

Proactivity, as in personal initiative *when at risk of getting unemployed*, may involve starting to look for new jobs in the same or another sectors in the neighbourhood or in other parts of the country, or to plan and search for competence development in the present occupation or education in completely new occupational field. Earlier research defined proactive job search as an employee's preventive actions to avoid unemployment, and active job

search when facing unemployment (see e.g., Kanfer & Hulin, 1985; Romaniuk & Snart, 2000). Preventive and proactive modes of action during unemployment imply readiness for change, and taking the initiative instead of being passive and reactive. Job search behaviour when at risk of being unemployed has been shown to be governed by norms, readiness for change, and attractiveness of mobility options (i.e., desirability, Ng, Sorensen, Eby, & Feldman, 2007). Research also emphasises the positive relationship between proactive personality and career initiative (Seibert, Kraimer, & Crant, 2001), and job search intensity (Zacher, 2013; Zacher & Bock, 2014). Wanting more challenging work, a desire to meet career aspirations, and attitudes toward moving are other factors which impact individuals' proactive behaviour (Ng et al., 2007).

Proactive personality, education, and job-search self-efficacy are predictors of proactive job-search behaviour among Italian job-centre users (Presti, 2014). Van Hooft, Born, Taris, and van der Flier (2005) found that family arrangements affected attitudes towards job search intentions, whereby those with families had weaker job search intentions. Whether proactive job search behaviour occurs can be explained by personal and social factors such as those mentioned above.

Job-search behaviour and re-employment

Being motivated to get a new job *after having lost a job* is intuitively related to conducting an intensive job search. Consequently, research interest in different job search behaviour (JSB) has been extensive. For a considerable period of time, job search research focused on quantitative aspects (i.e., job search intensity/effort, Wanberg, Kanfer, & Banas, 2000), and did not distinguish between different kinds of JSB. A review of the job search literature by (Saks, 2005) described research regarding predictors, behaviours, and outcomes of job searching. The review showed that the outcomes of a job search can vary depending on the type of JSB ((Saks & Ashforth, 2000; Van Hooft, Wanberg, & van Hoye, 2012; Vuori & Vesalainen, 1999). Furthermore, job search intensity can be a blunt measure that is not always related to job search effectiveness. *What* the seeker does, rather than the intensity of JSB in terms of the number of jobs applied for, has a greater impact on re-employment (Van Hooft, Wanberg, & van Hoye, 2012; Vuori & Vesalainen, 1999).

Different job search strategies

Research on this topic has been extensive, and somewhat contradictory (Saks, 2006). Most studies have focused on either job search intensity or on job sources. Wanberg et al. (2000) state that research should focus on the quality of the job search, instead of the time spent searching, or the number of applications submitted.

As mentioned above, job search strategies can be distinguished by *the sources of information* used to find new employment (Saks & Ashforth, 2002). People who use formal job sources (Saks & Ashforth, 2000), or 'the structured job information market' (Mau & Kopischke, 2001), study job advertisements, internet job search sites, and employment agencies. People using informal job sources (Saks & Ashforth, 2000), or 'the hidden job information market' (Mau & Kopischke, 2001), turn to informal contacts with friends, former co-workers, and relatives, and directly approach desirable employers (Saks & Ashforth, 2000).

The other distinction is between more *active or passive approaches* to the job search. Using one's own initiative to find job vacancies by contacting former and potential employers, friends, and acquaintances in person (i.e., informal sources), is a more active approach (Fugate et al., 2004). In contrast, reading job advertisements and visiting the local employment office for booked meetings (i.e., formal sources) is more passive. In Study II, a distinction is made between *informal-active* and *formal-passive* job search behaviour.

When used effectively, the *informal-active* job search approach is a more efficient strategy to find a job (Owens & Young, 2008). In informal-active job searches, the size of the network and the strengths of the ties affect the amount of time spent on job seeking (Hoye, van Hooft, & Lievens, 2009).

Other predictors of re-employment

Attitudes and re-employment

Attitude refers to a conscious or unconscious cognitive approach and emotional reaction to something (Ajzen, 1991). The potential to achieve desired goals, such as supporting oneself or having an interesting job, is assumed to be affected by attitudes and values. In the theory of planned behaviour (TPB) (Ajzen, 1991, 2011), attitudes toward behaviours, subjective norms, and perceived behavioural control interact with, and predict, both intentions and specific behaviours.

Some decades ago it was not seen as positive to change jobs often. Labour market politicians even campaigned against too much mobility (see, for example, Furåker (1972). Current advice to those who change jobs frequently is to give full account of the behaviour. That is, one should explain the choice to change jobs, and illustrate what has been learned as a consequence (Näswall et al., 2008; Rolfer, 1999). Modern attitudes are that a mobile workforce promotes both economic growth and a high employment rate. Mobility also reduces the risk of local labour shortages, and the attendant inflationary wage increases (SOU, 2003).

Being mobile or flexible is a key word in today's labour market. Attitudes toward mobility include a variety of phenomena in addition to purely geographic mobility. Being mobile is being *willing to move* or *willing to change*. The desire to *change occupation* and the *willingness to relocate* can intuitively be seen as enhancing the probability of becoming re-employed.

Willingness to relocate

A willingness to relocate can be viewed as form of forced flexibility, which can be affected by employment service requirements. For example, in Sweden, unemployed people must be prepared to seek jobs across the country after a certain period of unemployment.

Nyberg (2006) studied gender patterns in mobility related to work or education, considering commuting, occupational mobility, and geographic mobility. In this Swedish population, men and well educated or young people had most to gain from moving. Neither women nor men moved often for labour market reasons. Men commuted longer distances, but men and women spent the same amount of time commuting. Men changed employers more often than women. Note that Nyberg suggests (Nyberg, 2006) statistics can be inaccurate; for example, local governments (where most of the employees are women) are treated as a single employer, so that women working therein can change both their jobs and workplace without being registered in the statistics as a 'job-changer'. Willingness to relocate or commute a long distance is affected by family relationships (Baldridge, Eddleston, & Veiga, 2006; Kulik, 2000). Among other things, women take account of the family situation in their decisions to a greater extent than men. Individuals who prioritise staying in the same area for family reasons often face a longer period of unemployment (Challiol & Mignonac, 2005).

Desire to change occupation

The desire to change occupation is intuitively related to dissatisfaction with current conditions, e.g., with work demands, content of work, or development opportunities, or may simply reflect a desire to do something new. Lack of opportunity to change occupation can make individuals in non-preferred occupations feel 'locked in' (Aronsson & Göransson, 1999; Wirkkala, 2002).

Low self-efficacy, competence efficacy and personal initiative can contribute to individuals' feelings of helplessness and that individuals feel locked into an occupation or work place. Research in this area seem to have been sparsely conducted. In a study conducted for a Swedish trade union (TCO), Wirkkala found that 65% of women and 55 % of men did not believe that they could change occupation. And of women 56% and 48% of men did not believe that they could change work place (Wirkkala, 2002). White-collar workers seemed to be more willing than blue-collar workers to change occupation. This difference may reflect educational disparities that often correlate with self-efficacy (Otto, Dette-Hagenmeyer, & Dalbert, 2010). Given that specialised knowledge quickly can become outdated, there is reason to believe that many people continue to feel locked in. Aronsson and Göransson (1999) found that being locked-in (i.e., wanting to change occupation or workplace while not being able to do so) led to increasing prevalence of symptoms of fatigue, mild depression, and headaches.

Work involvement

The likelihood of re-employment is also assumed to be related to how important work is to the individual. Work involvement can be conceptualised as the self-reported importance of work, or the extent to which individuals want to participate in paid work. Related or synonymous terms are employment commitment or work centrality (Isaksson, Johansson, Bellaagh, & Sjöberg, 2004). Van den Broeck et al. (2010) found that individuals reporting high work involvement also demonstrated more flexible attitudes related to obtaining a job. Unemployed persons' flexibility, in terms of degree and content (e.g., flexibility related to demands, training, and accepting undemanding jobs), were related to high work involvement. Older people of both sexes generally report higher levels of work involvement (Isaksson et al., 2004).

Self-efficacy and re-employment

An individual's level of motivation, affective state, and actions are based more on what he or she believes than on what is objectively the case (Bandura, 1995B, p. 2). Self-efficacy can vary according to special life events. At transition points (e.g., threat of unemployment) individuals tend to report self-efficacy as lower than during unexceptional times (Bandura, 1977). High levels of self-efficacy are reported to have a positive association with job-seeking activities when unemployed (Nesdale & Pinter, 2000) and on success in gaining employment (Kanfer & Hulin, 1985). Work-related self-efficacy is positively connected to an individual's interest in education and occupational pursuits (Bandura, 1995A).

Some gender differences have been reported in fields such as information and communication technology, with men reporting higher self-efficacy than women (Hargittai & Shafer, 2006; Tømte & Hatlevik, 2011). Takaku and Williams (2011) found that in some circumstances, men report higher self-efficacy than women even when the two sexes are considered to have the same competency level. However, other studies have reported no gender differences (see, e.g., Nesdale and Pinter (2000). Gender patterns differ additionally in demographic variables related to re-employment.

Demographic variables, job search and re-employment

Naturally, job search behaviour is an important factor in becoming re-employed. Nevertheless, demographic variables such as age, gender, education, and family circumstances are also of interest when trying to predict re-employment. Demographic and socioprofessional predictions of job finding among newly registered unemployed people showed that more than 60% of the subjects could be classified by age and gender (Meyers & Houssemand, 2010). In particular, older people and women had a lower chance of being employed.

It has been found that younger individuals deploy less effort than older people in becoming re-employed. Song, Wanberg, Niu, and Xie (2006) reported a negative relationship between job search intensity and speed of re-employment for women over 40 years of age and men over 50.

Unemployed men report using more networking and spend more time seeking jobs than women, regardless of education (Kulik, 2000). Women use formal sources (e.g., newspaper ads and employment agencies) to a greater extent than men. Moreover, women, regardless of education level, were more confident than men that an intense job search was worthwhile

(Kulik, 2000). Generally, men may be more successful in their efforts to discover vacancies (Wanberg, 2012).

Family responsibilities are known to interfere with job searching and re-employment (Kulik, 2000), e.g., due to a reduced willingness to relocate or commute a long distance, or an inability to accept a job with inconvenient working hours. Conversely, family responsibilities can be motivational factors that intensify JSB. Being in a relationship predicts more intense JSB (Šverko, Galić, Serši , & Galeši , 2008) and more rapid re-employment (Šverko et al., 2008; Vuori & Vesalainen, 1999). Having a family is positively related to employment for men and negatively related for women (Van Hooft et al., 2005). Financial strain negatively affects job search self-efficacy, job search outcome expectations, and search goals (Dahling et al., 2013), which in turn can affect job search behaviour. Van Hooft et al. (2012) proposed a model focusing on job search quality and its antecedents and outcomes. Among other antecedents they suggest a role for social and financial factors.

Methods

Participants

Study I and II

The participants in Studies I and II were employees or former employees of a large multi-national company in Sweden. The assembly plant was downsizing and about one-half of the production line was closed. As a result, much of the staff became redundant. Employees were given notice of job termination six months before their positions were made redundant. The work tasks consisted of assembling, inspecting, quality control, repairing, and packing electronic components for telecommunications equipment.

In Study I and in Study II, Time 1, 201 of 217 (93%) participants completed a questionnaire within one to three weeks of leaving their jobs. It was possible to perform work task analyses of the jobs held by 176 of these 201 employees while they were still working. All the different positions where staff were available was examined. At Time 2, 15 months later (Study II), 142 persons (70.6%) completed the questionnaire.

The mean age in Study I and Study II at Time 1 was 38 years (*SD* = 8.09), ranging from 25 to 58 years. There were 66% women, 73.8% had finished upper secondary education, and 7% had a university degree. At Time 1, 71.8% of the participants were married or cohabiting and 59.9% had children under the age of 20 years at home. There were no notable changes in demographic characteristics between Time 1 and Time 2. There were no significant differences in the demographic variables between the participants who answered the questionnaire at Time 2 and those who did not do so.

Study III

The participants in Study III were 162 individuals distributed in 31 work groups, 83% of which were men. All of the participants were employed at four similar Swedish manufacturing companies. The 31 groups were chosen because they were assumed to be semi-autonomous workgroups based on findings that collective reflection, group initiative, and self-organizational activities presuppose an appropriate extent of autonomy (West et al., 2004). The companies were selected based on their similar production and production technology, production planning, work organizational solutions, organizational support, and selection criteria for group composition.

Measures

Table 1 presents a list of the measures used in the three studies.

Table 1.
Variables included in Studies I, II, and III

Variable	Study I	Study II	Study III
Job design	X		X
Personal initiative	X	X	
Work-related self-efficacy	X	X	
Competence efficacy	X		
Proactive job search	X		
Anonymous-passive JSB[1]		X	
Personal-active JSB[1]		X	
Willingness to relocate	X	X	
Desire to change occupation		X	
Work involvement		X	
Reflexivity			X
Cooperation			X
Social support			X
Self-organizational activities			X
Group initiative			X

[1] JSB = Job Search Behaviour

Work task analysis

Work task analyses were conducted in Studies I and III. The REBA instrument (in German, *Rechnergest tztes Dialogverfahren zur psychologischen Bewertung von Arbeitsinhalten*) is a semi-standardised system of work analysis (Pohlant et al., 2007; Richter et al., 1999). It provides a heterogeneous set of job design variables following a standardised protocol grouped into

five interrelated dimensions. The dimensions are: (1) completeness, (2) demands on cooperation, (3) demands on responsibility, (4) cognitive demands, and (5) demands on learning. Taken together, these five dimensions meet the above-described criteria for a well-designed job.

The response options were scaled. For example, the variable 'amount of cooperation' was defined as 'the time frame of daily required cooperation and communication with subordinates, fellow workers, and superiors'. The response options were 1 = *cooperation and communication are never or rarely required* through 5 = *cooperation and communication are required for the achievement of the assignment for longer time segments or during the whole process (more than 2 hours per shift)*. See Appendix A for complete descriptions and the scales used for all of the REBA items.

Completeness. Completeness was measured as hierarchical and sequential completeness (Hacker, 2003).

Demands on cooperation. Demands on cooperation were measured in terms of type of cooperation, extent of cooperation, and content of communication (Richter et al., 1999).

Demands on responsibility. Demands on responsibility were measured as responsibility in terms of morally or legally specified liability or joint responsibility for performance outcome (Richter et al., 1999).

Cognitive demands. Demands on cognition were measured as demands on participation in complex planning processes and demands on problem solving. Cognitive demands cover a range from mere sensory motor regulation that involves no mental processing to creative thinking processes characterised by large demands on planning and problem-solving capacities (Hacker, 2003; Richter et al., 1999; Volpert et al., 1983).

Demands on learning. Demands on learning refer to maintaining and using acquired skills and to continuous learning. Maintenance of skills relates to formal training and previous work experience. Enlargement of qualifications and abilities are related to the extent to which the work tasks required continuous learning (Richter et al., 1999).

Questionnaires

Study I

Unless otherwise specified, the response options provided for the main variables in the questionnaire were Likert scales ranging from 1 = strongly disagree to 7 = strongly agree.

Personal initiative was measured with seven items (e.g. 'I take initiative immediately even when others do not'), based on Frese et al. (1997).

Work-related self-efficacy was measured by nine items (e.g. 'I can solve most problems at work if I invest the necessary effort'), adapted from the General Self-Efficacy scale by Koskinen-Hagman, Schwarzer, and Jerusalem (1999).

Competence efficacy was measured with six items (e.g. 'I can often feel that I have difficulties to meet the standards in job advertisements'), as constructed by Fogde and Lundqvist Medén (2002).

Proactive job search was measured with 12 items (e.g. 'How often do you read job advertisements?'), modelled on Kanfer and Hulin (1985) job-search scale and Kinicki and Latack (1990) proactive job search subscale.

The items suitability was tested in an exploratory study in a company not part of this study, and internal consistency was proved to be satisfactory (Fogde & Lundqvist Medén, 2002).

Study II

As was the case for Study I, unless otherwise specified, the response options for the main variables were Likert scales ranging from 1 = strongly disagree to 7 = strongly agree. Willingness to relocate was measured using five items constructed by Wirkkala (2002) to assess the participants' willingness to relocate a variety of distances, such as to the nearest city or to another country (e.g. 'What is your attitude towards moving for work to another city in your region?'). The response format was a seven-point Likert scale where 1 = *very negative* to 7 = *very positive*.

Desire to change occupation was assessed with two variations of a single item by Wirkkala (2002) asked at Time 1 and Time 2: 'To what extent did you want to change occupations before the cutbacks in the company?' and 'Do you want to change occupations?'. The response format was a seven-point Likert scale where 1 = *not at all* and 7 = *very much*.

Work involvement was measured using a four-item scale constructed by the author for this Study to assess the importance of work in the participants

overall lives (e.g. 'I have a strong desire to work' and 'I usually look forward to going back to work after a leave').

Work-related self-efficacy and *personal initiative* were measured exactly as they were measured in Study 1.

Anonymous-passive JSB consisted of three items developed by Kanfer and Hulin (1985) as follows: 'During your unemployment period, how often did you: (1) read job ads in newspapers, (2) visit Internet sites that advertise vacancies, (3) visit the employment services' job bank?'.

Personal-active JSB consisted of four items constructed by the author for the purpose of this Study (e.g. 'How often have you contacted companies to ask if they have job openings?' and 'How often have you asked friends and family for information on job openings?').

Job-search intensity was assessed with responses to the question, 'How many jobs have you applied for since you were dismissed?'

Study III

In Study Ill, all of the responses were given on seven-point scales, ranging from 1 = *do not agree at all* to 7 = *agree entirely*.

Reflexivity was measured by four items (e.g. 'The members of our work group discuss the importance of new knowledge about how to carry out the work') as constructed by Edmondson (1999) and Matsson (2001), to capture collective reflexivity on task-related issues.

Cooperation was measured by six items (e.g. 'Members of our work group cooperate to get the work done') following Campion, Medsker, and Higgs (1993) and Lantz and Laflamme (1996) to capture cooperative behaviour, such as workload sharing, work task information and communication, and cooperative behaviour in general.

Social support was measured by five items (e.g. 'Members of our work group are able to bring up problems and tough issues'), which was constructed and tested by Campion et al. (1993), Edmondson (1999), and Lantz and Laflamme (1996), to capture socio-emotional processes, such as social support, psychological safety, and trust.

Self-organizational activities were measured by four items (e.g. 'In our work group we have initiated change of the framework and prerequisites [conditions] for our work in order to work in the most efficient way'), which was constructed by the authors for this research.

Group initiative was measured by six items (e.g. 'Our work group uses opportunities quickly in order to attain our goals'), constructed by Frese et

al. (1997), and transformed from the individual level to the group level by the authors.

Procedure

Study I

The data in Study I consisted of a work task analysis in position level and individual information collected from questionnaires. The work task analysis was performed in an assembly plant that had given notice of redundancy to about one-half of its staff while the employees where still working. The specific procedure that was used for the work task analysis is described below. About six to 10 weeks after the work task analysis was conducted, the data collection via the questionnaires was conducted. Within one to three weeks after their employment was terminated, the former assembly work employees individually completed the questionnaires in group settings of about 30 persons. Data collection took place at their former workplace during informational meetings with personnel from the local employment office.

At the start of these meetings, oral and written information about the study and its ethical aspects were provided. The former employees began by completing an instrument to assess competence (data not included in any of these studies). Completing the competency assessment was believed to help stimulate the participants' recall of aspects of their former jobs.

The questionnaire data were coded upon completion and the cover sheets that showed the participants' names and addresses for the follow-up questionnaire (Study II) were removed and separately stored. The participants retained an informative letter that included statements on the ethical aspects of the study, such as voluntariness, confidentiality, and researcher contact details. The last part of the meeting that, took about three hours (including a break) consisted of disseminating information about the regional labour market presented by the personnel from the local employment office. The management was provided with oral and written reports of the study results.

Study II

Study II was a longitudinal follow-up of Study I described above. At Time 2, 15 months later, questionnaires were distributed by mail to the former employees' home addresses that they had provided at Time 1. Enclosed with the questionnaires were postage-paid return envelopes pre-addressed to the

researcher. Additionally, there was a letter thanking the participants for participating at Time 1, explaining the importance of their continued participation, and statements of ethical aspects, such as voluntariness, confidentiality, and researcher contact details. The response rate was considered high because more than 70% completed and returned the follow-up questionnaires, although some of them did so only after a reminder notice was sent three or six weeks later.

Study III

The Study III data consisted of observations used for work task analyses of workgroups, together with the questionnaire data, aggregated to the group level. See the specific procedure used for the work task analysis described below. When possible, observations of the work task analysis and questionnaire administration were accomplished on same occasion. The four organizations involved provided the sites and allowed the participants to complete the questionnaires during work hours. Whenever possible, all of the employees in the groups participated at the same time. Before the meetings, all of the participants written information describing the study and its ethical aspects regarding voluntariness and confidentiality. At the meetings, the questionnaires was individually completed and coded to identify each participant's group and company.

Follow-up meetings were held for group members who did not participate in the first meetings. At each occasion, information about the study and its ethical aspects was given orally and in writing. All of the participants were invited to meetings in which their company-specific study results were presented. The four participating companies were given written information with their groups' results and comparisons of their groups' results to the overall results of the four participating organizations.

Work task analysis, Study I and Study III

In Studies I and III, a work task analysis was performed. Data consisted of observations, along with complementary interviews of staff members when information could not be obtained by observations alone. Questions were asked during observations, or afterward if questions could distract them while they performed the task. In order to make assessments as accurately as possible, questions were asked mainly to understand what was performed (none of the researchers were technicians), why (which objectives would be achieved by performing that moment or subtask), and sometimes questions

about cognitive demands on a specific subtask. The analysis consisted of all the specific work tasks performed by staff in a particular position.

First, before the workflow and structure of each job were studied, background information, such as technical documents and job descriptions, where studied. To create a comfortable atmosphere during the observations, the workers were informed about the method, that it was voluntary to participate, and that the focus of interest was on their work tasks and not on them as individuals.

The researcher(s) were trained and supervised by a more experienced user of the instrument and guided by a handbook (Pohlant et al., 2007). To assess inter-rater reliability (Bakeman & Gottman, 1997), two different observers were used for the analysis. Initial inter-rater reliability was high in both studies. When disagreements regarding assessments of tasks arose, the tasks were re-assessed to reach consensus on estimates, supported by discussions with a more experienced researcher.

Every position (Study I) and group (Study III) was given a profile of the jobs based on the means of the standardized values of all items under observation. Each work task was measured on an ordinal scale (see Appendix A) and categorized into one of the five dimensions of work task analysis described above. In Study I, the work task analysis comprised all five dimensions. In Study III, 20 of the 22 ordinal scales were used and these were grouped into five (Study I) or four (Study III omitted Demands on responsibility) of the dimensions.

In some REBA dimensions tasks were assessed with respect to all of their particular subtasks and some were assessed as overall tasks. For example, sequential completeness was assessed for the entire task. Sequential or cyclic completeness of the work structure includes activities regarding executing, preparing, controlling, and organising. These were assessed from the lowest level ('only executing') to the highest level ('executing, preparing, controlling, and organising'). For example the dimension *conflict quality/quantity* that involves contradictory demands with respect to for example content and scheduling were assessed on each subtask. Another example is *level of cognitive demand* that involves required cognitive performance were assessed on each subtask.

According to Action Regulation Theory, the hierarchical complete tasks comprises several levels of mental regulation, from automated responses to knowledge-based and intellectual processes (Frese & Zapf, 1994; Hacker, 1985 2003). In these studies, it was assessed as cognitive demands. Cognitive demands were measured with two items: 'degree of participation' and

'level of mental demands'. The degree of participation includes participation in operational planning processes and it was assessed from the lowest level ('no participation') to the highest level (which included implementing and selecting solutions; collecting, evaluating, and transforming information into solutions; problem definition; and setting objectives). Cognitive demands, together with the items in the dimension termed 'completeness', provide information about the jobs' hierarchical and sequential completeness.

After assessment by observations and interviews, each individual positions (Study I) or group (Study III) was provided with their job profile. The total profile was based on the standardised scales of the analysed items.

Altogether, 38 (Study I) or 31 (Study III) analyses were conducted by the researcher(s). Regarding the total amount of time used, Study I used between two and five hours for each position, depending on how many subtasks each position required. For example, an assembler could only have two subtasks, and a person working with quality control could have five or six subtasks. The amount of time used for each group in Study III was between two and eight hours, depending on whether the studied position or group had any task overlap, the number of tasks, and the subtasks that were analysed.

Statistical analyses

Study I

Study I investigated the relationship between job design, captured by objective work task analysis, and self-reported personal initiative and proactivity. All five dimensions of job design from REBA were tested. The scales were standardised (z-transformed), and the mean of each dimension and an overall job design score were calculated for each position. Chi-Square calculations were assessed to determine the systematic effects of the demographical variables on the outcome. Internal consistencies of the measures were assessed by Cronbach's alpha and found to be satisfactory.

The hypothesized model was tested using structural equation modelling (SEM). The five dimensions of job design were highly inter-correlated and (the weakest correlation coefficient among the pairs was .62), therefore, treated as one measure in the SEM. The model fit of the analysis was determined by Chi-Square and root mean square error of approximation (RMSEA), which indicated a good fit.

Study II

Study II was a longitudinal study intending to predict re-employment of assembly workers whose employment had been terminated. Three of the predictors had high correlations (Pearson). Therefore, a confirmatory factor analysis was conducted to determine whether the items of the three scales represented separate constructs. The analysis employed maximum likelihood estimation and identified a three-factor solution that was a satisfactory model fit (Medsker, Williams, & Holahan, 1994; Schumacker & Lomax, 2004) with better fit indices than the one- or two-factor solutions. Internal consistency of the measures was determined by Cronbach's alpha, which was satisfactory.

A hierarchical stepwise logistic regression analysis was performed to identify the statistically significant predictors of re-employment at Time 2. The model contained four blocks of independent variables: demographic variables, attitudinal variables, individual characteristics, and job search behaviours. The overall model that included all of the predictors was statistically significant, indicating that these variables were able to distinguish between re-employed and unemployed participants 15 months after employment termination. The Hosmer-Lemeshow test results confirmed the model's goodness-of-fit.

An independent samples *t*-test was conducted to further clarify gender differences in the independent variables (the sample sizes by gender did not allow for stable hierarchical logistic regression analyses), and eta^2 values of the effect (i.e. the percentage of the variance explained by gender).

Study III

Study III investigated job design as a predictor of group initiative and self-organizational activities. Job design comprised four dimensions based on REBA (the omitted dimension was demands on responsibility). Scales were standardized (*z*-transformed). The mean of each dimension and an overall job design score were calculated for each job. Internal consistency was assessed by Cronbach's alpha and was satisfactory.

Some of the correlations (Pearson) between pairs of the five measures were high, so a confirmatory factor analysis was performed to determine whether the items in the five scales represented different constructs. The analysis employed maximum likelihood estimation and derived a five-factor solution as a good model fit (Medsker et al., 1994; Schumacker & Lomax, 2004). The model had better fit indices than the one- to four-factor solutions.

The self-report data from the questionnaire responses were based on mean values. To assess the extent of group agreement in the aggregated measures, intra-class coefficients ICC1 and ICC2 (Bliese, 2000), computed in one-way ANOVAs, and the $r_{wg(j)}$-index of within-group agreement according to (James, Demaree, & Wolf, 1984, 1993) were examined.

The hypothesized model was tested using SEM. The four dimensions of job design were highly inter-correlated and, therefore, they were treated as one measure in the SEM. The model fit was determined by Chi-Square and, because sample size influences Chi-Square, root mean square error of approximation (RMSEA) was computed, which indicated a good fit.

SEM was performed using LISREL 8.30 (Jöreskog & Sörbom, 1993) for Study I and AMOS 6 (Arbuckle, 2005) for Study III. Confirmatory factor analyses was performed using AMOS 6, and other statistical calculations in the three studies was performed using SPSS 14.0 (Norušis, 2006).

Summary of studies

Study I - Personal initiative at work and when facing unemployment

Aim

The aim of Study I was to investigate the relationships between job design and proactivity during a period between notice of termination and actual termination. Proactive behaviour is seen as positive in a work context, and we assumed that proactive behaviour expressed as personal initiative would benefit in other situations as well.

Hypothesis

We propose that job design influences proactive behaviour at work and in other situations, including handling and mastering unexpected situations, problems, or new tasks. Figure 1 presents the hypothetical model of the relationship between job design (in five dimensions), self-efficacy, competence efficacy, personal initiative, and preparatory and active job search. The arrows between the factors (shown in the ovals) represent the hypotheses. The five dimensions of job design are shown in the rectangles.

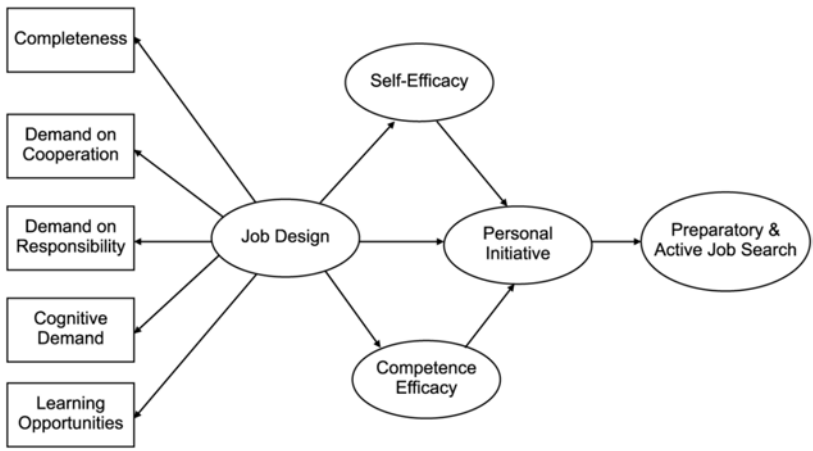

Figure 1. Hypothetical model of the relationships between job design (in five dimensions), self-efficacy, competence efficacy, personal initiative, and preparatory and active job search, Study I.

Results

The work task analyses revealed that the tasks were all satisfactory regarding sequential completeness. In other words, the participants could participate in preparing, executing, checking, and organising their own work. Regarding demands on cooperation, demands on responsibility, cognitive demands, and learning opportunities, the participants were mostly at the lower end of the scales. Men tended to have 'better jobs' than women in the overall job-design assessment.

The five dimensions of job design were highly inter-correlated and, in the SEM, they were treated as one variable (Figure 2). Self-efficacy and competence efficacy mediated the relationship between job design and personal initiative.

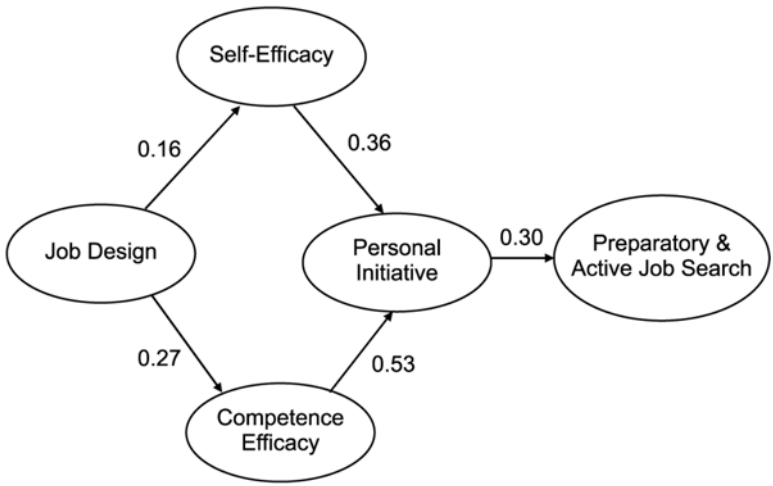

Figure 2. The direct and indirect effects of job design on self-efficacy, competence efficacy, personal initiative, and job search behaviour, Study I.

The final model (Figure 2) confirmed all but one of the hypothesised paths shown in Figure 1. By omitting the non-significant path between job design and personal initiative and recalculating the coefficients, the final model was obtained. Model fit was determined by Chi-Square and root mean square error of approximation (RMSEA), both of which indicated good fit to the model. Although the hypothesised direct relationship between job design and personal initiative was not supported, partial regression analyses found that self-efficacy and competence efficacy mediated the

relationship of job design to personal initiative. Self-efficacy and competence efficacy had substantial direct effects on personal initiative. The statistics in Figure 2 report the partial regression coefficients.

Study II - Predictors of Re-employment. – A Question of Attitude, Behaviour, or Gender?

Aim

The second study was a follow-up to Study I that was conducted 15 months later. The general aim was to investigate how the participants' personal initiative, self-efficacy, and job-related attitudes at Time 1, and how their job search behaviour during unemployment between Times 1 and 2, predicted their re-employment after 15 months.

Hypothesis

The hypotheses were:

- Willingness to relocate and desire to change occupations are positively related to re-employment after 15 months.
- Work involvement is positively related to re-employment 15 months after termination.
- Work-related self-efficacy will be positively related to re-employment.
- Personal initiative is positively related to re-employment.
- Personal active job search behaviour will have a higher positive prediction value related to re-employment than anonymous passive job search behaviour.

Results

Results regarding the effects of gender on re-employment have been mixed or not convincing and, thus, we found no firm basis for a hypothesis.

Hierarchical logistic regression analysis was performed to predict employment status at Time 2. The full model containing all of the predictors was statistically significant, indicating that the model was useful for predicting unemployment among the participants 15 months after notice of termination.

The two strongest predictors in the model were demographical factors. Those who were re-employed after 15 months were more than nine times more likely to be men than women and participants without children were

more than seven times more likely to be re-employed after 15 months than individuals with children at home.

Attitudinal measures also contributed to the prediction in that willingness to change occupations and willingness to relocate both increased the probability of re-employment. A high work self-efficacy significantly decreased the probability of re-employment. The odds ratio of having a job decreased more than two times for every additional degree of work self-efficacy reported.

Finally, there were differences related to job-search behaviour. Anonymous-passive job search behaviour decreased the probability of re-employment. Personal initiative, work involvement, and job-search quantity did not significantly contribute to predicting whether the participants were re-employed.

Study III - Group initiative and self-organizational activities in industrial work groups

Aim

The aim of Study III was to investigate job design as a predictor of initiative at the group level and self-organizational activities in work groups. A model in the form of input-process-output was used to scrutinize the relationships.

Hypotheses

- Job design, cooperation and social support are each individually and positively related to reflexivity.
- Cooperation, social support, and reflexivity are each individually and positively related to group initiative.
- Reflexivity and group initiative are each individually and positively related to self-organizational activities.

Results

The final model (Figure 4) was obtained by omitting the statistically non-significant paths and recalculating the coefficients.

The results (Figure 4) provide substantial but not complete support for the hypothetical model. The widths of the arrows illustrate the strengths of the relationships and correspond to the levels of statistical significance. The path from social support to reflexivity and the path from group initiative to self-organizational activities almost reached significance and were regarded

as tendencies in the predicted direction. Two of the hypothesised relationships, between cooperation and reflexivity and between reflexivity and group initiative, were not supported.

Reflexivity explained most of the variance in self-organizational activities, but it did not influence group initiative. Cooperation and social support in the work group enhanced group initiative to achieve meaningful change.

In sum, dimensions of job design can influence self-organizational activities so that a group, using reflexivity, can proactively create conditions and organize work to handle uncertainty and master new tasks.

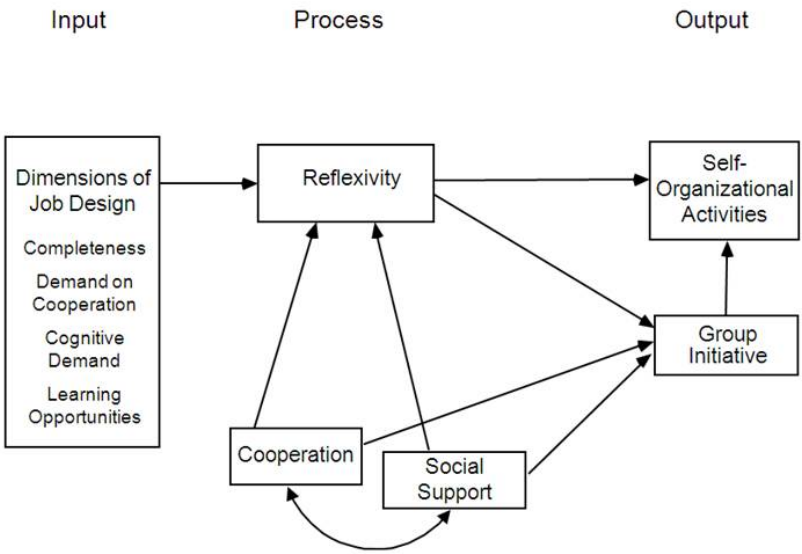

Figure 3. Hypothesized model input, process output model of work groups, Study III.

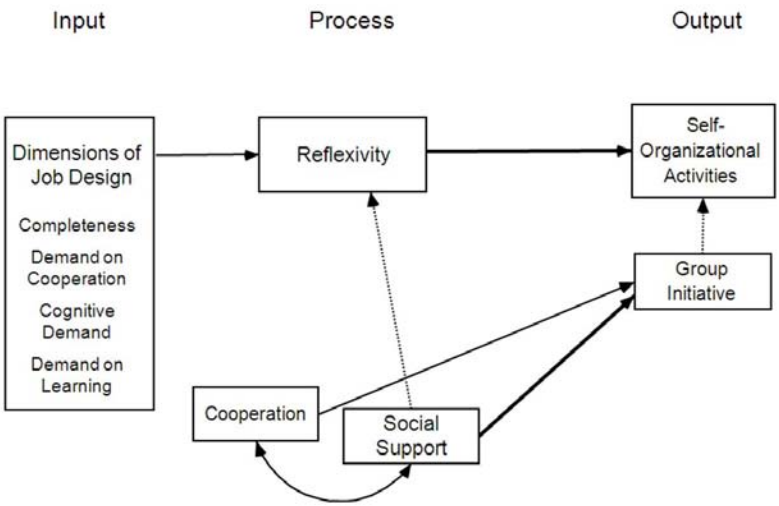

Figure 4. Final paths, Study III.

Discussion

The overall aim of this thesis was to gain knowledge about the prerequisites and implications of proactive behaviour at work, and when facing unemployment. Todays' working life entails requirements to be flexible and proactive in order to adapt to rapid change. Analyses of work tasks were conducted with a theoretical base in action regulation theory to observe how job design affects the proactivity of individuals and groups.

Main findings

The research question in the first paper addressed the possible implications of job design, self-efficacy beliefs, and proactivity on behaviour when at risk of losing one's job.

Job design

A job designed with adequate sequential completeness implies that working persons have the opportunity to be involved in the work cycle from planning and preparing to executing and control. A high level of hierarchical completeness implies that they participate in the creative process and problem solving. It is not farfetched to assume that behaviour and attitudes that people develop at work will spread to other situations.

We assumed that habitual behaviour, or attitudes that arise at work or in the work context, affect behaviour away from work as well, such as when at risk of becoming unemployed. We also hypothesised that proactive notice of unemployment in the form of personal initiative would enhance the occurrence of a proactive job search. In line with earlier research (Crant, 2000), personal initiative was found to be positively related to proactive job search when facing the threat of unemployment.

Although job design has an impact on personal initiative, this occurs when self-efficacy and competence efficacy are mediating variables, which has been supported in earlier research (Crant, 2000; Frese et al., 2007). The structural equation modelling (SEM) analysis in Study I showed that the hypothesized direct relationship between job design and personal initiative was not supported. This contradicts previous research that showed positive direct relationships between aspects of job design (control and complexity) and personal initiative (Fay & Frese, 2001; Frese et al., 2007). Jobs with relatively low qualification (e.g. cognitive demand and learning opportunities), as in this study, perhaps do not give prerequisites for exerting personal

initiative. Moreover, the explanation is probably more complex than a direct relationship between the nature of the work and a specific behaviour. More aspects of the individual's context, such as interaction with the social situation, need to be considered.

Self-efficacy and competence efficacy seemed to be enhanced by aspects of job design and thereby to affect personal initiative. Belief in self-efficacy is a prerequisite for people to perform actions they are motivated to undertake (Bandura, 1982; Crant, 2000). However, there was still some question as to whether proactivity and job search are enough to obtain new employment after dismissal.

Predict re-employment

The second dissertation study was a follow up conducted 15 months later with the group of assembly workers from Study I. They had all been dismissed, and the aim of the study was to investigate the re-employment rate and identify predictors of re-employment. As hypothesised, high estimates regarding the attitude variables of willingness to relocate and desire to change occupation made a significant contribution to predicting re-employment. Desire to change occupations can reflect dissatisfaction with one's current work or work situation. It is not far-fetched that people reporting high desire to change occupations were also reemployed to a higher degree. Willingness to relocate predicted a greater chance of being reemployed, which is also in line with prior research (Challiol & Mignonac, 2005) and the hypothesis. Unemployed people in Sweden, according to the employment service requirement, after a certain period, must be prepared to seek jobs across the country. Thus, willingness to relocate can be seen as a form of forced flexibility in some situations.

Work involvement was significantly correlated with personal-active job search behaviour (JSB), but it did not contribute to the prediction of re-employment. It could possibly be fruitful to distinguish between work involvement linked to a specific job and work involvement in general.

In this study, work related self-efficacy, contrary to the hypothesis, decreased the probability of re-employment. In addition, anonymous-passive JSB decreased the probability of re-employment. The highest predictive value was demographic factors; being male and not having children were the greatest contributing factors in the longitudinal hierarchic regression-model predicting re-employment.

People who reported high on the personal initiative scale also conducted more extensive proactive job searches when facing the risk of becoming unemployed (Study I). There was also a significant correlation between personal initiative and personal-active JSB in Study II. However, when other factors were introduced in the regression analysis, the hypothesis about personal initiative as a predictor of re-employment was not confirmed; personal initiative did not predict re-employment. This means that the relationship between personal initiative and re-employment remains unclear. One contributing factor may be that the measure of 'Proactive JSB' in Study I was somewhat blunt (Van Hooft et al., 2012; Vuori & Vesalainen, 1999). In Study II, the measure was divided into two qualitatively different measurements focusing on anonymous-passive or personal-active behaviour when trying to obtain information about job vacancies and a purely quantitative measure (how many jobs applied for). As the jobs held were mostly in the lower distribution of job design dimensions regarding cognitive demand and learning opportunities, study groups with a wider distribution would probably show stronger relationships to personal initiative.

In Study II, the results seemed to indicate that work-related self-efficacy actually decreases the odds of re-employment. Eventually, this can be explained by the phenomenon of being locked in (Aronsson & Göransson, 1999; Wirkkala, 2002). Considering that self-efficacy may be domain specific, high rated work-related self-efficacy does not imply that a high value is placed on job-search self-efficacy. It would have been desirable to have measured not only work-related self-efficacy, but also general and job-search self-efficacy in Study I and Study II.

Education has been associated with re-employment (Vesalainen & Vuori, 1999), emphasising that education makes it easier to get a job. In Study I, people with higher education had more qualified jobs according to the job design measures, and they reported a greater extent of proactive job search. In Study II, measures of education level were included, but variability was limited and education did not correlate with variables other than age and desire to change occupation, which indicated that education had no significant relationship with re-employment status in this study.

Proactivity and job search behaviour

Neither active-personal JSB nor job search intensity predicted re-employment after 15 months (Study II). On the other hand, anonymous-passive JSB actually showed a negative predictive value related to re-employment. That is, engaging in anonymous-passive JSB actually seemed to harm the chances

of re-employment. Possible explanations can be found in motivation theory, planned behaviour theory (Ajzen, 1991, 2001), and self-efficacy theory (Bandura, 1995A, 1995B); perceived behaviour control is a prerequisite for actual behaviour. Consequently, repeated disappointments can decrease the self-efficacy people have regarding education fulfilment and occupational roles, which in turn can cause narrower career options to be considered (Bandura, 1995B).

Gender differences

Gender differences were not a pronounced research question from the start in this thesis. In Study I, results regarding gender differences were not reported, as the focus was on the impact of organizational factors (job design). However, the high predictive value of gender on re-employment in Study II evoked the urge to study gender differences further. Study II reported significant gender differences in work-related self-efficacy (moderate effect) and in anonymous-passive JSB (large effect). Gender differences in re-employment can be discussed in light of the fact that women generally take more responsibility for children (Kulik, 2000, 2001), which can be experienced as an obstacle to re-employment. Responsibility for children means that it can be more difficult to accept a job that provides long commuting distances or with inconvenient working hours.

Assembly work is traditionally seen as a male job, so despite the fact that this study group consisted mostly of women, it is possible that one explanation for the gender difference in re-employment can be the type of jobs participants had. A meta-analysis of gender stereotypes and gender discrimination in working life was presented by Koch, D´Mello, and Sackett (2014). They reported that employers often favour men in jobs that are male-dominated, but the corresponding phenomenon is not seen in female-dominated jobs. Prejudice against females and a preference for men in areas that have been considered 'male' occur (Eagly & Karau, 2002) and could be part of the explanation for the gender difference in re-employment.

Gender differences in re-employment can also be associated with patterns of different JSB among women and men. Earlier research reports that there are gender differences in actual JSB and in how the jobseekers find out about vacancies. Men seemed to spend more hours job searching (Kulik, 2000) and benefit from the contacts in their network more efficiently than women (Wanberg, 2012). Women use more formal sources to find out about vacancies and less networking than men (Kulik, 2000). In Study II, women reported more passive-anonymous JSB than men did, which is in line with

earlier research. Unemployed people in general, and perhaps women in particular, would benefit from assistance developing their JSB, especially the way in which they find information about job vacancies.

There were gender differences in work-related self-efficacy. This was in line with earlier research, where men reported higher self-efficacy in some areas (Hargittai & Shafer, 2006). As self-efficacy is seen as a prerequisite for actually performing actions you are motivated to perform, this can contribute to the gender differences in re-employment.

Proactivity in work groups

In the third dissertation study, the interest was to see if job design had any effect on proactivity in the form of initiative at the group level and self-organizational activities in workgroups.

The research model consisted of a theoretical model of relationships between the input variable job design, the interplay between group processes, and the output variables of both group initiative and self-organizational activities. The results showed that the dimensions of job design were directly related to reflexivity in work groups, and that reflexivity in workgroups, in turn, led to groups that were more engaged in self-organizational activities. The dimensions of job design designated as autonomy and complexity (in this study measured as cognitive demand and learning opportunities) appeared to be important regarding whether groups were initiative-taking, were creative, and would go beyond the stipulated task (West et al., 2004). In our study, cooperation and social support were directly related to group initiative, and job design, cooperation, and social support appeared to have an indirect influence on self-organizing activities.

As in Study I, there were no direct relationships between job design and proactivity, here measured as group initiative and self-organizational activities, respectively. Group processes such as cooperation and social support are processes that may be enhanced to increase self-efficacy, which is proven to be important for proactivity (Bandura, 1995B; Nesdale & Pinter, 2000). As the relationship between job design and proactivity (group initiative and self-organizational activities) can also be studied as a reciprocal relationship, a longitudinal study design would have been desirable, as it would further clarify causal directions. Proactive groups can transform work characteristics, and the work characteristics provide scope for more or less proactivity (Frese et al., 2007; Li et al., 2014).

Strengths and limitations

A strength of the thesis studies is their data. Firstly, the data comes from different sources: observational data from work task analyses (Study I and Study III), self-reported data from questionnaires, and actual results in terms of the unemployment situation (Study II). More objective data, such as that from the external assessed work task analyses, could be a more adequate or complementary way to collect data. Certain types of data, such as work complexity or cognitive demands, can be difficult to grasp without structured methods. On significance for reliability in the work task analysis is that the criteria for the measurement was the same for all observations, as they established and conducted by the (same) researchers. Data that are more objective, not affected by the individual's emotion and cognition in the assessment, is generally seen as less biased (Frese & Zapf, 1994).

It is satisfying to obtain a high response rate on questionnaires in a longitudinal study. A contributing factor to this could be that there was a lot of time spent on the premises during the data collection. This together with pauses in the conversations to discuss work and the purpose of the study may have paved the way for a somewhat closer connection between the subjects and the researcher, making it less difficult to get the follow-up questionnaires completed and returned.

The JSB measures were slightly modified from Study I to Study II. In Study I, a scale with 12 items was used. In Study II, this was divided into two groups of qualitatively different activities, one regarding the collection of information about job vacancies and one that was a purely quantitative measure of how many jobs people had applied for. This made it possible to distinguish between personal-active and anonymous-passive JSB, which were found to influence re-employment in different directions.

Some of the measures in the three studies had weaknesses; proactive job search in Study I is one such weakness. The reliability of the measurement may have suffered from that there was not an explicit specified period of time in the questions. In addition, the desire to change occupation consisted of only one item, and the measurement of cooperation in Study III needs further development.

Since the sample size affects the reliability of SEMs, the limited sample size in Study III (31 groups) is a weakness. A strength is that, unlike most of the published research on groups, the participants in Study III consisted of existing work groups from industrial enterprises and not of psychology students in experiments.

From a research point of view, it was an advantage that the samples in Study I and Study II were homogenous in the sense that all of them were dismissed at about the same time, and, consequently, all were unemployed in the beginning. They generally had the same formal education, and they had largely performed the same types of tasks before their unemployment. Since a majority of the study group (Study I and Study II) consisted of women in a traditionally male profession, the question of external validity is essential. However, it seems to be of critical importance to always include and investigate gender effects in studies aiming at identifying predictors since factors like proactive behaviour attitudes like job involvement or JSB are not enough to explain re-employment. Respondents with a more even distribution in demographical measures as well as other professions may well be included in forthcoming research.

In all three studies, the participants' jobs largely consisted of relatively low-skill and routine tasks. There may be advantages with homogeneous groups when determining, for example, the influence of attitudes. In future studies, it would be of value to investigate individuals and groups with greater distribution, especially in education and job dimensions such as cognitive requirement, learning demand, and sequential completeness.

Conclusions

Work task analysis

Collecting data with more objective analysis instruments, such as work task analysis, is a laborious and time-consuming method of data collection. However, it provides the opportunity to obtain information that is hard to acquire in other ways. For example, cognitive demand is a dimension that is not easily captured by surveys and interviews (Hacker, 2003; Richter et al., 1999). The concepts of autonomy and control, which were captured by subjective perceptions and self-reported measures, have also been criticized for imprecise definitions; thus, to some extent, the results are unclear where they have been used (Frese et al., 1997; Speier & Frese, 1997). For example, the degree of education has been shown to affect resemblance in people's subjective estimation of work complexity (Morgeson & Campion, 2003). In the German computerized method for psychological review of work content known as REBA (Rechnergestütztes Verfahren zur psychologischen Bewertung von Arbeitsinhalten) (Pohlant et al., 2007; Richter et al., 1999), the instrument used in Study I and Study III, autonomy is captured as the degree of participation in choosing means and setting goals.

ARIA (Waldenström, 2007, 2009), the shorter Swedish instrument, with its external perspective, takes an intermediate position; it is not as time laborious as objective measurement methods (e.g. REBA (Pohlant et al., 2007; Richter et al., 1999), but it does not get the individual's total subjective perception.

The conclusion is that it is definitely meaningful to use objective/external analysis instruments as complements to self-reported data, as this reduces the impact of peoples' emotional perceptions and reactions. These structured or semi-structured instruments also allow less room for the researcher's subjective interpretation.

The knowledge that action (regulation) and human work theories provide as well as the information that can be obtained through work task analyses are important and useful. Information about how various requirements and conditions of work affects both the work itself, as well as the workers' proactivity, self-efficacy, creativity, and innovation, can be acquired. This information can also have an impact outside of work, such as in other situations where proactivity is required.

Predictors of re-employment

The various predictors of re-employment have been somewhat clarified, but some of them need to be further investigated. It is not surprising that willingness to relocate and a desire to change occupation were predictors of re-employment. The role of proactivity as a predictor of re-employment seems to be complex and needs further clarification. Gender (being male) and (lack of) family responsibility, in this study group, showed surprisingly high predictive values. The different JSB of men and women could be part of the explanation.

Implications for research and practice

The longitudinal study of predictors of re-employment for the unemployed (Study II) did not report on changes in the attitude variables, such as work involvement and willingness to relocate, or changes in personal initiative and self-efficacy over time, which is also interesting. There is existing data to be further examined and presented on that subject.

As mentioned above, job design and proactivity (group initiative and self-organizational activities) can be studied as having a reciprocal relationship (Frese et al., 2007; Li et al., 2014). A study with a longitudinal design examining the reciprocal effect of proactive groups or individuals and job design would be interesting.

Use of this type of analysis instrument in Sweden was uncommon earlier, in part because the tradition of action regulation theory has been developed and used in Russian and German speaking areas. Instruments such as REBA, designed in this theoretical tradition, were for a long time not available in English or Swedish. The combination of (in Sweden) a relatively unknown theoretical background and the instruments' relatively resource intensive design have probably contributed to this.

However, since action regulation theory focuses on working conditions that are beneficial both for organization efficiency and to the individual's health and development, application of these theories and use of these instruments is recommended.

Instruments with an objective/external focus are useful for analysing work conditions regarding potential for developing and learning in individuals and groups, the possible harmful effects of work, and opportunities to improve efficiency by organizing work.

As gender differences were shown, not only in re-employment but also in different JSB preferences, women (unemployed or willing to change occupation) could benefit from exercising the 'masculine' approach to finding out about vacancies. In other words, women should use their networks to a greater extent and more effectively (Wanberg, 2012).

From a research perspective, it seems more fruitful to distinguish between and further evaluate different types of job search strategies. The result that family circumstances (i.e. not having children at home) and gender (i.e. being male) showed such a high predictive value regarding re-employment needs to be further examined among respondents with a more even gender distribution and in working areas that are not 'typically' male.

In recent years, methods for supporting the unemployed have changed and need to continue being developed. Practitioners who guide and counsel the unemployed could probably focus more on supporting and developing job search strategies that are more effective, and focus less on the number of job applications submitted by the unemployed, in order to receive unemployment compensation.

This thesis has contributed to previous research by demonstrating that it is more important to focus on how job search behaviour is performed instead of the number of jobs applied for, and it could be beneficial with additional support and assistance in developing more appropriate job search strategies for the unemployed. Furthermore, demographic factors, such as gender, need to be taken into account to form a better understanding of why some obtain re-employment and others do not. This thesis also shows

that work task analysis is a useful data collecting method because it provides access to information that cannot be obtained through self-reported measures. Furthermore, it is worthwhile to continue identifying the antecedents and consequences of proactivity, as this seems to be an important factor regarding work and unemployment.

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Appendix A

Items and response alternatives in the REBA instrument (REchnergestütztes Dialogverfahren zur psychologischen Bewertung von Arbeitsinhalten).

Completeness

1. Number of work tasks. (Number of differently demanding sub-activities.) Response alternatives from 1 = 1 sub-activity, to 4 = more than 5 sub-activities.
2. Sequential completeness. (Cyclic or sequential completeness of the work structure and existence of sub-activities in executing, preparing, controlling and organising.) Response alternatives from 1 = executing, to 4 = executing, preparing, controlling and organising.
3. Organising functions. (The scope and content of organizational functions assigned to the employee.) Response alternatives from 1 = no organising functions, to 5 = work assignment includes organisation and contacts with employees/groups/divisions at upper and/or lower level.
4. Cycle length. (Amount of recurring performances in a workday.) Response alternatives from 1 = approximately every minute, to 7 = no recurrences in a workday.
5. Information about the organisation. (Scope of required information about the work organisation.) Response alternatives from 1 = information about the work organisation at the employee's own work station, to 3 = + additional information about the overall organisation of the production in the company.
6. Information about results. (Scope of required information about work results.) Response alternatives from 1 = information about the result of the employee's own work, to 3 = information about the results of anticipated and performed, earlier, later or parallel work, at upper and lower level.
7. Feedback. (Differentiation of feedback with regard to the quality) Response alternatives from 1 = no feedback about the quality, to 5 = immediate feedback about the kind and frequency of particular errors.
8. Predictability. (Anticipation of action demands.) Response alternatives from 1 = events that call for an action cannot be anticipated, to 4 = the appearance of discrete action demand is such that the kind/or the scope of the required action can be anticipated.

9. Temporal degrees of freedom. (Technical or organizational conditional agreements for scheduling the own activities.) Response alternatives from 1 = no temporal degree of freedom: extremely close temporal binding up to the operations, with very short spans due to the technique, to 5 = the scheduling at work is to a great extent arbitrary: up to sets of assignments and a possibility for scheduling beyond a shift depending on the conditions.
10. Procedural degrees of freedom. (To what extent the employee modifies the procedures to achieve the task according to the demands.) Response alternatives from 1 = no procedural degrees of freedom except the decision between adopting or refusing the assignment, to 6 = degrees of freedom with respect to sequence of sub-activities, methods, tools, features or the result, and for independent finding of tasks.
11. Decision demand. (Possible or required decision-making. Impact of the decisions on the achievement of the assignment.) Response alternatives from 1 = no decision possible, to 5 = decisions are required; the alternatives differ from each other with regard to their effectiveness. The consequences are not obvious but require deductions and calculations.
12. Variety of movements. (Physical variety of work activities. Variety of postures and movement patterns.) Response alternatives from 1 = both movements and postures are monotonous, to 4 = both movements and postures are varying.
13. Conflict quality/quantity. (Contradictory demands with respect to content and scheduling. Possible occurring contradictions between demands described in the work assignment and the actual or expected organisational and technological conditions.) Response alternatives from 1 = work assignment and the organisational/technological conditions always comprise the risk of contradictory demands (permanent goal conflicts), to 3 = the task and the organisational and technological conditions do not comprise contradictions (no goal conflict).

Demand on Cooperation

14. Amount of cooperation. (Time frame of daily-required cooperation and communication with subordinate, fellow workers and superiors.) Response alternatives from 1 = cooperation and communication is never or rarely required, to 5 = cooperation and communication is required for the achievement of the assignment for longer time segments or during the whole process (more than 2 hours per shift).
15. Forms of cooperation. (Types of required cooperation/communication that are a consequence of shared organisational and technical agreements.) Response alternatives from 1 = isolated individual work without cooperation or communication, to 9 = self-organised group work with regard to the schedule, methods of work, division of work, and an agreement on the task and the goals.
16. Contents of communication. (Content of work-related cooperation/communication). Response alternatives from 1 = no cooperation/communication, to 6 = cooperation/communication for solving problems, and a single solution has to be found in face of different points of view.

Demand on Responsibility

17. Content of responsibility. (Individual responsibility in terms of morally and legally specified liability.) Response alternatives from 1 = no explicitly assigned individual responsibility, to 5 = responsibility for quantity and the quality of employee's own work with consequences for the wages and /or social appraisal. Responsibility for materials, the work process and responsibility for the safety and health of other people.
18. Group responsibility. (Joint responsibility for performance outcome.) Response alternatives from 1 = the responsibility for performance is solely individually based, to 4 = the attribution of responsibilities takes place through a collective appraisal of the individual contributions to the group's performance; the group as a whole is completely responsible for the result.

Cognitive demand

19. Degree of participation. (Level of participation in operational planning processes with regard to the work system.) Response alternatives from 1 = no participation, to 7 = implementing solutions in the practice, selections of solutions, transforming information into solutions, evaluating the information, collection of information, and problem definition and setting objects.
20. Level of mental demands. (Required cognitive performance.) Response alternatives from 1 = work task requires only sensory motor regulation, to 9 = creative thinking process.

Learning Opportunities

21. Use of qualifications. (Rate of the performances that demand for the job expected qualification level). Response alternatives from 1 = the qualification is partly used in the activity, and there is a risk of forgetting qualification areas, to 5 = the qualification is used in the activity, and it is improbable that limited qualification areas are forgotten.
22. Learning potential. (Frequency and content of job-related learning demands.) Response alternatives from 1 = after acquiring the expected qualification, there are no permanent learning demands, to 4 = the activity requires a continuous enhancement of abilities and skills.

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