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Anne Mäkikangas

Personality, Well-Being and Job Resources

From Negative Paradigm towards Positive Psychology

JYVÄSKYLÄN YLIOPISTO

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Tapani Korhonen
Department of Psychology, University of Jyväskylä
Irene Ylönen, Marja-Leena Tynkkynen
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ABSTRACT

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This study examined the development and interaction of a variety of resources related to personality, well-being and job. More specifically, the interconnection between personality resilience (self-esteem, optimism and sense of coherence), its antecedents, stability across time and linkages to different well-being outcomes were investigated. In addition, the longitudinal associations between job resources and well-being as well as the construct validity of the general and job-related subjective well-being scales were studied. This study utilized three different Finnish longitudinal datasets. In Studies I and IV, the data were obtained as part of an interdisciplinary research project, *Economic Crisis, Job Insecurity and the Household*, which was conducted among working-aged people between 1999 and 2000 (n = 640). Studies II and IV were based on the ongoing *Jyväskylä Longitudinal Study of Personality and Social Development* (JYLS) in which children who were 8 years old at baseline (n = 369) have been followed at ages 14, 27, 36 and 42. Study III was based on the ongoing longitudinal project *Positive and Negative Trajectories of Occupational Well-being among Finnish Managers: A 10-year Follow-up Study* (FINNMA-10). In this study longitudinal data from 1996 and 1999 were utilized (n = 615). The main results revealed, firstly, that positive childhood and adolescence experiences, namely child-centered parenting and school success, were the grounds of adult personality resilience development. Secondly, personality resilience constructs showed relatively high rank-order stability and were strongly connected with each other in adulthood. Thirdly, personality resilience was highly related to self-rated psychological well-being, whereas the associations with health behavior or objective health were scarce. Fourthly, satisfaction with different life domains was connected with increasing optimism during adulthood. Finally, feelings of comfort at work were associated with more positive perceptions regarding the supportiveness of the organizational climate. These findings suggest some stability in perceptions of personality and well-being; however, overall the findings lend more support to the resource accumulation hypothesis. To conclude, more attention need to be given to the measurement of different personality resilience constructs. Similarly, reverse causality needs to be better taken into account in occupational health theories.

Keywords: personal resources, personality resilience, well-being, job resources, development, longitudinal study

Author's address Anne Mäkikangas
Department of Psychology
University of Jyväskylä
P.O. Box 35
FIN-40014 University of Jyväskylä
FINLAND
e-mail: anne.makikangas@psyka.jyu.fi

Supervisor group Professor Ulla Kinnunen (main supervisor)
Department of Psychology
University of Tampere, Finland

Professor Lea Pulkkinen
Department of Psychology
University of Jyväskylä, Finland

Docent Taru Feldt
Department of Psychology
University of Jyväskylä, Finland

Docent Saija Mauno
Department of Psychology
University of Jyväskylä, Finland

Reviewers Professor Katri Räikkönen-Talvitie
Department of Psychology
University of Helsinki, Finland

Professor Arnold B. Bakker
Institute of Psychology
Erasmus University Rotterdam, The Netherlands

Opponent Professor Katri Räikkönen-Talvitie
Department of Psychology
University of Helsinki, Finland

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CONTENTS

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1 INTRODUCTION

1.1 Towards positive psychology

The emphasis in psychological research thus far has been on studying ill-health and problems of mental health. For example, according to Schaufeli and Bakker (2004), the ratio between ill-health and well-being in occupational health research has been as high as 15:1. The outcome of this emphasis on mental disorders has been an illness-centered framework for human behavior within which negative outcomes are usually predicted by negative causes, and a lack of mental and physical symptoms is regarded as a sign of health and well-being (Antonovsky, 1987; Schaufeli, Salanova, Gonzáles-Romá, & Bakker, 2002; Seligman, 2003; Seligman & Csikszentmihalyi, 2000; see also Linley, Joseph, Harrington, & Wood, 2006). Because the majority of psychological research has utilized this framework, little is known about positive personal resources and their interaction with each other (Sheldon & King, 2001).

The approach of so-called positive psychology, which emerged at the beginning of the millennium, is based on the premise that the normal functioning of human beings cannot be accounted for purely by an illness-centered framework (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001). The fact is that the majority of people do not suffer from mental health problems and they manage their lives and work reasonably well (see Mäkikangas, Feldt, & Kinnunen, 2005, for a review). According to Seligman and Csikszentmihalyi (2000), the science of psychology should be expanded to explore personal resources, such as positive subjective experiences, personality characteristics and institutions.

The present study addressed these concerns by investigating personal resources from different perspectives and in different areas of life. The main interest of the study lies in the measurement, development, stability and interaction of different personal resources. Here, the term 'personal resources' is defined along the lines suggested by Hobfoll (2002, p. 307), who describes it as "those entities that either are centrally valued in their own right… or act as a means to obtain centrally valued ends". In this study personal resources refer to

1) personality resilience (self-esteem, optimism and sense of coherence), 2) well-being (job-related affective well-being, psychological well-being, physical health and health behavior) and 3) job resources (job control and supportive organizational climate).

The introduction is divided into three subsections. Subsection 1.2 of this introduction presents and compares the main theories on which the study is based. These theories depict the developmental processes behind different personal resources. Subsection 1.3 introduces the personality resilience constructs (i.e., self-esteem, optimism and sense of coherence) investigated in this study. In this section the similarities of these constructs and their well-being associations are presented. Subsection 1.4 focuses on job resources and job-related affective well-being, summarizing the knowledge gained thus far on the relationship between job resources and well-being at work.

1.2 Personal resources: Theoretical views

In this study the development and interaction between different personal resources are dissected from the viewpoint of four theories. These theories are the Conservation of Resources theory (COR theory) (Hobfoll, 1989, 2002; Hobfoll & Shirom, 2001), Broaden-and-Build theory (Fredrickson, 1998, 2001, 2006; Fredrickson & Joiner, 2002), Reserve Capacity model (Gallo & Matthews, 2003) and Homeostatic model (Cummins, 2003; Cummins, Gullone, & Lau, 2002; Cummins & Lau, 2004; Cummins & Nistico, 2002). Each of these theories offers a different and important perspective on the development of personal resources. Moreover, in all these theories, the role of personality characteristics is discussed. The latter is important, because personality characteristics come under the umbrella of personal resources in the present study. For each theory, the basic ideas are presented first, after which the role of personality characteristics in the theory is evaluated.

1.2.1 Conservation of Resources theory

The underlying premise of the COR theory developed by Steven Hobfoll (Hobfoll, 1989, 2002; Hobfoll & Shirom, 2001) is that the prime human motivation is directed towards the maintenance and accumulation of resources. According to this theory, individuals tend to retain, protect and build resources that they value. In this theory, resources are defined very broadly and divided into four categories. According to Hobfoll (1989, 2002), the valued personal resources in western society consist of 1) personality characteristics (e.g., self-esteem, optimism, sense of coherence), 2) conditions (e.g., well-being and health), 3) objects (e.g., socioeconomic status, housing) and 4) energies (e.g., time, money, knowledge).

The COR theory indicates that personal resources are dynamic and change over time; thus, in the central place of the theory are the loss and gain cycles of

resources (Hobfoll, 2002). The idea of cycles is that both the loss and gain of resources are cumulative, that is, an initial loss can trigger a chain of resource depletion (i.e., loss cycle). Alternatively, resources tend to have a knock-on effect and thus generate other resources (i.e., gain cycles). The theory implicates that loss cycles are more powerful and dominate over gain cycles. Loss cycles are also the principal ingredient in the stress process (Hobfoll, 2002; Wells, Hobfoll, & Lavin, 1999). Accordingly, a person experiences stress when valued resources are threatened with loss, lost, or when individuals fail to gain resources after substantial resource investment (Hobfoll, 1989, 2002). However, according to Hobfoll (2002), a strong arsenal of resources has great importance, especially in the context of loss. Consequently, resources are important in at least four ways. Individuals with a strong resource pool 1) are less susceptible to resource loss, 2) will experience fewer negative outcomes in terms of mental and physical well-being, 3) are more capable of problem-solving in stressful situations, and 4) will invest their resources in order to improve their condition and obtain new resources (Hobfoll, 2002).

Additionally, separate resources create developmental pathways which are called resource caravans (Hobfoll, 2002). Here, the idea is that key resources tend to appear together; thus, a person with a high level of self-esteem will also possess high levels of other personality characteristics, such as optimism (Hobfoll, 2002). Besides emphasizing personality as a key resource, the COR theory underlines the role of personality characteristics in gain cycles. According to Hobfoll and his colleagues (Hobfoll, Johnson, Ennis, & Jackson, 2003), personality characteristics are seen as important in the coping process and they refer to individuals' sense of their ability to control and impact upon their environment successfully. Hobfoll (2002) has proposed that these kinds of personality characteristics consist, among others, of self-esteem, optimism and sense of coherence.

1.2.2 Broaden-and-Build theory

In common with the COR theory, the Broaden-and-Build theory concentrates on the accumulation of resources (Fredrickson, 1998, 2001, 2006). The theory postulates that positive emotions broaden people's momentary thought-action repertoires (i.e., some emotions increase the tendency for physical action and some for cognitive activity), and consequently, create openness to new ideas, new courses of action and promote enhanced emotional well-being in the future (Fredrickson, 1998, 2001, 2006; Fredrickson & Joiner, 2002). According to this theory, negative emotions narrow one's attention and thinking, heighten sympathetic activity, and prepare one for specific action (i.e., attack, escape). In contrast, positive emotions broaden one's attention and heighten ordinary ways of thinking and behaving, and in this way undo the harmful effects of negative emotions. Thus, in the long run, positive emotions build resources which according to Fredrickson (1998), can be personal, physical, intellectual and social in their nature. The increment in these different resources is assumed to be long-lasting. On the whole, positive emotions and broadened thought-action

repertoires affect each other reciprocally, producing an upward spiral of resources.

In the Broaden-and-Build theory, personality is considered from the viewpoint of psychological resiliency. The term 'resilience' refers to individual differences in coping and reacting to stressful and demanding situations (Rutter, 1990). The characteristics of a resilient person are positive emotionality, optimism, openness to new experiences and an energetic approach to life (see Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Feldman-Barrett, 2004). According to this theory, positive emotions build psychological resilience which, in turn, helps resilient individuals to cope with, and recover from, demanding and negative emotional experiences (Fredrickson, 1998, 2001, 2006; Fredrickson & Joiner, 2002; Tugade & Fredrickson, 2004; Tugade et al., 2004).

An important issue in the Broaden-and-Build theory is the granularity of positive emotions, which means the extent to which one describes positive emotions in an accurate and specific manner (Tugade et al., 2004). It is assumed that resilient persons may understand the importance of positive emotions and represent their emotional states in a more distinctive way than persons with a low level of resilience. Resilient individuals also utilize this specific emotional knowledge in an active way in the coping process (Tugade et al., 2004). The central implication of emotional granularity is that positive emotions cannot be combined together but, on the contrary, should be classified according to their form and function (Fredrickson, 1998, 2001; Tugade et al., 2004). For example, an individual's interest broadens his or her thought-action repertoire but, at the same time, it also adds to his or her store of knowledge. Another positive emotion, contentment, is an emotional state where a person integrates recent events and achievements into his or her self-concept and worldview, and thus builds on personal resources (Fredrickson, 1998).

1.2.3 Reserve Capacity model

Recently Gallo and Matthews (2003) have presented a Reserve Capacity model which shares similarities with both the COR- and Broaden-and-Build theories. The main idea in this holistic model is to depict the psychosocial pathways along which socioeconomic status (SES) is associated with health. This model is based on extensive research evidence showing a relationship between SES and the levels of different inter- and intrapersonal resources and health (see Gallo & Matthews, 2003). According to the Reserve Capacity model low SES environments offer less possibilities to access and develop different tangible, interpersonal, and intrapersonal resources (Gallo & Matthews, 2003). Consequently, lower SES environments foster higher exposure to stress and thus increase experiences of strain. Overall, lower reserve capacity, together with high exposure and reactivity to stressors, explains the linkages from low SES to health and well-being outcomes.

More specifically, the Reserve Capacity model proposes various processes between low SES and health outcomes (see Gallo & Matthews, 2003). First of all, low SES is assumed directly to influence the individual's exposure to stressful

experiences, thereby eliciting more negative and fewer positive emotions. Both exposure to negative events and increased negative emotions may also have direct effects on physical health and health behaviour. In addition, low SES is associated with lower resource reserves, which do not protect against the harmful effects of different stressors. Further, low resource reserves may also mediate the associations between low SES and emotional and physical health. This model also takes into account the possibility of the reverse association, i.e., the nature of emotions and cognitions may reduce different resources, increase the possibility to appraise different situations more negatively or positively, or cause either positive or negative shifts in SES.

Personality characteristics are one of the main components in the broader resource reserve along with tangible (i.e., financial situation) and interpersonal (i.e., social support and networks) resources. However, the personality characteristics presented in the model (e.g., self-esteem, optimism, personal control) (see Gallo, Bogart, Vranceanu, & Matthews, 2005; Gallo & Matthews, 2003) are depicted as health-protecting resiliency factors that help to cope with different life experiences. Consequently, the Reserve Capacity model resembles the COR (Hobfoll, 1989) and Broaden-and-Build theories (Fredrickson, 1998) in this regard.

1.2.4 Homeostasis model

In contrast to earlier theories, the Homeostasis model developed by Robert Cummins and his colleagues (Cummins, 2003; Cummins et al., 2002; Cummins & Lau, 2004; Cummins & Nistico, 2002) concentrates on the stability of subjective well-being. The theory is based on empirical findings which have indicated that subjective well-being scores (i.e., life satisfaction) show high stability and similarity within and across populations despite widely-differing life conditions (Cummins, 2003). The main idea of the Homeostasis model is that subjective well-being is held under homeostatic control and thus does not vary across its full range. The theory subscribes to the belief that each individual has a set-point for his or her subjective well-being, which is managed by a homeostatic system (Cummins, 2003; Cummins & Lau, 2004; Cummins & Nistico, 2002). Under normal conditions (i.e., when homeostasis is working), an increase or decrease in subjective well-being will be small. However, homeostasis can be defeated (e.g., by illness or a very happy life event) so that during the homeostasis break, these environmental effects will impact on subjective well-being, which will show fluctuation outside of its ordinary range. After the homeostasis break, individuals tend to establish their usual level of subjective well-being. As a consequence of the homeostasis process, the level of subjective well-being is quite stable over time.

Personality characteristics occupy a major position in the homeostasis model because of the importance of in maintaining homeostasis. Thus, personality is responsible for the level of subjective well-being (Cummins & Lau, 2004; Cummins & Nistico, 2002). Core personality traits (neuroticism and extraversion) are the first-order determinants of subjective well-being because

of their relatively high stability and genetic background (Cummins & Lau, 2004). Alongside these, positive cognitive biases (self-esteem, optimism and perceived control), are the second-order determinants of subjective well-being. Together they provide a set-point for subjective well-being (Cummins & Lau, 2004). Thus, subjective well-being varies within the narrow range determined by personality. Self-esteem, optimism and control are important protective factors which help to maintain the level of subjective well-being. For example, when individuals face difficult situations, they use their self-esteem, optimism and control to interpret the events or themselves more positively and, thus, maintain their original level of subjective well-being.

1.2.5 Summary and comparison of the theories

The central aspects of the three theories presented above are compared in Table 1. The core difference between the theories is that the COR theory, Broaden-and-Build theory and Reserve Capacity model view resources as dynamic and cumulative across time, whereas the Homeostasis model assumes that resources (i.e., well-being and personality) are relatively stable over time. Furthermore, the COR theory discusses resources mainly on a general level and does not posit causality between different resources or in the process of resource accumulation (i.e., which resource will lead to another). Compared to the COR theory, the Broaden-and-Build theory explains the mechanism behind the accumulation of resources in more depth and states that positive emotions are causal agents which help to build other resources. These theories emphasize the importance of personality characteristics in maintaining and increasing subjective well-being. The Reserve Capacity model emphasizes the role of the social and financial environment in the development of resources, and thus depicts the psychosocial mechanisms behind resource development more accurately than the other theories. The role of personality is most underlined in the Homeostasis model. However, all these theories accentuate personality resources, especially in the coping process.

The Homeostasis model is very empirically oriented. It is based on research findings showing that the answers on scales of general life satisfaction and job satisfaction are very similar, although there is considerable variation in life and/or work conditions (e.g., Hutton, Atkinson, Judd, Darling, Tran, & Cummins, 2004). The COR theory was originally developed as a stress theory (Hobfoll, 1989) and, due to this emphasis, the majority of the empirical research has concentrated on the study of loss cycles (see e.g., Hobfoll et al., 2003; Holahan, Moos, Holahan, & Cronkite, 1999). However, in recent years the study of gain cycles has increased (see Llorens, Schaufeli, Bakker, & Salanova, 2007; Salanova, Bakker, & Llorens, 2006). The Broaden-and-Build theory is the only theory, which focuses purely on the positive aspects of well-being. The rapidly growing empirical evidence has mainly accrued from experimental study designs (see e.g., Tugade & Fredrickson, 2004). The Reserve Capacity model combines the large amount of research evidence on the relations between SES, resources, emotions and cognitions, and health. In this model the larger societal

context is associated with the stress-theoretical framework. However, the studies concerned with this model have concentrated on negative health and well-being processes. Gallo and Matthews (2003) have suggested that this theoretical framework should also be utilized and tested in the context of positive psychology.

TABLE 1 Comparison of the resource theories

Characteristics	Conservation of Resources theory (Hobfoll, 1989)	Broaden-and-Build theory (Fredrickson, 1998)	Reserve Capacity model (Gallo & Matthews, 2003)	Homeostasis model (Cummins et al., 2002)
Main idea	to explain the process by which resources increase and diminish	to describe how positive emotions lead to increased resources	to explain the psychosocial pathways connecting socioeconomic status and health	to explain why subjective well-being remains stable across time
Core concepts	resources, loss and gain cycles, resource caravans	positive emotions, thought-action repertoire, upward spiral, undoing effect, granularity of positive emotions	socioeconomic status, reserve capacity, cognitive-emotional factors, health	subjective well-being, homeostasis, personality, positive cognitive bias
Resources	cumulative and changeable	accumulative and compoundable	accumulative, changeable	stable, only short-term changes
The role of personality	important; personality characteristics are considered as key resources and crucial in the coping process	noteworthy; resilient individuals utilize positive emotions in the coping process and positive emotions increase resilience	noteworthy; high intrapersonal resources protect from stress and directly increase positive emotions, cognitions and health	salient; personality traits determine the basic level of subjective well-being and positive cognitive buffers sustain that level
Research evidence	increasing	prolific	increasing	moderate
Applicability	wide	moderate	wide	moderate

1.3 Personality as a resource

1.3.1 The structure and overall development of personality

Personality has for many decades intrigued researchers. However, there has not been, nor is there yet, a clear consensus on the definition of personality. Allport (1937, p. 48) offered his well-known definition of personality as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment". However, in recent years, the conception of personality has been widened, and personality is thought to be composed of different levels (see McAdams & Adler, 2006; Roberts & Wood, 2006).

According to the conceptual framework of personality by McAdams and his colleagues (McAdams, 1995; McAdams & Adler, 2006; see also Feldt, Mäkikangas, & Kokko, 2005), personality consists of three levels. Level 1 contains dispositional traits that describe the fundamental and broad differences between persons that in many respects show consistency across different situations and over time (McAdams & Adler, 2006). Level 2 includes characteristic adaptations, i.e., personal motives and goals, which are connected to specific time, situations and social roles. Level 3 – the broadest level of personality – represents integrative and evolving self-defining life stories. This so-called 'narrative identity' reconstructs the individual's past life and also creates the future (McAdams & Adler, 2006).

The question of overall change, continuity and/or stability of personality across time depends on how and what level of personality is depicted. To take the development of personality on level 1, which is the focus of this study, some general principles have been outlined recently (Roberts & Wood, 2006). In contrast to prior theorizing that assumed that personality traits are largely stable after age 30 (McCrae & Costa, 2003; see also Antonovsky, 1987), Roberts and Wood (2006) state that personality retains its plasticity over the life span (see also Caspi, Roberts, & Shiner, 2005). According to the plasticity principle, personality traits are open systems that can change at any age due to interaction with environment. Consequently, personality and life experiences are in a reciprocal relation with each other over the life span, i.e., personality influences and is influenced by social experiences (see also Roberts, Walton, Bogg, & Caspi, 2006; Tennen, Affleck, & Armeli, 2005). Despite their plasticity, personality traits can also be seen to develop through cumulative continuity, i.e., rank-ordering in personality traits increases throughout the life span (Roberts & Wood, 2006). According to the authors maintaining one's identity, continuity in one's roles in general, and investment in social age-graded roles are related to personality stabilization. Furthermore, according to the maturity principle, people become more functionally mature with age, i.e., people become more agreeable, conscientious, and emotionally stable with age (Roberts & Wood, 2006).

In the present study, the focus is on personality characteristics – self-esteem, optimism, and sense of coherence – which all can be reckoned among level 1, according to McAdams' (McAdams, 1995; McAdams & Adler, 2006) classification. Typically, temperament and the Big Five personality traits represent level 1, due to their biological basis and relative high rank-ordering across time (McCrae & Costa, 2003; see also McAdams & Adler, 2006). For example, the stability coefficients for the Big Five personality traits in adulthood (from age 33 to 42) have found to vary from 0.65 to 0.97 (Rantanen, Metsäpelto, Feldt, Pulkkinen, & Kokko, in press). Self-esteem, optimism and sense of coherence have been found to show relative high rank-ordering in adulthood, but in addition to their trait quality, they also possess state aspects (see e.g., Kernis, 2005; Shifren & Hooker, 1995; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; see also Trzesniewski, Donnellan, & Robins, 2003) and are formed by different life experiences. Because of this dual nature, self-esteem, optimism and sense of coherence are seen as trait-like personality characteristics in this study.

In this personality subsection, definitions of self-esteem, optimism and sense of coherence will be given after which the main similarities between these constructs and other personality constructs will be analyzed. Finally, the well-being associations of these constructs will be reviewed.

1.3.2 Definition and development of self-esteem, optimism and sense of coherence

Self-esteem is probably one of the most widely studied personality constructs. To illustrate this, a search of the PsycINFO database identified 18,583 articles referring to self-esteem. The introduction of the construct together with the scale of global self-esteem by Morris Rosenberg (1965), has been followed by a huge body of empirical research and literature relating to it. Overall, self-esteem describes the degree to which one experiences feelings of self-worth (Rosenberg, 1965, 1979). People with high self-esteem respect and accept themselves and are also good at recognizing their own weaknesses and strengths. On the contrary, people with low self-esteem are more likely to be dissatisfied with themselves, deny their own self-worth and have a tendency towards self-deprecation (Rosenberg, 1965, 1979). Self-esteem strongly affects a person's relationships with others, for example the extent to which the person believes he/she will be rejected by another (see Brockner, 1983, 1988).

The development of self-esteem is explained both by genetic factors (Kamakura, Ando, & Uno, 2007) and environmental factors, especially interaction with significant others (i.e., parents, siblings, teachers) (Coopersmith, 1967; Keltikangas-Järvinen, 1994). For example, Keltikangas-Järvinen, Kivimäki and Keskivaara (2003) found that a mother's child-rearing practices influenced subsequent self-esteem, i.e., hostile maternal rearing practices in early adolescence (at ages 6 and 9) predicted the likelihood of low self-esteem six years later. In addition, Heinonen and her colleagues showed that maternal perceptions of child difficult temperament measured at ages 6

and 9 associated with low self-esteem via hostile child-rearing attitudes in early adolescence (at ages 12 and 15) among girls (Heinonen, Räikkönen, & Keltikangas-Järvinen, 2003). Furthermore, the authors showed that perceived difficult temperament at age 12 and 15 predicted lower self-esteem at late adolescence (at age 18) for both genders (Heinonen, Räikkönen, Keskivaara, Keltikangas-Järvinen, 2002). Later, positive and negative life experiences influence self-esteem. For example, progress in university studies has been found to associate with an increase in self-esteem (Salmela-Aro & Nurmi, 2007). Furthermore, difficult work life experiences, such as unemployment (Kokko & Pulkkinen, 1998) and job insecurity (Kinnunen, Feldt, & Mauno, 2003) have found to decrease self-esteem in adulthood.

Substantial fluctuation has been found in the mean level of self-esteem over time. Thus, before ages 7 and 8, the level of self-esteem is typically high, but then decreases during the school years (see Donnellan, Trzesniewski, & Robins, 2006). However, the level of self-esteem typically increases later on. For example, the level of self-esteem increased during university studies (from age 21 to 27) (Salmela-Aro & Nurmi, 2007) and in middle-adulthood (from age 36 to 42) (Pulkkinen, Feldt, & Kokko, 2005). The results of rank-order stability studies show that the stability coefficient for self-esteem has typically been around 0.50–0.60 (Block & Robins, 1993; Trzesniewski et al., 2003; see also Donnellan et al., 2006). The meta-analysis conducted by Trzesniewski et al. (2003) indicated that the rank-order stability of self-esteem was relatively low during childhood (uncorrected test-retest correlation was 0.40) and increased from adolescence (0.48 for ages 12–17) into adulthood (0.65 for ages 22–29 and 0.62 for ages 30–39), indicating that self-esteem became more stable in adulthood. In one recent study the rank-order stability of self-esteem from age 36 to 42 was found to be 0.68 (Kinnunen, Feldt, Kinnunen, & Pulkkinen, in press).

Dispositional optimism refers to the tendency to believe that one will generally experience good vs. bad outcomes in life (Scheier & Carver, 1985, 1992). A person with an optimistic life orientation trusts that things will work out and experiences daily events generally in a positive way (Scheier & Carver, 1985). Similarly, a person with pessimistic life expectancies feels that things will have a more or less negative outcome. Optimism is linked to self-regulation of behavior, meaning that people's actions are influenced by their expectations about the outcomes of their actions (Carver & Scheier, 1998; Scheier & Carver, 1992). People's expectations determine their behavior, i.e., whether to continue striving or to give up (Scheier & Carver, 1992). Accordingly, people with an optimistic life orientation tend to assume that their goals are attainable, and they persist in reaching those goals even in the face of adversity (Scheier & Carver, 1985, 1992).

The development of optimism is assumed to be affected by childhood environment, i.e., favorable early-life experiences (Carver & Scheier, 2003; see also Heinonen, 2004). In fact, Heinonen, Räikkönen and Keltikangas-Järvinen (2005a) showed that perceived difficult temperament at age 3 and 6 predicted maternal hostile child-rearing attitudes three years later, which in turn was

associated with increased pessimism at ages 24 and 27. Further, retrospective reports of childhood adversities (e.g., fear of a family member) or poor parent-child relationships were associated with a lower level of optimism in adulthood (Korkeila et al., 2004). In addition, attachment insecurity in childhood and adulthood has been found to associate with increased pessimism (Heinonen, Räikkönen, Keltikangas-Järvinen, & Strandberg, 2004). Furthermore, low family socioeconomic status in childhood (at ages 3 and 6) has been shown to predict high levels of pessimism in adulthood (at ages 24 and 27) (Heinonen, Räikkönen, Matthews et al., 2006).

Furthermore, the Northern Finland 1966 Birth Cohort Study found that optimism at age 31 was predicted by the wantedness of the child, high socioeconomic status in childhood, good school achievement and high vocational education, and a stable work history (Ek, Remes, & Sovio, 2004). In addition, growth in social networks has found to predict increases in optimism in adulthood (Segerstrom, 2007). One recent longitudinal study also found a reciprocal relationship between parents' optimism and their children (Heinonen, Räikkönen, Scheier et al., 2006). The authors reported that parents' level of optimism positively influenced their ratings of their child's behavior and that parental perceptions of low negative affectivity of the child predicted an increase in parents' optimism and a decrease in pessimism over time. To sum up, the development of optimism happens in reciprocal relations with the environment; in particular, relationship with significant others and success in age-related developmental tasks are important in forming the level of optimism of an individual (see Ek et al., 2004).

Although optimism is formed by life experiences, it is assumed to be relatively stable in adulthood (Scheier & Carver, 1985, 1992). Scheier and Carver (1985) found, during a 4-week period in a student sample, a test-retest correlation of optimism, as measured by the Life Orientation Test (LOT), of 0.79. The test-retest correlations for the revised version, i.e., LOT-R were 0.68 over 4 months, 0.60 over 12 months, 0.56 over 24 months and 0.79 over 28 months (Scheier, Carver, & Bridges, 1994). Furthermore, stability correlations of 0.35 (Segerstrom, 2007), and even as high as 0.71 (Matthews, Räikkönen, Sutton-Tyrrell, & Kuller, 2004) have been found across ten-year follow-ups. In addition, there is some evidence to show that the positive attitude towards the future at age 13 is associated with optimism at age 43 ($\beta = 0.24$) (Daukantaite & Bergman, 2005). At the mean level, some slight increase in optimism was found across a 10-year follow-up in adulthood (Segerstrom, 2007). However, contrary results also exist, for example, Pulkkinen et al. (2005) found that the average level of optimism remained at the same level from the age 27 to 42.

Sense of coherence is a global orientation that expresses the extent to which the environment is perceived and controlled for meaningful and appropriate action (Antonovsky, 1987). An individual whose sense of coherence is high views the world as meaningful, comprehensible and manageable. Meaningfulness refers to the feeling that environmental events are perceived more often as challenges than threats, and that it is worthwhile to engage in

life's challenges. Comprehensibility expresses to what extent an individual perceives situations as cognitively meaningful and predictable, and manageability refers to the extent to which an individual considers coping resources to be available (Antonovsky, 1979, 1987). These aspects of sense of coherence have been found to be strongly interconnected (e.g., Feldt, Leskinen, Kinnunen, & Mauno, 2000; Feldt & Rasku, 1998; Feldt, Lintula et al., 2007). Sense of coherence develops in interaction with the environment. Previously, it has been shown that child-centered parenting, parental socioeconomic status, school success in childhood and adolescence, and stable career line in early adulthood are associated with a high level of sense of coherence in adulthood (Feldt, Kokko, Kinnunen, & Pulkkinen, 2005).

Sense of coherence is assumed to be a stable personality disposition in adulthood. After the formative years, sense of coherence is assumed to stabilize around age 30 (Antonovsky, 1979, 1987). Antonovsky (1979, 1991) has suggested that consistency of life experiences (i.e., the environment is clear and structured vs. disorganized), load balance (i.e., adequate amount of demands in proportion to an individual's resources), and participation in action shaping outcomes (i.e., feeling able to influence life events) are important for the development of sense of coherence. Previous empirical studies – in large point – have investigated the stability of sense of coherence in adulthood. The results have supported the relative stability of sense of coherence: stability coefficients have varied from 0.59 to 0.81 (Feldt, Kivimäki, Rantala, & Tolvanen, 2004; Feldt, Leskinen, & Kinnunen, 2005; Feldt, Lintula et al., 2007). However, the rank-order stability of sense of coherence has been found to be higher among older (over 30 years) than among younger (under 30 years) individuals (Feldt, Lintula et al., 2007). One recent longitudinal study also found that the stability of sense of coherence depended strongly on its level (Hakanen, Feldt, & Leskinen, 2007). Sense of coherence was more stable over 13 years among those with a high level (0.57) than those with a low level of sense of coherence (0.31). Furthermore, the mean level increased over 13 years only among those with a high level of sense of coherence.

1.3.3 Conceptual and empirical similarities

Self-esteem, optimism and sense of coherence share similarities on the conceptual level. Both optimism and sense of coherence represent relatively new health-related personality dispositions that express a person's positive life orientation, and especially the capacity to cope successfully in stressful situations (see Antonovsky, 1987; Scheier & Carver, 1985). Both constructs are cognitively orientated and emphasize one's relation to the outside world. In particular, the manageability component of sense of coherence and optimism closely resemble each other. Optimism is, however, more clearly future-orientated and thus a narrower construct than sense of coherence, which also focuses on present and past.

Self-esteem in general refers to one's affective relation towards oneself, including feelings of self-worth. However, self-esteem can be seen as a source of

optimism and sense of coherence. Accordingly, the source of believing that one is capable and expecting that good things will happen is related to feelings of self-worth (Scheier & Carver, 1992; Wenglert & Rosén, 1995). It has also been proposed that people with low self-esteem are insecure about their abilities, pay more attention to negative than positive situational factors and are more prone and sensitive to negative feedback, all of which lead to low outcome expectancies (Sweeny, Carroll, & Shepperd, 2006). In an empirical study it was found that self-esteem measured in adolescence (at ages 12 and 18) was associated negatively with dispositional pessimism measured in adulthood (at age 33) (Heinonen, Räikkönen, & Keltikangas-Järvinen, 2005b).

Previous studies have shown that, on an empirical level, these personality characteristics are strongly connected to each other. Consequently, the correlation between self-esteem and optimism has varied from 0.33 to 0.80 (Aspinwall & Taylor, 1992; Brissette et al., 2002; Fontaine & Jones, 1997; Mäkikangas & Kinnunen, 2003; Scheier & Carver, 1985; Scheier et al., 1994), between self-esteem and sense of coherence from 0.61 to 0.64 (Johnson, 2004; Pallant & Lae, 2002), and between optimism and sense of coherence from 0.53 to 0.66 (Ebert, Tucker, & Roth, 2002; Gruszczyńska, 2006; Pallant & Lae, 2002).

There are also several other personality constructs that share similarities with self-esteem, optimism and sense of coherence. One such construct is neuroticism (i.e., emotional instability) (see Bono & Judge, 2003; Feldt, Metsäpelto, Kinnunen, Pulkkinen, 2007; Judge & Bono, 2001; Smith, Pope, Rhodewalt, & Poulton, 1989). Persons with a high level of neuroticism are often anxious, guilt-prone, vulnerable to stress, and insecure in their relationships (see Judge & Bono, 2001; McCrae & John, 1992); thus, neuroticism is often manifested by a high level of pessimism and a low level of self-esteem. The empirical connection between these constructs has been high: the correlation between emotional stability (i.e., neuroticism) and self-esteem was 0.64 (see Judge, Erez, Bono, & Thoresen, 2002, for a meta-analysis), between neuroticism and optimism the correlations have ranged from -0.50 to -0.58 (Gruszczyńska, 2006; Scheier et al., 1994) and between neuroticism and sense of coherence the associations have ranged from -0.63 to -0.85 (Feldt, Metsäpelto et al., 2007; Gruszczyńska, 2006). Despite the high correlations, there are studies that have found divergent validity between these constructs. For example, optimism was related to well-being indicators, after neuroticism was partialled out (Scheier et al., 1994).

Other constructs that share similarities with the self-esteem, optimism and sense of coherence are, for example, self-efficacy (Bandura, 1977), locus of control (Rotter, 1966), self-mastery (Pearlin & Schooler, 1978), hardiness (Kobasa, 1979), and hope (Snyder, 1989). Empirical evidence for the associations between these personality constructs has been provided by Judge et al. (2002), Scheier et al. (1994), Scheier and Carver (1985), Gruszczyńska (2006), Maddi and Hightower (1999), Magaletta and Oliver (1999), and Robins, Tracy, Trzesniewski, Potter and Gosling (2001). Of these constructs, self-efficacy is of particular importance. Self-efficacy represents the optimistic self-belief that

one's actions are responsible for successful outcomes in a specific domain (Bandura, 1977). Consequently, this construct has a strong emphasis on the expectation of desired outcomes, and thus shares close associations with optimism and the manageability component of sense of coherence. However, the main differences between these constructs and self-efficacy lie in the breadth of the expectations and also in the role of self-agency. For example, in theory of global optimism (see Scheier & Carver, 1985, 1992), personal efficacy beliefs are only one causal factor out of the many that underlie generalized positive expectations.

1.3.4 Well-being associations

The personality constructs presented above – self-esteem, optimism and sense of coherence – have all been connected with a higher level of well-being. Overall, the previous studies have supported the view that individuals with high ratings in these personality constructs report better psychological and physical health and well-being (see Baumaister, Campbell, Krueger, & Vohs, 2003; Carver & Scheier, 1999, 2002, 2003; Feldt, 2000; Locke, McClear, & Knight, 1996; Scheier, Carver, & Bridges, 2001; Tharenou, 1979, for reviews) and are more satisfied with their lives than persons with low ratings (Cummins & Nistico, 2003; Diener & Diener, 1995; Harju & Bolen, 1998; Røysamb & Strype, 2002). In general, the findings from numerous studies show that individuals with high levels of self-esteem, optimism, and sense of coherence are better adjusted than their counterparts. More specially, all these personality constructs act as buffers that protect well-being and health from different stressors (Chang, 1998a, 2002; Chang & Sanna, 2003; Feldt, 1997; Matthews et al, 2004; Mäkikangas & Kinnunen, 2003).

Overall, self-esteem, optimism and sense of coherence could be seen to promote well-being and health through three different links (see Antonovsky, 1987; Peterson, 2000). First, the strong associations with well-being of these personality constructs could be explained by a link with cognitive appraisal processes (Antonovsky, 1987; Peterson, 2000). Persons with high levels of self-esteem, optimism and sense of coherence may appraise fewer stressors in their environment, react to stressors differently and, especially, use more proactive coping-strategies to handle stressors than others (see also Bolger & Zuckerman, 1995; Gallo & Matthews, 2003; Hobfoll, 2002; Lazarus & Folkman, 1984). In this link, the use of active coping strategies, in particular, may explain positive well-being outcomes. For example, many studies have shown that individuals with high levels of self-esteem, optimism and sense of coherence use active coping strategies (e.g., problem-focused coping). By contrast, individuals lacking self-esteem, optimism and/or sense of coherence have been shown to use more passive forms of coping (e.g., withdrawal, denial) to manage stressful events (see e.g., Aspinwall & Taylor, 1992; Brissette et al., 2002; Carver, Scheier, & Weintraub, 1989; Chang, 1998b; Ebert et al., 2002; Johnson, 2004; Pallant & Lae, 2002; Scheier & Carver, 1985, 1992; Scheier et al., 1994; Scheier, Weintraub, & Carver, 1986).

Second, the positive associations with well-being of self-esteem, optimism and sense of coherence could be explained by a link with health behavior (Antonovsky, 1987; Peterson, 2000). In earlier studies, optimism has found to be related to healthier dietary habits and lower body mass index, and pessimism with alcohol consumption and smoking (Kelloniemi, Ek, & Laitinen, 2005; see also Steptoe, Wright, Kunz-Ebrecht, & Iliffe, 2006). However, the association with health behavior of smoking or alcohol consumption has not shown a consistent association with self-esteem (see Baumeister et al., 2003, for a review) or sense of coherence (Kuuppelomäki & Utriainen, 2003).

Third, personality constructs may promote well-being via physiological link (see Antonovsky, 1987; Peterson, 2000, see also Scheier & Carver, 1987). Of these constructs, the study of optimism has offered the strongest evidence for this connection. For example, pessimism has found to be connected with higher blood pressure (Räikkönen, Matthews, Flory, Owens, & Gump, 1999) and optimism with higher cellular immunity (Segerstrom, 2006). In addition, Matthews et al. (2004) found that optimistic women were less likely to show progression of carotid disease in mid-life than pessimists. However, there all also studies which have failed to show a physiological link with optimism (see Levenson, & Aldwin, 2006; Peterson & Bossio, 2001, for reviews). Furthermore, metabolic syndrome (i.e., the composite variable of dystolic and diastolic blood pressure, glycosylated hemoglobin, HDL and total cholesterol, waist/hip ratio and peak flow) has been associated with low ratings of sense of coherence, particularly with the meaningfulness component (Lindfors, Lundberg, & Lundberg, 2006). Overall, the evidence for physiological link with sense of coherence has been scarce (see Feldt, 2000, for a review).

1.3.5 Accumulation of personality and well-being resources

According to the previous literature, there are many similarities between the personality constructs used in the present study. For example, both Hobfoll (2002) and Cummins and Nistico (2002) have pointed out that these personality constructs have similar associations with well-being and they overlap greatly with each other. Furthermore, in the earlier literature, self-esteem, optimism, and sense of coherence (among other personality constructs) have been labeled as "positive cognitive bias" (Cummins et al., 2002; Cummins & Lau, 2004; Cummins & Nistico, 2002), "personal resilience" (Major, Richards, Cooper, Cozzarelli, & Zubek, 1998; Wanberg & Banas, 2000), "core self-evaluation traits" (Judge & Bono, 2001; Judge, Locke, Durham, & Kluger, 1998), "psychological capital" (Luthans, Avey, Avolio, Norman, & Combs, 2006) and "personality resources" (Hobfoll, 2002).

The self-reported associations with well-being of these constructs have also shown great similarity. For example, the study by Pallant and Lae (2002) analyzed self-esteem, optimism and sense of coherence at the same time, and found that all these constructs had similar correlations with well-being measured in terms of physical (r ranging from -0.27 to -0.44) and mental symptoms (r ranging from -0.31 to -0.51), positive (r ranging from 0.42 to 0.43)

and negative affect (*r* ranging from -0.31 to -0.55), satisfaction with life (*r* ranging from 0.48 to 0.53) and perceived stress (*r* ranging from -0.46 to -0.65). However, despite these similar empirical associations, most previous studies have concentrated on the different associations of these constructs with health and well-being (see e.g., Aspinwall & Taylor, 1992; Ebert et al., 2002; Fontaine & Jones, 1997; Mäkikangas & Kinnunen, 2003; Pallant & Lae, 2002; Scheier & Carver, 1985; Scheier et al., 1994; Wenglert & Rosén, 1995).

For example, Scheier et al. (1994) showed, in a student sample, that optimism was associated with low levels of depression and physical symptoms and with different coping strategies after self-esteem was partialled out. Aspinwall and Taylor (1992) in turn found that both self-esteem and optimism predicted less frequent use of avoidance coping strategies, but only optimism was directly associated with good adjustment to college. On the other hand, Fontaine and Jones (1997) found that low self-esteem remained a predictor of depression when the effect of optimism was controlled for. In the study by Mäkikangas and Kinnunen (2003) self-esteem and optimism both had similar associations with subsequent mental distress, but they moderated slightly differently the relationship between work stressors and well-being outcomes. Analyzing optimism and sense of coherence in the same path model, Ebert et al. (2002) found that optimism was associated with approach coping, whereas sense of coherence was associated with less frequent use of avoidance coping. In addition, optimism was directly associated with psychological well-being, whereas the effect of sense of coherence on well-being was mediated through avoidance coping.

In this study, the purpose is to analyze the associations between personality constructs with an emphasis on their similarity. According to the COR theory (Hobfoll, 2002), it might reasonably be assumed that self-esteem, optimism and sense of coherence are key personality resources which are intertwined with each other in adulthood. Furthermore, all the four major theories used in this study emphasize that these personality characteristics have beneficial effects on well-being, and thus their links with well-being are also investigated. In this study, the term personality resilience will be used as a hypernym for self-esteem, optimism and sense of coherence (see also see Major et al., 1998; Rutter, 1990; Tugade & Fredrickson, 2004; Tugade et al., 2004; Wanberg & Banas, 2000). This term was selected as it emphasizes the health promoting role of these three constructs and their importance in the coping process.

1.4 Resources in the work context

As in psychology in general, so also in work psychology the positive aspects, such as job resources and work-related well-being, have received less research interest than the study of the negative aspects, i.e., job demands, stress, and burnout (see Luthans, 2002ab). In recent years interest in job resources and their

role in work motivation process has, however, increased (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004; Schaufeli et al., 2002). Recent longitudinal research findings have challenged the traditional stress models and raised questions concerning the nature of the associations between job resources and employees' well-being (see De Lange, Taris, Kompier, Houtman, & Bongers, 2003, 2004, 2005).

In this study job-related affective well-being is depict holistically, including both the positive and negative emotions evoked by the psychosocial work environment. One of the major aims of this study was to examine the longitudinal linkages between job resources and positive and negative indicators job-specific affective well-being, as so far these have been rather neglected area of research. In this subsection, the definition of job resources and the causal links between job resources and well-being will be described.

1.4.1 Job resources

According to the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), job resources are physical, psychological, social or organizational aspects of the job that help the individual to cope with job demands, increase learning and development as an employee, and are useful in achieving work-related goals. Job resources have motivational potential because they make employees' work meaningful, hold them responsible for work processes and outcomes, and provide them with information about the actual results of their work activities (cf. Hackman & Oldham, 1980). According to the JD-R model, job resources trigger the motivation process and thus lead to positive well-being (e.g., work engagement, flow) and attitudinal (e.g., satisfaction, commitment) outcomes (see Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004).

In this study, perceived job control and supportive organizational climate were considered as job resources which possess motivational potential. These two work characteristics were selected on the grounds of their theoretical relevance and importance in the work of managers (Noblet, Rodwell, & McWilliams, 2001) who constituted the target group of this sub-study. Job control is one of the main components of the Demand-Control model (Karasek, 1979) and also one of the most investigated job resources (see Van der Doef & Maes, 1999, for a review). Job control refers both to autonomy (i.e., control over the individual's own scheduling and tasks) and to participation in the decision-making process (i.e., control over the organizational decision-making process) (Spector, 1998). High job control has been associated with high levels of job satisfaction, organizational commitment, life satisfaction and job performance (De Cuyper & De Witte, 2006), and low levels of burnout (De Jonge & Schaufeli, 1998; Lee & Ashforth, 1996) and stress symptoms (e.g., frustration, anxiety, psychosomatic symptoms) (Liu, Spector, & Jex, 2005).

Supportive organizational climate, on the other hand, refers in this study to individuals' perceptions of the quality of communication and social support in their work environment. In general, organizational climate refers to similar

and shared perceptions regarding the organization's practices (Hellriegel & Slocum, 1974; Schneider, 1975). These perceptions may relate to affective (i.e., social relationships), cognitive (i.e., individual's involvement in work activities) or instrumental aspects (i.e., task involvement) of organizational practices (Carr, Schmidt, Ford, & DeShon, 2003). In this study, organizational climate was considered as an individual-level construct, which concentrated mostly on the affective component of social relationships. In earlier studies, supportive organizational climate has been related to high psychological well-being (e.g., low levels of burnout, psychological stress, anxiety), to job satisfaction and other favorable work attitudes (e.g., job involvement and organizational commitment) and to high work motivation and job performance (e.g., supervisor or self-ratings) (see Parker et al., 2003, for a meta-analysis).

1.4.2 Longitudinal associations between job resources and affective well-being

The relationship between job characteristics and well-being is one of the most central and widely studied issues in the occupational health literature. The predominant work stress models have hypothesized that the relationship between work characteristics and well-being is unidirectional. Thus, job characteristics have linear (Demerouti et al., 2001; Karasek, 1979) or nonlinear (Warr, 1987) effects on an employee´s well-being, and cause different kinds of physiological, emotional, cognitive and behavioural outcomes. Many studies have found evidence for linear, so-called normal causality (i.e., job characteristics influencing well-being at work) (see e.g., De Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001; Houkes, Janssen, De Jonge, & Bakker, 2003; Ter Doest & De Jonge, 2006). However, recent longitudinal studies have shown that the association between work characteristics and well-being can also be the other way around (i.e., reversed causality), or job characteristics and well-being are in a relationship of mutual influence (i.e., reciprocal causality) (see e.g., De Lange et al., 2003, 2004, 2005; Salanova, Bakker, & Llorens, 2006).

On the theoretical level, the mechanisms behind the reciprocal and reversed causality have been much less discussed than those behind the normal causality view. However, recently has been presented a model with four mechanisms that differently explain the reversed causality findings (De Lange, 2005; De Lange et al., 2004, 2005). The underlying assumption in this model is that an employee's level of psychological well-being is a determinant of these mechanisms. First of all, reversed causal effects may occur due to environmental changes (De Lange, 2005; De Lange et al., 2004). These might occur if one changes one's job, or the content of the job changes, for example, due to promotion. The authors assume that employees with a higher level of psychological well-being will obtain better jobs, and this will lead to a higher level of job resources. This mechanism has been labeled the 'upward selection mechanism'. In contrast, the second mechanism, named the 'drift mechanism' refers to a process where employees with a lower level of psychological well-

being might drift into jobs with a lower level of job resources across time. However, changes in the work environment independent of the employee and his/her well-being may occur, for example work colleagues or managers might change over time.

The reversed causality findings might also be explained by employee perceptual changes (De Lange, 2005; De Lange et al., 2004, 2005). The 'rosy perception mechanism' refers to a situation where energetic employees appraise their perceptions of their work characteristics in a more positive light across time. This mechanism could be also one strategy for coping with and accepting an unfavorable work situation among employees with a lower level of psychological well-being. Negative employee perceptual change – the 'gloomy perception mechanism'– means a process in which the employees evaluate their work characteristics more negatively and for this reason appraise their work characteristics as less favorable over time. For example, employees with low levels of psychological well-being might perceive that their level of social support has declined.

The existence of reciprocal and reversed causal relationships between job resources and employee well-being are consistent with both the COR theory (Hobfoll, 1989, 2002) and the Broaden-and-Build theory (Fredrickson, 1998, 2001). The central idea of the COR theory is that resource gain occurs in cycles. Consequently, those employees who gain more job resources will also gain a higher level of well-being at work, and thus job resources and well-being increase each other. In relation to the Broaden-and-Build theory, positive affective states such as comfort and enthusiasm broaden an individual's momentary thought-action repertoires and assist in building an his or her enduring personal resources, in this case increased job resources.

1.4.3 Affective well-being at work

There are many broad conceptualizations of work-related well-being, and the question of how subjective well-being at work should be measured and understood is a complicated one. Affective well-being is one of the core aspects of subjective well-being at work. Overall affective well-being can be considered to be the core of mental health (Keyes, 2005), and it can be defined as a subjective estimation of whether a person is feeling well or unwell (Warr, 1987). However, along with affective well-being, motivational aspects, such as aspiration, autonomy and competence also are involved in occupational well-being (Warr, 1987). In addition, social well-being (i.e., environmental mastery, quality of social functioning), cognitive well-being (i.e., cognitive weariness) and psychosomatic (i.e., symptoms of distress) well-being are components of work-related well-being (Van Horn, Taris, Schaufeli, & Schreurs, 2004).

In this study well-being at work is dissected from the perspective of job-related affective well-being. This job-specific construct is defined and categorized in the light of Peter Warr's (1987, 1990a, 1994) theoretical model, which takes into account both the positive and the negative feelings caused by the work environment. In this theoretical model, all job-related affective states

can be classified into four categories according to pleasure and arousal: high- (i.e., anxiety) and low-arousal (i.e., depression) unpleasant affective states and high- (enthusiasm) and low-arousal (i.e., comfort) pleasurable affective states. In earlier research, anxiety and comfort have been combined together with the implication that they represent end-points of the same phenomenon (see Jeurissen & Nyklíček, 2001; Warr, 1990b). According to positive psychology, positive and negative constructs should not be measured by the same items (e.g., a lack of symptoms should not be regarded as a sign of well-being) (see e.g., Schaufeli et al., 2002). Besides, as Fredrickson (1998, 2001) suggested, positive emotions cannot all be combined together, because their meanings and functions differ.

Consequently, one of the major aims of this study was to investigate the longitudinal associations between work characteristics and job-specific affective well-being, which is considered to be one of the major goals in occupational health research (Taris & Kompier, 2003). Since most of the earlier studies have utilized cross-sectional study designs, this study contributes to the existing literature by investigating extensively the longitudinal linkages between job resources and job-related affective well-being. Alongside normal causality, reciprocal, reversed and curvilinear (i.e., too little or too much of some specific job resource affects well-being adversely) associations between job resources and well-being are also analysed. In addition, in contrast to earlier studies, both the positive and negative affective states of work-related well-being are examined at the same time in the same study.

1.5 Aims of the present study

The main aims of this study were to examine 1) the stability and accumulation of personality resilience (i.e., resource caravans according to Hobfoll, 2002), 2) their positive connections with different well-being outcomes as expected on the basis of the COR (Hobfoll, 1989) and Broaden-and-Build theories (Fredrickson, 1998) and the Reserve Capacity model (Gallo & Matthews, 2003), 3) the stability (i.e., homeostasis) of well-being measured in terms of job-related affective well-being, psychological well-being and physical health (see Cummins & Nistico, 2002), and 4) the accumulation between job resources and job-related affective well-being according to the COR and Broaden-and-Build theories. Thus, the main underlying research question was whether it was possible to consider the accumulation of resources according to the COR and Broaden-and-Build theories and the Reserve Capacity model, or whether homeostasis better described the situation behind the development of resources.

The specific aims of the present study were to investigate:

(1) The relationships, development and stability of personality resilience (i.e., self-esteem, optimism, sense of coherence) in adulthood (Studies I, II, III)
(2) The relationships between personality resilience (i.e., self-esteem, optimism and sense of coherence) and well-being (job-related affective well-being, psychological well-being, physical health and health behavior) (Studies I, II, III)
(3) The linkages between job resources (i.e., job control, supportive organizational climate) and job-related affective well-being (Study III)
(4) The rank-order stability of well-being across time (job-related affective well-being, psychological well-being, physical health) (Studies I, II, III, IV)

The conceptual framework of the study with the main constructs and the examined associations (in Studies I–IV) is illustrated in Figure 1.

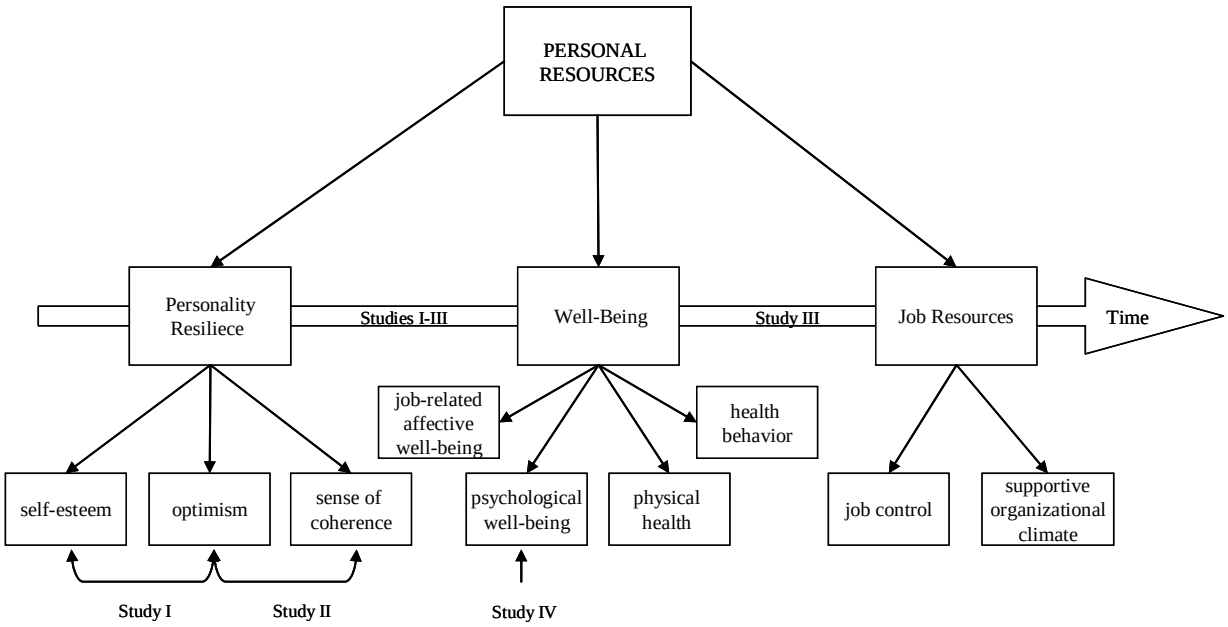

FIGURE 1 The framework of the study

2 METHOD

2.1 Participants and procedure

The study was based on three different Finnish longitudinal datasets. In Studies I and IV, the data were obtained as part of an interdisciplinary research project *Economic Crisis, Job Insecurity and the Household*. The random sample (n = 1978) was selected from the files of the Finnish Population Register Center in 1999, and restricted to working-aged people between 25 and 59 years. Postal questionnaires were sent to the randomly selected sample in Spring 1999. In Spring 2000 the questionnaires were sent to those individuals who had answered in 1999. Responses were received in 1999 from 851 people (response rate 45%) and in 2000 from 655 people (response rate 77%). At the first measurement time, the respondents (n = 851) and the non-respondents (n = 1027) did not differ in terms of gender, age, marital status and geographical location (Kinnunen et al., 2000).

Study I was based on the answers of the employed persons who participated in both phases of the study (n = 457). Information on the attrition in sample is given in the original article (see Mäkikangas, Kinnunen, & Feldt, 2004). Study IV was partly based on the responses of the persons who participated in both phases of the study (n = 640), being employed was no longer a criterion. The attrition analysis concerning this sample is also given in the original article (Mäkikangas et al., 2006).

Study II and in part Study IV were based on the ongoing *Jyväskylä Longitudinal Study of Personality and Social Development* (JYLS). The JYLS started in 1968, since then the same participants have been followed over 30 years. The original sample consisted of 369 second-grade pupils from 12 entire school classes randomly selected from urban and suburban elementary schools in Jyväskylä. The main data collection phases were at ages 8, 14, 27, 36 and 42. At ages 27, 36 and 42, the participants filled in postal Life Situation Questionnaires. They were also interviewed, during which time they filled in several self-administrated questionnaires. A medical examination was performed by a physician when the participants were 42 years old. There was no initial attrition

in the sample and the follow-up attrition rates have been low (Pulkkinen et al., 2005). At age 42, the participants were representative of the original sample in terms of demographics (gender, marital status, education, occupational status) and health indicators. Furthermore, at age 42, the male participants represented their age cohort (born in 1959) in terms of marital status, level of education and occupational status. On average, white-collar workers were over-represented and blue-collar workers under-represented among the female participants, when compared to their age cohort (Pulkkinen et al., 2005).

Study II utilized school register data at age 14 (n = 346), the postal questionnaires and the questionnaires filled in during the interview at ages 27 (n = 321), 36 (n = 313) and 42 (n = 285), including information about personality characteristics, self-rated well-being, and the medical examination at age 42 (n = 241). Study IV was based on the responses of the participants who filled in the postal questionnaire, including the General Health Questionnaire (GHQ-12) at age 36 and 42 (n = 330). The attrition analysis of the GHQ data is presented in the original article (Mäkikangas et al., 2006).

Study III was part of the ongoing longitudinal project *Positive and Negative Trajectories of Occupational Well-being among Finnish Managers: A 10-year Follow-up Study* (FINNMA-10). The original sample of 2000 managers was drawn form the membership registers of the Union of Technical Employees (sample size 1000) and from the Union of Professional Engineers (sample size 1000). A postal questionnaire was sent to the selected participants´ home addresses in spring 1996. Three years later, in spring 1999, questionnaires were sent to those respondents who had participated in the first study phase. Answers were received in 1996 from 1035 person (response rate 64%) and in 1999 from 637 (response rate 70%). There was no attrition in the longitudinal sample in regard with gender, age, sense of coherence or main job resources (job control, supportive organizational climate) (Feldt et al., 2004; Feldt, Mäkikangas, Hyvönen, Kinnunen, & Kokko, in press). Study III utilized the answers of the managers employed full-time and participating in both phases of the study (n = 615).

2.2 Measures

Detailed information on the measures used is provided in the original articles, thus, only a brief summary is given here. The measures which were not based on well-known validated scales, or were used only in Study II, are described in more detail. The measures used are grouped into three categories: 1) personality resilience, 2) well-being, and 3) job resources. In addition to these, several control and background variables were used (i.e., gender, age, school success, child-centered parenting, parental socioeconomic status, occupational position, managerial position).

2.2.1 Personality resilience

In study I *self-esteem* was measured by using the 10-item Rosenberg's (1965) Self-Esteem Scale (RSES) and *optimism* was measured with the 6-item Life Orientation Test-Revised (LOT-R) (Scheier et al., 1994). In Study II, *optimism* was measured via five items derived from questionnaires used in the JYLS: 1) "I believe that I can influence my development" (1 = strongly disagree, 4 = strongly agree), 2) "Do you feel that you can affect the changes in your life?" (1 = not at all, 4 = very much), 3) "I believe things will turn out fine" (1 = strongly disagree, 4 = strongly agree), 4) "I am able to make my goals come true" (1 = strongly disagree, 4 = strongly agree), 5) "Are your expectations of the future, generally speaking?" (1 = very pessimistic, 4 = very optimistic). In studies II and III *sense of coherence* was measured by using the 13-item Orientation to Life Questionnaire (OLQ) (Antonovsky, 1987).

2.2.2 Well-being

Psychological well-being scales. In studies I and IV self-reported *mental distress* was measured by using General Health Questionnaire (GHQ-12; Goldberg, 1972). In study II Depression Scale of the General Behavior Inventory (GBI; Depue, 1987) was used to measure self-reported *depression.* The participants were asked to answer questions such as "Have there been periods of time when you felt a persistent sense of gloom?" on a 4-point frequency-scale (1 = never, 4 = very often). In Study II *psychological well-being* was measured by a 18-item Ryff's (1989) scale. The participants were asked to indicate their agreement, on a scale of 1 (totally disagree) to 4 (totally agree), with statements such as "Some people wander aimlessly through life, but I am not one of them". In study II *life satisfaction* was measured by five questions: "How satisfied are you with your… 1) occupational selection, 2) work, 3) leisure, 4) living, and 5) housing?". The answers were given on a 4-point scale (1 = very unsatisfied, 4 = very satisfied). In study III *job-related affective well-being* was measured with Warr's (1990a) 12-item scale.

Physical symptoms were measured by the 10-item Physical Symptoms Inventory (PSI; Spector & Jex, 1998) in Study 1. In study II Aro's (1988) checklist of 18 symptoms (e.g., muscular pain, headache) was used as a measure of *psychosomatic symptoms*. The participants were requested to answer each item on the basis of their experiences over the previous six months, using a 4-point scale ranging from 1 (never) to 4 (very often).

Health behavior. In study II *drinking behavior* was assessed by annual use of alcohol, a 4-item alcoholism screening test CAGE (Cutting down, Annoyance by criticism, Guilty feeling, and Eye-openers; Ewing, 1984) and the 9-item Malmö modification of the brief Michigan Alcoholism Screening Test (Mm-Mast; Kristenson & Trell, 1982) in Study II. *Current smoking habits* were measured by asking: "Do you smoke or have you ever smoked?" and categorised as 0) never smoked, 1) given-up smoking, 2) smoke occasionally, 3) smoke daily.

Objective health indicators. In study II *metabolic syndrome* which is a well-known risk factor for cardiovascular disease and diabetes (Alberti & Zimmet, 1998) was measured by a composite variable comprising 1) high-density lipoprotein, 2) triglycerides, 3) systolic and 4) diastolic blood pressure, 5) plasma glucose and 6) waist circumference (Alberti, Zimmet, & Shaw, 2005; Ford, Giles, & Dietz, 2002).

2.2.3 Job resources

Job control was measured via four items (Feldt, & Ruoppila, 1993; see also Feldt et al., 2004, Feldt, Mäkikangas et al., in press), i.e., to what extent the current job offered: 1) independence, 2) responsibility, 3) opportunities to use one's own skills and 4) control over one's own work. Answers were given on a 5-point scale (1 = not at all, 5 = very much). *Supportive organizational climate* was measured using four items (Lehto, 1991; see also Feldt et al., 2004, Feldt, Mäkikangas et al., in press): 1) "Our workplace is dominated by an atmosphere of openness and solidarity", 2) "We have free-flowing communication in our workplace", 3) "In difficult tasks I can call on the assistance of my co-workers", 4) "We operate openly and constructively in our workplace". Answers were rated on a 5-point scale ranging from 1 (totally agree) to 5 (totally disagree). The scale was reverse-scored, so that a high score indicated a good organizational climate.

2.3 Data analyses

In all four studies, confirmatory factor analysis (CFA) and structural equation modelling (SEM) conducted via the LISREL (Jöreskog & Sörbom, 1996) or Mplus (Muthén & Muthén, 1998-2003) programs were the primary methods of analysis. The major goals were to test alternative confirmatory factor analysis models (Studies I-IV), the invariance of the factor structures across time (Studies III, IV), the rank-order stability of personal resources (Studies I-IV), and the cross-lagged connections across time (Studies I, III). Thus, the CFA and SEM were the best methods of analysis for these research purposes. Besides these, a Latent Growth Curve analysis (LGC; Duncan, Duncan, Stryker, Li, & Alpert, 1999) was used in Study II in order to describe and explain individual differences in development over time and to study developmental dynamics between personality and well-being. Possible mean level changes across time were analysed by using multivariate analysis of variance (MANOVA) (in Study I) and LGC-analysis (in Study II). A summary of the participants, variables and data analysis is presented in the Table 2.

TABLE 2 Summary of the participants, variables and data analyses used in Studies I – IV

	Participants	*Variables*	*Data analysis*
Study 1	*Economic Crisis, Job Insecurity and the Household* (*n* = 457) • 49% women • average age 45 in 1999 • 93% full-time • 89 % permanent employees	*Control variables* - age, occupational position *Personality resilience* - self-esteem (α = .86-.88) - optimism (α = .73-.81) *Well-being outcomes* - mental distress (α = .89-.93) - physical symptoms (α = .81-.83)	Pearson correlations [equity test of correlations based on z-transformation]; MANOVA; CFA and SEM [maximum likelihood, (ML), listwise deletion, multigroup-method]; χ^2 – difference test
Study II	*JYLS* At age 14 (*n* = 346) • 47% women • Parental socioeconomic status: 55% blue collar, 31% lower white-collar, 13.5% upper white-collar At age 27 (*n* = 321) • 48% women At age 36 (*n* = 311) • 48% women At age 42 (*n* = 285) • 47% women • 82.5% employed • 64% vocational school or vocational college education	*Background variables* - gender, parental socioeconomic status, child-centered parenting, school success *Personality resilience* - optimism (α = .66-.76) - sense of coherence (α = .82) *Well-being outcomes* - depression (α = .93) - psychosomatic symptoms (α = .78) - psychological well-being (α = .73) - life satisfaction (α = .56-.63) - health behavior: smoking, alcohol consumption (CAGE α = .84, MmMast α = .74) - metabolic syndrome	Pearson correlations; CFA, Saturated Simplex Modelling and LGC [robust maximum likelihood (MLR), missing data method]
Study III	*FINNMA-10* (*n* = 615) • employed, full-time managers • 94% men • Average age 43.7 in 1996 • 9% upper level, 56% middle level, and 35% lower level managers • 55% engineers, 28% technicians, 17% other technical employees	*Control variables* - age, gender, managerial level *Personality resilience* - sense of coherence (α = .84-.86) *Job resources* - job control (α = .75-.80) - supportive organizational climate (α = .83) *Well-being outcomes* Job-related affective well-being - anxiety (α = .74-.78) - comfort (α = .80-.83) - depression (α = .83-.85) - enthusiasm (α = .82-.85)	CFA and SEM [maximum likelihood (ML), pairwise deletion]; χ^2 –difference test

TABLE 2 (*continued*)

	Participants	*Variables*	*Data analysis*
Study IV	*Economic Crisis, Job Insecurity and the Household* (*n* = 640) • 51% women • average age 45 • 77.5% employed • 30% vocational school education *JYLS* (*n* = 330) • 47% women 76% employed at age 36 • 32% vocational school education at age 36	*Well-being outcome* Mental distress: - Anxiety/depression (α = .79-.84) - Social dysfunction (α = .81-.88) - Loss of confidence (α = .84-.89)	CFA and SEM [robust weighted least squares (WLSMV), missing data method]; Satorra-Bentler scaled χ^2-difference test

3 OVERVIEW OF THE ORIGINAL STUDIES

Study I
Mäkikangas, A., Kinnunen, U., & Feldt, T. (2004). Self-esteem, dispositional optimism, and health: Evidence from cross-lagged data on employees. *Journal of Research in Personality*, *38*, **556–575.**

The purpose of Study I was, first, to investigate the interrelation of self-esteem and optimism; second, to study their rank-order stability; and third, to examine the cross-lagged relationships between self-esteem, optimism and self-reported well-being (i.e., mental and physical symptoms) over a one-year time period among a sample of employees (n = 457). It was hypothesized that self-esteem and optimism would compose a single latent construct of personality resilience and that personality resilience would show relatively high rank-order stability over one year. In addition, it was expected that personality resilience would be more strongly related to mental than physical symptoms.

The CFA-based results showed that self-esteem and optimism shared a considerable amount of common variance (ψ = 0.90 at Time 1 and ψ = 0.87 at Time 2) and, in line with the hypothesis, they formed a single global construct of personality resilience. This means that the positive evaluations that individuals hold about themselves and towards the world were highly connected with each other in adulthood. The SEM findings further indicated that the stability coefficient of the global construct of personality resilience was 0.86 over one year. This means that these positive evaluations about self and future showed high rank-order stability across time, supporting the hypothesis. In addition, mental and physical symptoms also showed some rank-order stability across the one-year period; e.g., the stability coefficient of physical symptoms was 0.71. Furthermore, according to the hypothesis, it was found that personality resilience was associated with fewer mental and physical health symptoms. High personality resilience was beneficial, especially from the viewpoint of mental well-being, as it was strongly associated with both concurrent and subsequent low levels of mental symptoms. In addition, it was found that earlier physical symptoms were associated with increasing mental symptoms one year later.

Study II

Feldt, T., Mäkikangas, A., & Aunola, K. (2006). Sense of Coherence and Optimism: A More Positive Approach to Health. In L. Pulkkinen, J. Kaprio, & R. J. Rose (Eds.), ***Socioemotional Development and Health from Adolescence to Adulthood*** **(pp. 286–305). Cambridge Studies on Child and Adolescent Health. New York: Cambridge University Press.**

The aim of Study II was to investigate the antecedents, development and consequences for well-being of the personality resilience constructs – optimism and sense of coherence – by using the data from the JYLS. The first aim was to analyse the association between optimism and sense of coherence. The second aim was to look at the antecedents of adult optimism in adolescence and to investigate how optimism develops across adulthood (from age 27 to age 42). The third aim was to investigate the relationship between personality resilience and different well-being outcomes, paying special attention to the dynamics of developmental interaction between optimism and life satisfaction. In this study it was assumed that optimism and sense of coherence would form a latent construct of personality resilience. Furthermore, it was expected that optimism would be stable in adulthood. In addition, it was hypothesized that optimism and sense of coherence would be more strongly associated with psychological well-being, than health behavior or objective indicators of health.

First of all, the SEM analysis showed that optimism and sense of coherence were highly connected with each other ($\psi = 0.66$), although the correlation was not high enough allow the conclusion to be drawn that they are identical personality constructs. Consequently, the hypothesis was only partially supported. Of the family and school background variables, child-centered parenting and school success (measured as grade point average, GPA) at age 14 were associated with high levels of optimism at age 27. However, among participants with a lower GPA at age 14, the level of optimism increased more from ages 27 to 36, when compared to that of individuals with a higher GPA. In addition, those individuals who had perceived their parents as child-centered at age 14, were more likely to show an increase in their level of optimism from ages 27 to 36.

Furthermore, on the basis of the SEM analysis, the rank-order stability of optimism was found to be high in adulthood, especially from ages 36 to 42 (stability coefficient 0.75). In addition, the LGC analysis indicated that no mean level changes occurred from ages 27 to 42. However, there was significant individual variation in the level of optimism as well as in the linear rate of growth within it. These results indicate that despite the stability in mean level and rank-ordering, there were individual trajectories in optimism across time.

A high sense of coherence was connected more strongly with a low level of psychological ill-health (i.e., depression, psychosomatic symptoms), whereas optimism was associated strongly with psychological well-being and life satisfaction. In addition, sense of coherence was linked to positive health behavior (no smoking and low alcohol consumption), but health behavior associations with optimism were weak. Neither of these personality resilience

constructs showed any association with the objective health measure of metabolic syndrome. Furthermore, the results based on the LGC analysis further showed that high levels of life satisfaction (measured as satisfaction with occupational choice, work, leisure, living and housing) were associated with an increase in optimism from ages 27 to 42. Thus, the hypothesis that optimism and sense of coherence would show stronger associations with psychological well-being than with objective health indicators gained support.

Study III

Mäkikangas, A., Feldt, T., & Kinnunen, U. (in press). Warr's scale of Job-related affective well-being: A longitudinal examination of its structure and relationships with work characteristics. ***Work and Stress*****.**

The main aim of Study III was to test the linear and curvilinear longitudinal associations between work characteristics and job-related affective well-being using three-year longitudinal data on managers (n = 615). First, the factor structure and its invariance across time and, second, the rank-order stability of job-related affective well-being and sense of coherence were tested. Third, the curvilinear and cross-lagged relationships between job resources and job-related affective well-being were analyzed. It was expected, first, that job-related affective well-being scale would consist of four interrelated factors, namely, anxiety, comfort, depression and enthusiasm. It was further hypothesized that the rank-order stability of these job-related affective well-being factors would be low across the three-year period. Moreover, the non-linearity, normal causality, reversed causality and reciprocal causality hypotheses were tested.

The CFA- and SEM-based results showed that the job-related affective well-being scale separated the aspects of well-being and unwell-being, and also the dimensions within, namely, anxiety, comfort, depression and enthusiasm. This factor structure was found to be relatively invariant across time. Thus, the hypothesis of the four-factor structure gained support. Contrary to the hypothesis, the rank-order stability of these dimensions across the three years was relatively high (completely standardized stability coefficients varied between 0.65 and 0.71). Also, sense of coherence was found to be stable over time, i.e., the completely standardized stability coefficient was 0.73. The findings concerning the cross-lagged relationships between job resources and job-related affective well-being supported the reversed causality hypothesis: high feelings of comfort at work were longitudinally associated with a positive perception of the supportiveness of the organizational climate. The job resources included in this study (job control and supportive organisational climate) did not serve as antecedents of job-related affective well-being during the follow-up. In addition, there were no cross-sectional or longitudinal curvilinear associations between work characteristics and job-related affective well-being.

Study IV

Mäkikangas, A., Feldt, T., Kinnunen, U., Tolvanen, A., Kinnunen, M-L., & Pulkkinen, L (2006). The factor structure and factorial invariance of the 12-item General Health Questionnaire (GHQ-12) across time: Evidence from two community-based samples. ***Psychological Assessment, 18*****, 444–451.**

The main purpose of Study IV was to investigate the validity of the General Health Questionnaire with 12-items (GHQ-12). The construct validity of the GHQ-12 was investigated by examining the factor structure, its invariance across time and the rank-order stability of the instrument by using one-year (n = 640) and six-year (n = 330) longitudinal samples. It was hypothesized that the GHQ-12 would consist of three interrelated factors (i.e., anxiety/depression, social dysfunction, and loss of confidence) and that this structure would be invariant across time. It was further assumed that the rank-order stability of the GHQ factors would be low across time because the scale is intended to measure short-term changes in mental well-being.

As a result of CFA, the correlated three-factor model (i.e., anxiety/depression, social dysfunction and loss of confidence) showed a better fit with both samples than the alternative models. Thus, according to the hypothesis, the scale consists of three dimensions which capture 1) mental problems, 2) psychological health and social functioning, and 3) feelings towards the self. The SEM results showed that this structure was also relatively invariant across time in both samples, which indicates that the scale has good construct validity. It was further found, in line with the hypothesis that the standardized stability coefficients of the obtained factors varied between 0.45 and 0.61 across the one-year and between 0.25 and 0.39 over the six-year period. Consequently, these low rank-order stabilities suggest that GHQ-12 measures temporal mental state and that it is not a measure of long-term mental well-being.

4 DISCUSSION

4.1 Main findings from the viewpoint of personal resource theories

The major goal of the present study was to examine the associations between different personal resources i.e., personality resilience, well-being and job resources. The main question underlying this study was whether it is possible to observe an accumulation of personal resources, or whether the longitudinal trend behind them would be better described by homeostasis and stability.

The main findings of the study were firstly that the personality resilience constructs (i.e., self-esteem, optimism and sense of coherence) tend to manifest together. For example, the higher the level of self-esteem, the higher the level of optimism. Secondly, perceptions of personal resources in adulthood (i.e., personality resilience, well-being and job resources) showed a relative high rank-ordering across time. Thirdly, the results revealed that positive experiences in childhood and adolescence (child-centered parenting, school success) laid the foundation for adult optimism, whereas in later adulthood, satisfaction with different life domains influenced the level of optimism. Fourthly, personality resilience was related to better self-reported well-being, whereas the associations with health behavior and with objective health were scarce. Fifthly, it was found that positive emotions at work were associated with job resources, supporting the reversed causality hypothesis. More specifically, comfort, including feeling relaxed, calm, and contented, was associated with improved organizational climate three years later.

The main findings regarding personality resilience constructs suggest that self-esteem, optimism and sense of coherence could, following Hobfoll's (2002), be seen as key resources and leaders of resource caravans. According to Hobfoll (2002), personality resilience constructs tend to appear together and also the draw other personal resources, such as high well-being, with them. Thus, the gain cycles proposed by the COR theory were supported (Hobfoll, 1989, 2002). In addition, in the present study, the personal resource measurements showed a

notable rank-order, reflecting some consistency in how personal resources were perceived across time. These findings in part support the Homeostasis model (Cummins, 2003; Cummins & Lau, 2004; Cummins & Nistico, 2002), which suggests that personal resources are rather stable despite differing life conditions.

In line with the Reserve Capacity model (Gallo & Matthews, 2003), high socioeconomic status in adulthood was associated with higher levels of the personal resiliency constructs and positive affective well-being (i.e., enthusiasm). However, socioeconomic status in childhood did not predict the development of optimism in adulthood, whereas the other factors – school success and a safe and supportive environment in childhood – did. Thus, it could be that these other factors buffer from the harmful effects of low SES. Earlier results have also suggest that good parent-child relationships are important for development of optimism, especially in situations characterised by psychosocial or financial difficulties (Korkeila et al., 2004).

It is possible to interpret the results concerning reversed causality on the basis of Fredrickson´s (1998, 2001) Broaden-and-Build theory. According to this theory, positive emotions broaden people's momentary thought-action repertoires and, as a result, create openness to new ideas and new courses of action, thereby enhancing emotional well-being in the future. Fredrickson (1998) emphasized that having feelings of comfort does not mean passivity but on the contrary, it makes self-reflection possible. In the work context, comfort seems to create more openness to communication and constructive co-operation.

Overall, the associations between different personal resources (personality resilience, well-being and job resources) favoured the personal resources as accumulative rather than stable and homeostatic. On the basis of this study, the gain cycles and upward spirals proposed by the COR theory (Hobfoll, 2002) and Broaden-and-Build theory (Fredrickson, 1998, 2001, 2006) can been seen as a chain, showing how optimism developed over time and how it was associated with psychological well-being, which in turn increased the further level of optimism. These positive associations of well-being with personality resiliency are also underlined in the Reserve Capacity model (Gallo & Matthews, 2003). Basically, the results were more in line with the COR (Hobfoll, 1989, 2002), Broaden-and-Build theory (Fredrickson, 1998, 2001) and Reserve Capacity model (Gallo & Matthews, 2003) than with the Homeostasis model (Cummins, 2003; Cummins et al., 2002; Cummins & Lau, 2004; Cummins & Nistico, 2002). The results are also, of course, partly related to the statistical methods used. For example, a statistical method like SEM is used, the stability across time is usually found. However, when the used methods are more oriented to capturing change, like LGC-analysis, then more support for the personal resources as cumulative is likely to be detected.

4.2 The accumulation, stability and well-being associations of personality resilience

The personality resilience constructs studied here showed strong associations with each other in adulthood, especially the connection between self-esteem and optimism was very strong. The latent factors of self-esteem and optimism showed correlations with each other of between 0.87 and 0.90, and such a strong association as this was best explained by a core construct of personality resilience. Empirical evidence exists to show that self-esteem measured in adolescence (at age 12 and 18) is associated negatively with pessimism in adulthood (at age 33) (Heinonen et al., 2005b). The present study, too, showed that these constructs measured among adults with an average age of 45, were strongly connected with each other. It has been proposed earlier that believing that one is capable and expecting that good things will happen (i.e., optimism) is related, among other possible factors, to feelings of self-worth (Scheier & Carver, 1992; Sweeny et al., 2006; Wenglert & Rosén, 1995). The strong link observed between self-esteem and optimism offers further support for these discussions.

As expected on the basis of earlier studies (Ebert et al., 2002; Gruszczyńska, 2006; Pallant & Lae, 2002), the connection between optimism and sense of coherence was also strong, i.e., the association between the latent factors was 0.66. However, the connection was not as strong as the connection between self-esteem and optimism, and therefore these constructs cannot be seen to represent the same core construct. Although both optimism and sense of coherence are important aspects of personal resilience, there are some major differences in their definition and measurement. First of all, sense of coherence is a multiple-component construct, where comprehensibility describes the cognitive aspect (i.e., what to do), manageability, the instrumental aspect (i.e., able to do) and meaningfulness the motivational aspect (i.e., why to do) of the construct (Antonovsky, 1987; see Feldt, 2000). Of these components, optimism resembles closely only with manageability, i.e., whether one thinks one is able to do something in the future. In addition, the time reference of the optimism and sense of coherence scales differs. In the optimism scale, the emphasis is on the future, whereas in the 13-item SOC scale, it is on the past and present. However, the longer version of the sense of coherence scale (i.e., 29-items) also includes questions concerning the future. Therefore, a stronger correlation with optimism might be found if the longer version of the sense of coherence scale is used.

Personality resilience showed relatively high rank-order stability across time, as was expected. For example, the stability coefficient for self-esteem was 0.80 and for optimism 0.81 during a one-year period, and for sense of coherence 0.73 across three years. When analysing the stability of optimism over a longer time period, it was found that optimism stabilised in adulthood. Thus, during a nine-year period (from age 27 to 36), the stability of optimism was 0.56, and

later, from age 36 to 42, it rose to 0.75. There were no mean level changes evident in optimism during age 27 to 42 years. These results suggest that the perceptions individuals hold about themselves are relatively stable in adulthood and thus, represent cumulative continuity as argued by Roberts and Wood (2006). Although the rank-order stabilities of all these personality constructs were high, it has to be taken into account that the first measurement explained the highest 66% of the latter measurement. Such a high proportion of the explained variance shows that other factors and interactions with environment also play a significant role in forming these personality resilience constructs, which is in line with the plasticity principle presented by Roberts and Wood (2006).

This study showed that child-centered parenting and school success at age 14 were important factors forming the level of adult optimism. The finding that child-centered parenting was associated with increasing of optimism in adulthood, especially from age 27 to 36, is novel and noteworthy. In line with earlier studies and discussions on this issue (Ek et al., 2004; Heinonen et al., 2004; Heinonen et al., 2005a; Korkeila et al., 2004; Scheier & Carver, 1993), it seems that a supportive childhood environment and experiences of success are the building blocks of adult optimism. One reason for this might be that in an emotionally safe environment, a child develops a strong level of self-esteem (Coopersmith, 1967; Keltinkangas-Järvinen et al., 2003), which also reflects trust in the future, as the present study showed. An important finding, however is that the level of optimism increased more in adulthood among those with low school success compared with individuals with better school success. This suggests that after young adulthood other issues, such as positive experiences and success at work and leisure time, become more important for shaping optimism. This is also apparent from the results of this study, which indicated that a high level of satisfaction with various life domains (i.e., occupational choice, work, leisure, living) increased optimism during adulthood.

In the present study, personality resilience was strongly linked to self-rated psychological well-being. High levels of self-esteem and optimism decreased subsequent mental distress symptoms over a one-year period. In addition, the cross-sectional analysis revealed that low sense of coherence correlated strongly with high levels of self-rated depression, anxiety and psychosomatic symptoms. It has been found that that sense of coherence represents the antipode of neuroticism (Feldt, Metsäpelto et al., 2007), and this might explain the strong correlations with negative well-being. Optimism, on the other hand, also correlated with negative well-being, but more strongly with psychological well-being and life satisfaction. Seligman (2003) has suggested that among the personality resilience constructs, optimism is the flagship of positive psychology because of its well-being associations. The beneficial role of optimism gained further support from the present study.

Contrary to self-rated well-being, neither sense of coherence nor optimism were associated with the objective indicator of health (i.e., metabolic syndrome). According to Kompier (2005), the associations with self-reports and

physiological health indicators are extremely difficult to demonstrate and the causal link between them remains an open question. Also the associations with health behavior (i.e., no smoking, low alcohol consumption) were minor compared to those with self-reported well-being. The association with other positive health habits, like exercising or eating healthy food, might have been stronger (see Kelloniemi et al, 2005; Scheier et al., 2001). In the present study, coping strategies were not examined. However, they are considered to be the most important link between these particular personality resilience constructs and well-being (Scheier & Carver, 1985, 1992; see also Aspinwall & Taylor, 1992; Ebert et al., 2002; Johnson, 2004; Pallant & Lae, 2002) and might have partially explained the strong connection found in this study between personality resilience and psychological well-being.

4.3 Methodological consideration and recommendations for future research

There are several strengths and limitations that should be considered in evaluating the findings of the present study. Both the strengths and limitations relate to the study design, measures and statistical analysis.

Study design. First of all, the major contribution of this study was the use of a multi-sample longitudinal procedure. In this study, three longitudinal data sets with different time-lags (i.e., from one year to 28 years) were used. This provided an excellent opportunity to investigate the stability and development of personal resources across time. In addition, this made it possible to study the cross-lagged associations over time. However, in three cases (Studies I, III, IV) a two-wave measurement design was used, which has its disadvantages when compared to the use of three or more waves (Little, Bovaird, & Slegers, 2006). For example, where several measurement times are used, a more complex picture of the associations between the analyzed resources can be gained.

Another important issue is whether the time-lags between measurements can be theoretically justified. Zapf, Dormann and Frese (1996) have pointed out that if the period between measurements is too short, this might lead one to conclude that no cross-lagged effects exist. Also, if the time-lags are too long, this can lead to an underestimation of the cross-lagged associations. In this study, it might be reasonable to ask, whether a one-year time period is too short to study the cross-lagged association between personality and well-being, or whether a three-year time period is too long to study the association between job resources and well-being. However, it is often difficult, or even impossible, to say what the most appropriate time-lag would be, because the theoretical grounds do not always exist and the processes are also dependent on individuals.

The third crucial methodological issue is causality. Although longitudinal data were used, the requirement for causal closure (i.e., the assumption that the

model incorporates all relevant predictors or endogenous variables) was not fulfilled (James, Mulaik, & Brett, 1982). Thus, this leaves open the possibility that the relationships found in this study are a result of unmeasured third variables. For example, coping strategies might have explained the strong links between personality characteristics and well-being.

The fourth methodological pitfall is related to the possible attrition and response rate in the samples. All the study samples were carefully designed and randomly selected at the first measurement time. Also, the response rates of the longitudinal samples were high. However, the original response rate in the data used in Studies I and IV (based on the project "Economic Crisis, Job Insecurity and the Household") was relatively low (45%), which seriously limits the generalizability of these results. In addition, in all the datasets attrition analyses were carefully performed and showed that attrition was not systematic across time. Despite the attrition analysis, there is still the possibility that the datasets were somehow selected in regard to some variables, and thus attrition might have occurred at the beginning of the study. For example, although we could show that the "Economic Crisis, Job Insecurity and the Household" sample was representative in terms of background factors, we cannot be sure that this was the case in relation to the dependent variables of the study (e.g., personal resources).

In addition, although representative and relatively large samples were used, it has to be remembered that the findings of a study are always affected by properties of the sample, culture, time period, cohort and age, which in turn affect their generalizability (see e.g., Rutter, 1995). For example, in Study III the managers were mostly men and the study time was located during a period (years 1996–1999) when enormous changes occurred in Finland's economy. In 1996, Finland was still in the grip of a recession, but three years later, a recovery had taken place (see Nätti, Kinnunen, Happonen, Mauno, & Sallinen, 2001). In addition, because the JYLS data are based on Finnish people born in 1959, the findings can be generalized with a high level of confidence only to this age cohort.

Statistical analysis. The analysis methods employed in the present longitudinal study can be considered as a particular strength of the study. The primary statistical methods were CFA and SEM models. The advantages of these statistical analyses lie, first, in the use of measurement models which take measurement error into account, second, in the possibility for constructing multivariable-multiwave models, and third, in enabling reciprocal and reversed associations to be analyzed across time (Zapf et al., 1996). These statistical methods made it possible to examine the invariance of the factor structure over time. This is a crucial issue when constructs are studied using questionnaires. If the factor structure or loading pattern changes over time, a questionnaire will not provide reliable and valid results (see e.g., Meredith, 1993; Vandenberg & Lance, 2000). In addition, testing measurement invariance over time is also a requirement before the rank-order stability coefficients can be investigated. Thus, measurement invariance is an important issue, but is hardly ever tested in

longitudinal studies, as noted by Vandenberg and his colleagues (Vandenberg, 2002; Vandenberg & Lance, 2000).

In this study, the variable-oriented approach was used. This approach investigates the relation between variables (Bergman & Trost, 2006; Laursen & Hoff, 2006; Magnusson, 1998), i.e., the focus is usually on whether and how strongly certain predictors are associated with different outcomes. The underlying implication of the variable-approach is that the (predictive) associations among variables are similar to all persons in the study population (Laursen & Hoff, 2006). However, when analyzing long-term development of personal resources, a single stability or beta coefficient does not say much about the dynamic developmental process, as Fraley et al. (2005) have pointed out. Therefore, LGC analysis was also employed to obtain a more dynamic analysis which however, represents also a variable-oriented approach. Specifically, LGC analysis allows the investigation of inter-individual differences in intra-individual changes over time (i.e., growth trajectories) and also the investigation of the predictors of change (Duncan et al., 1999). In the future, studies using the person-oriented approach are needed (see also Jugde, Van Vianen, & De Pater, 2004) in order to study the change and stability of personality resilience constructs and their antecedents more accurately.

Measurements. One methodological limitation of this study concerns the use of self-reported data, which is prone to response styles (e.g., social desirability, acquiescence), personality characteristics and affective states (Kompier, 2005; see Mäkikangas, Feldt, & Kinnunen, 2007, for a review). Despite these limitations, good self-report scales are a useful and valid source of information, and should not be underestimated (Kompier, 2005). In this study, the majority of the scales used were well-known and the products of a long construction process (e.g., General Health Questionnaire; Goldberg, 1972, Self-Esteem Scale; Rosenberg, 1965). However, in Study II, the scale of optimism was formed for the purposes of this study, that is, it was not based on any well-known scale, although the items used were similar to those in the LOT scale developed by Scheier and Carver (1985). Nonetheless, there are at least two major differences between the self-formulated scale and the LOT scale. First, the self-formulated items consist of purely positively worded items, whereas the LOT consists of both positively and negatively phrased items. Second, the self-formulated scale includes two items in which the emphasis was on self-agency in relation to the future, i.e., the scale also possesses properties of the self-efficacy construct. Unfortunately, the concurrent validity of the LOT and the self-formulate scale could not be tested in this study. In addition, this study employed a measure of life satisfaction that captured specific facets (i.e., satisfaction with occupational choice, work, leisure, living). There are benefits when specific versus global measures are used (see Mäkikangas et al., 2007); however in this study, an item measuring satisfaction with different social relationships would have made the life satisfaction scale even more informative.

Objective information would have made the results of this study more complete. For example, information about possible changes in managers' work and/or in job positions could have shed more light on the reversed causal mechanisms found in Study III. Furthermore, this study covered only three personality resilience constructs. It would have been useful to enlarge this viewpoint, and analyze, for example, the core self-evaluation constructs (i.e., self-efficacy, locus of control, neuroticism) (Judge et al., 1998) along with the three used in this study. The final point concerning measures is related to positive psychology. Although the positive constructs (i.e., personality resilience, well-being, job resources) were used, the emphasis in the analysis of well-being continued to be a negative rather than positive view.

4.4 Implications of the study

This study has both theoretical and practical implications for research, education and prevention. The first implication is related to the personality resilience constructs. A large number of different constructs describing personality dispositions exists. The line between these constructs (i.e., self-esteem, optimism, sense of coherence), however, is thin. This might partly be a problem of measurement, that is, questionnaires cannot capture the theoretical differences between the constructs. However, this might also be a problem specific to psychological research; there are more constructs than actual phenomena to measure. In either case, the strong association between the different personality resilience constructs should be better acknowledged, as it is in the core self-evaluation theory (Judge et al., 1998).

The second implication is related to how positive and negative well-being constructs should be measured. For example, in this study, the job-related affective well-being scale consisted of four factors: comfort, enthusiasm, anxiety and depression. In addition, the factor of social functioning (consisting of e.g., happiness, enjoyment daily life and active coping) was separated off from factors which indicated more mental problems (i.e., anxiety/depression, loss of confidence). A lot of earlier studies have been conducted on the assumption that absence of ill-health symptoms equals the presence of well-being. However, according to a recent view of positive psychology, positive and negative (mental) health constructs are not opposite ends of the same continuum, but rather distinct but correlated axes (Keyes, 2005). As Corey Keyes (2005, p. 546) has pointed out, "the absence of mental illness does not equal the presence of mental health". In practice, this means that positive and negative constructs should be measured with different scales (see also Schaufeli et al., 2002; Seligman & Csikszentmihalyi, 2000).

The third implication relates to reversed causality. The present dominant theoretical stress models assume normal causality (see Demerouti et al., 2001; Karasek, 1979; Siegrist, 1996; Warr, 1987). Although some reverse model

formulations exist (see De Lange, 2005), the emphasis has been on the negative side, e.g., how mental ill-health leads to increased job demands. A more positively orientated occupational work and health theory is needed alongside the traditional stress theories. A good example of a positive-orientated occupational theory is the Job Demand-Resources (JD-R) model that take the motivational processes of well-being into account (Demerouti et al., 2001; see also Bakker & Demerouti, 2007). However, as Bakker and Demerouti (2007) themselves point out, the reciprocal relations between job demands and resources and well-being should also be taken into account on a theoretical level.

Moreover, important guidelines for empirical research can be drawn from this study. First, the basic issue in empirical research is the use of reliable and valid measurements. When longitudinal data are applied, the same scales for the same constructs should always be used when possible and also their measurement invariance should be tested. Second, the construct validity between similar study variables should be carefully explored before the investigation of further associations. Third, researchers and practitioners should be acquainted with the scales they use and their properties (e.g., the instructions about how to use scales, content of the items). In the future, education in the use and evaluation of the survey questionnaires needs to be increased in the basic education of psychologists. The majority of psychological knowledge is based on quantitative data, and thus, the skills to evaluate the information gained from surveys and to use them, are essential.

The important preventive aspect of this study is related to how positive personality characteristics are built during the life course. It seems that a safe and supportive childhood environment is an extremely important starting point for favorable development. Success at school is also important, but in later life other areas, such as work, have effects on personality. The issue most relevant to the development of personality resilience is that an individual can experience fulfillment and be successful in a specific central area of life.

A major implication of this study concerns the role of positive emotions in organizations. So far this issue has been largely ignored, but it seems that the positive well-being is important facilitator of supportive organizational climate. Consequently, jobs should be designed in such a way that it is possible to experience feelings of comfort. Although comfort, like the other dimensions of job-related affective well-being, might partly be based on personality characteristics (see Warr, 1987, 1994, see also Cummins, Gullone, & Lau, 2002), there is still room for creating working conditions which promote the experience of positive emotions at work. This can be done, for example, by reducing job demands and increasing job resources (Bakker & Demerouti, 2007; Demerouti et al., 2001).

TIIVISTELMÄ

Persoonallisuus, hyvinvointi ja työn voimavarat: Kohti positiivista psykologiaa

Tämän väitöskirjan tavoitteena oli tutkia yksilöllisiä voimavaroja. Yksilöllisinä voimavaroina tarkasteltiin persoonallisuuden voimavaratekijöitä (itsearvostus, optimismi, koherenssi), hyvinvointia (työhön liittyvä tunneperäinen hyvinvointi, psykologinen hyvinvointi, fyysinen hyvinvointi ja terveyskäyttäytyminen) ja työn voimavaroja (organisaatioilmapiiri, vaikutusmahdollisuudet). Päätavoitteena oli selvittää yksilöllisten voimavarojen pysyvyyttä ja yhteen kietoutumista aikuisiässä.

Tutkimus jakaantui kolmeen osa-alueeseen, joista persoonallisuuden voimavaratekijöiden – itsearvostuksen, optimismin ja koherenssin – ja näiden hyvinvointiyhteyksien tarkastelu muodosti ensimmäisen osa-alueen. Keskeisenä tutkimuskysymyksenä oli selvittää, kuinka nämä persoonallisuuden voimavaratekijät kietoutuvat toisiinsa aikuisuudessa. Lisäksi tarkasteltiin persoonallisuuden voimavaratekijöiden ajallista pysyvyyttä sekä niiden yhteyksiä hyvinvointiin. Tutkimuksen toisena osa-alueena oli työn piirteiden ja työhyvinvoinnin välisen suhteen selvittäminen. Tavoitteena oli tutkia, ovatko työn voimavarapiirteet (tukea antava organisaatioilmasto ja hyvät vaikutusmahdollisuudet) yhteydessä (lineaarisesti tai epälineaarisesti) tunneperäiseen työhyvinvointiin, vai selittääkö työhyvinvointikokemus työn voimavarapiirteitä käänteisen kausaliteetin mukaisesti. Tutkimuksen kolmannen osa-alueen muodosti hyvinvoinnin arvioimiseen käytettyjen kyselymenetelmien rakennevaliditeetin sekä ajallisen invarianssin (pysyvyyden) analysoiminen.

Tutkimus pohjautui kolmeen eripituiseen suomalaiseen pitkittäistutkimusaineistoon. Ensimmäinen aineisto oli osa monitieteistä tutkimusprojektia ”Kotitalous, työ ja hyvinvointi”, jossa seurattiin vuoden ajan suomalaisia työntekijöitä (n = 640). Toinen aineisto perustui ”Lapsesta aikuiseksi” -pitkittäistutkimukseen, jossa on seurattu samoja henkilöitä vuodesta 1968 alkaen, jolloin he olivat 8-vuotiaita (n = 369). Tässä tutkimuksessa käytettiin osanottajista 14-, 27-, 36- ja 42-vuotiaina kerättyjä tietoja. Kolmas aineisto liittyy tutkimusprojektiin ”Esimiesten työn ja työhyvinvoinnin myönteiset ja kielteiset kehityspolut: 10-vuotisseuruututkimus esimiestyön muutoksista ja sen seurauksista”, jossa insinööri- ja teknisten toimialojen esimiehiä on tutkittu vuosina 1996, 1999 ja 2006. Tässä tutkimuksessa hyödynnettiin kahden ensimmäisen mittausajankohdan tietoja (n = 615). Tutkimusaineistojen pääasiallisina tilastollisina analyysimenetelminä käytettiin rakenneyhtälömallinnusta (konfirmatoriset pitkittäisfaktorimallit ja simplex-mallit) sekä latenttia kasvukäyrämallinnusta.

Ensimmäisen osatutkimuksen päätulokset osoittivat, että itsearvostus ja optimismi olivat aikuisuudessa voimakkaasti yhteydessä keskenään ja muodostivat yhden persoonallisuuden voimavarafaktorin. Tämän voimavarafaktorin havaittiin myös olevan suhteellisen pysyvä vuoden aikavälillä. Korkea itsear-

vostuksen ja optimismin taso oli yhteydessä vähäisiin itseraportoituihin fyysisiin ja psyykkisiin oireisiin. Lisäksi havaittiin, että niiden yksilöiden, joiden persoonallisuutta luonnehtivat hyvä itsetunto ja optimismi, psyykkinen kuormittuminen laski vuoden seuranta-aikana. Fyysisten oireiden havaittiin olevan suhteellisen pysyviä ja ne ennustivat psyykkisten oireiden lisääntymistä vuoden seuranta-aikana.

Toinen osatutkimus paljasti, että optimismi ja koherenssi olivat melko voimakkaasti yhteydessä toisiinsa. Optimismi osoittautui myös suhteellisen pysyväksi aikuisuudessa (27–42-vuotiaana), eikä siinä havaittu keskiarvotason muutoksia. Lapsilähtöinen – sensitiivinen ja lapsen tarpeet huomioiva – vanhemmuus 14 vuoden iässä oli yhteydessä optimismin kasvuun 27 vuoden iästä 42 vuoden ikään. Lapsilähtöinen kasvatustyyli oli myös yhteydessä vahvaan koherenssin tunteeseen 42 vuoden iässä. Lisäksi hyvä koulumenestys 8-luokalla ennakoi korkeaa optimismin tasoa 27 vuoden iässä. Persoonallisuuden hyvinvointiyhteyksiä analysoitaessa havaittiin, että optimismi ja koherenssi olivat yhteydessä hyvään itsearvioituun hyvinvointiin ja vähäiseen psyykkiseen ja fyysiseen oireiluun. Optimismin yhteys elämäntyytyväisyyteen oli melko voimakas, ja tyytyväisyyden vapaa-aikaan, ammatinvalintaan, asumiseen, työhön ja toimeentuloon havaittiin olevan yhteydessä optimismin kasvuun 27 vuoden iästä 42 vuoden ikään. Sen sijaan optimismilla tai koherenssilla ei havaittu olevan yhteyksiä metaboliseen oireyhtymään. Myös yhteydet terveyskäyttäytymiseen olivat vähäisiä.

Kolmas osatutkimus osoitti, että tunneperäisen työhyvinvoinnin kyselymenetelmä sisälsi neljä toisiinsa yhteydessä olevaa ahdistuksen, mukavuuden, masennuksen ja innostuksen ulottuvuutta. Kyselymenetelmän rakenne osoittautui ajallisesti pysyväksi. Lisäksi ilmeni, että työhön liittyvät ahdistuksen, mukavuuden, masennuksen ja innostuksen tuntemukset olivat suhteellisen pysyviä kolmen vuoden aikavälillä. Analyysit työn piirteiden ja työhyvinvoinnin eri ulottuvuuksien suhteesta osoittivat, että työhön liittyvät mukavuuden tunteet lisäsivät tutkittavien kokemusta tukea antavasta organisaatioilmapiiristä kolmen vuoden seuranta-aikana.

Neljännessä osatutkimuksessa havaittiin, että siinä tutkittu psykologista hyvinvointia kartoittava kyselymenetelmä (General Health Questionnaire, GHQ) sisälsi kolme keskenään korreloivaa ahdistuksen/masennuksen, sosiaalisen toimintakyvyn ja itseluottamuksen ulottuvuutta. Kyselymenetelmän rakenne oli ajallisesti pysyvä sekä vuoden että kuuden vuoden aikavälillä, mutta ulottuvuuksien suhteellisen pysyvyyden havaittiin olevan vähäistä. Kyselymenetelmän todettiinkin arvioivan psykologisessa hyvinvoinnissa tapahtuvia lyhytaikaisia muutoksia.

Tutkimuksen päätulokset tarjoavat tärkeää lisätietoa sekä persoonallisuus- että työstressiteoreettiseen kirjallisuuteen. Ensinnäkin on tärkeää huomioida persoonallisuuden ominaisuuksien vahva yhteys toisiinsa, mikä merkitsee sitä, että persoonallisuuden voimavarat kasaantuvat aikuisiällä. Tämä tulos voi yhtäältä heijastaa kyselytutkimuksen ongelmia tai toisaalta olla osoitus siitä, että psykologian alalla on olemassa enemmän persoonallisuutta kuvaavia käsitteitä

kuin tutkittavia ilmiöitä. Toiseksi tulokset viittaavat siihen, että ns. käänteinen kausaliteetti tulisi huomioida aikaisempaa paremmin stressiteoreettisessa kirjallisuudessa ja sen tutkimusta tulisi lisätä. Lisäksi tulokset osoittivat, että kielteisiä ja myönteisiä tunteita ja hyvinvoinnin tiloja tulisi arvioida omilla käsitteillään ja arviointimenetelmillään. Nämä tulokset puolestaan antavat uutta näkökulmaa positiivisen psykologian piirissä käytyyn keskusteluun hyvinvoinnin arvioimisesta. Käytännön tasolla tämän tutkimuksen perusteella on tärkeää kiinnittää huomioita hyvinvointiin sekä työpaikoilla että perheissä. Esimerkiksi mahdollisuuksia kokea tyytyväisyyden ja mukavuuden tunteita työssä tulisi edistää lisäämällä työn voimavaratekijöitä.

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