Subjective Well-being in an Adult Swedish Population

Findings from a population-based study

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Stockholm 2009
Faith can move mountains

Doubt can create them

Howard Wight
ABSTRACT

This doctoral thesis examines various factors associated with subjective well-being (SWB) in an adult Swedish population, aged 20-64 years, using cross-sectional and longitudinal data. The thesis includes four studies based on the PART study, a current population-based study on mental health, work, and relations in Stockholm County, Sweden. Research has shown that there is a relationship between mental health problems such as depression and low well-being. It is therefore of great interest to investigate various factors associated with SWB in order to promote or increase mental health. We also examined if the well-being scale used in all studies could be used as a screening instrument for depression.

The specific aim of Study I was to examine if age, gender, foreign background (i.e. not born in Sweden), cohabitation, education, financial strain, social support, childhood conditions and negative life events and their associations with SWB could be replicated in our data. In Study II we investigated strategies people chose to employ in order to improve or maintain their well-being and whether these were associated with SWB. Study III examined if changes in cohabiting, social support or the financial situation influenced SWB, after controlling for neuroticism at a 3-year follow-up. The change in the study sample’s SWB was also studied during the same time period. In Study IV the aim was to investigate whether the well-being scale, the (WHO) Ten Well-being index, could be used as a screening instrument for depression.

Results from Study I showed that men had higher SWB than women, and that positive childhood conditions, cohabiting, greater age, sound financial situation, absence of negative life events, and support from friends were all positively associated with SWB. Social support had the strongest relationship. Together, these factors explained 20% of the variance in SWB and the findings replicated earlier research. The strategies reported in Study II were physical exercise, physical health, engaging in pleasurable activities, relaxation, plan/set limits, social support, professional contacts, positive thinking, and work. Of these, social support, relaxation, physical exercise and physical health were associated with higher SWB. Social support showed the strongest association. In Study III changes in financial situation, social support, or cohabiting influenced SWB after controlling for neuroticism. The results also suggested that SWB was relatively stable over a period of three years. Preliminary findings from Study IV indicate that the (WHO) Ten Well-being index can work as a screening instrument for depression in population-based samples.

In summary, the findings suggest that demographics and psychosocial factors explain only a small part of the variance in SWB, replicating previous data. Certain self-care strategies are positively associated with SWB. In addition, changes in life circumstances influence SWB, even after controlling for neuroticism over a period of three years despite the stability of SWB. Furthermore, the preliminary findings indicate that the well-being scale can work as a screening instrument for depression in a population-based sample. The overall conclusion from the results of this thesis suggests that it is important for the health care services to be aware that negative life events/circumstances may affect people’s SWB over several years. Furthermore, self-help interventions might be important in order to maintain or increase SWB.

Key words: subjective well-being, depression, life circumstances, follow-up, population-based
LIST OF PUBLICATIONS
This thesis is based on the following papers, which will be referred to in the text by their roman numerals.


IV. Hansson, A., Alderling, M., & Hillerås, P. The WHO (Ten) Well-being Index as a Screening Instrument for Major Depression Compared with the Major Depression Inventory and Schedules for Clinical Assessment in Neuropsychiatry in a Population-based Sample (*Submitted*).

The three published papers are reprinted with kind permission of the publishers of the respective journals.
## CONTENTS

INTRODUCTION ........................................................................................... 1

BACKGROUND ............................................................................................. 2

  Subjective well-being (SWB) .......................................................... 2

  The relation between PA, NA and life satisfaction .................. 3

  Measuring SWB .............................................................................. 4

  Previous research on SWB .............................................................. 5

    Demographics .............................................................................. 5

    Life circumstances/events ........................................................ 7

    Childhood conditions ................................................................ 8

    Social support ........................................................................... 8

    Self-care strategies/interventions .............................................. 9

    Personality .............................................................................. 10

  Depression .............................................................................................. 10

  Mental health and SWB ........................................................................ 11

THE OBJECTIVES OF THE THEIS ............................................................ 12

MATERIAL AND METHODS ..................................................................... 13

  The PART study ............................................................................ 13

  Participants first phase (baseline) .................................................. 13

  Questionnaires ............................................................................... 13

  Interviews ...................................................................................... 13

  Participants second phase (follow up) ........................................... 14

  SWB measure (study I-IV) ............................................................ 14

  Personality measure (study III) ...................................................... 15

  Demographics and psychosocial variables (study I-III) ................. 16

  Major depressive diagnosis (Study IV) ............................................ 17

  Self-care strategies (open-ended question) (Study II) .................... 17

  Methodological approach ................................................................. 17

  Ethical considerations ............................................................................. 18

OVERVIEW OF THE STUDIES .................................................................. 19

  Study I .................................................................................................... 19

  Study II ................................................................................................... 20

  Study III.................................................................................................. 22

  Study IV ................................................................................................. 23

DISCUSSION ................................................................................................ 24

  Impact of demographics and psychosocial factors ....................... 24

  Self-care strategies ................................................................. 25

  Stability and changes in SWB ....................................................... 27

  The well-being scale as a screening instrument ......................... 28

  SWB and the WHO (ten) well-being index ................................... 29

  The relation between SWB and mental health problems ............... 29

  Methodological reflexions ............................................................. 30

  Future research .............................................................................. 31

CONCLUSIONS ........................................................................................... 32

ACKNOWLEDGEMENTS ........................................................................... 33

REFERENCES .............................................................................................. 34
**LIST OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANCOVA</td>
<td>One-way Analysis of Covariance</td>
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<td>ANOVA</td>
<td>One-way Analysis of Variance</td>
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<td>DSM-IV</td>
<td>Diagnostic and Statistical Manual of Mental Disorders Fourth Edition</td>
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<td>ES</td>
<td>Effect Size</td>
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<td>Major Depression Inventory</td>
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<td>NA</td>
<td>Negative Affect</td>
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<td>PA</td>
<td>Positive Affect</td>
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<td>PART</td>
<td>In Swedish; Psykisk hälsa, Arbete och RelaTioner</td>
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<td>PGWBI</td>
<td>The Psychological General Well-Being Index</td>
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<td>PWB</td>
<td>Psychological well-being</td>
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<td>SCAN</td>
<td>Schedules for Clinical Assessment in Neuropsychiatry</td>
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<td>SD</td>
<td>Standard Deviation</td>
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<td>SWB</td>
<td>Subjective well-being</td>
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<td>SWLS</td>
<td>The Satisfaction with Life Scale</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
INTRODUCTION
The term Subjective well-being (SWB) is a broad concept and refers to an individual’s personal evaluation of his/her life, both cognitive and emotional aspects (Diener, Shu, Lucas & Smith, 1999). The essence of SWB research is how and why people experience their lives in positive ways. In various studies SWB incorporates diverse terms such as happiness, satisfaction, morale and positive affect (Diener, 1984). The most common definition of SWB includes three general components; life satisfaction (i.e. cognitive evaluations), positive affect (PA) and negative affect (NA) (i.e. emotions) (Diener et al., 1999).

SWB is not synonymous with mental health. For example, although a person who is delusional may consider himself happy we would not say he is mentally healthy. An important issue is if SWB is a necessary condition for mental health. Some people can function well in life but still not feel particularly happy; it is thus hard to determine the level of SWB optimal for mental health. However, most people consider SWB to be a desirable and necessary characteristic of mental health (Diener, Suh & Oishi, 1997).

Mental health problems are a major issue worldwide and their prevalence is high. For example, depression is one of the leading causes of disability in the adult population in the Western World (Regier et al., 1993; American Psychiatric Association, 1994). Studies have shown that depression is associated with limitations in well-being (Hays, Wells, Sherbourne, Rogers & Spritzer, 1995). It is therefore of great importance to extend our knowledge about factors that might help to increase a person’s SWB.

Most SWB research has primarily focused on younger people, such as students, and has used quite old SWB measurements. The four studies included in the current thesis are based on a population aged 20-64 years, provide large samples and used a relatively new SWB scale.

This doctoral thesis focuses on various factors associated with SWB. This was accomplished by examining how age, gender, foreign background (i.e. born in Sweden or not) cohabitation, education, financial strain, social support, childhood conditions, personality (i.e. neuroticism), negative life events, and self-care strategies influenced SWB in a population-based sample using both cross-sectional and longitudinal data. The change in the study sample’s SWB was also studied during a 3-year follow up. We also aimed to examine if the well-being scale used in the studies could be used as a simple screening instrument for depression in population-based studies.
BACKGROUND

Subjective well-being (SWB)

Two traditions have emerged in well-being research; the eudaimonic tradition and the hedonistic tradition (psychological and subjective) (Deci & Ryan, 2006; Ryan & Deci, 2001). The eudaimonic approach focuses on human development, meaning and self-realization. Well-being is defined in terms of the degree to which a person is fully functioning and living life in a deeply satisfied way, congruent with their own personal goals. Psychological well-being (PWB) is a central phenomenon in this tradition (Ryff, 1989; Ryff & Keyes, 1995; Waterman, 1993).

The hedonic tradition focuses on experiences of happiness and satisfaction. According to the hedonic point of view, a happy person experiences more positive affect (PA) than negative affect (NA) (Deci & Ryan, 2006; Kahneman, Diener & Schwarz, 1999; Myers & Diener, 1995; Ryan & Deci, 2001). SWB is a central phenomenon in this tradition (Deci & Ryan, 2006). Even though these traditions differ there is a substantial overlap between these two perspectives (Bauer, McAdams & Pals, 2006; Deci & Ryan, 2006; Waterman, Schwartz & Conti, 2008).

In the 1960s Bradburn suggested that SWB is composed of two components, PA and NA. This was heralded as an important discovery for the field of SWB (Bradburn, 1969). Bradburn proposed that PA and NA are to some extent independent and not simply opposites, and there is evidence that persons can have both high and low well-being scores simultaneously (Bradburn, 1969; Headey & Wearing, 1992). However, some researchers suggest that PA and NA are two poles along a single dimension (Grichting, 1983; Kamman, Christie, Irwin & Dixon, 1979; Stones & Kozma, 1985), which indicates that a high well-being score automatically leads to a low score regarding ill-being/psychological distress. This is why some researchers suggest that SWB consists of two separate dimensions, sometimes called well-being and ill-being (Headey, Holmström & Wearing, 1984, 1985). Furthermore, some researchers also suggest that SWB consists of five (Lawton, 1975), six (Neugarthen, Havighurst & Tobin, 1961; Ryff, 1989), or even seven components (Reker & Peacock, 1981).

As noted above, it has proved difficult to clarify the construct of SWB and there is still no consensus regarding the concept of well-being and its dimensions. Despite the lack of agreement the most common way to define SWB is in terms of three separate components, i.e. life satisfaction (cognitive evaluations of one’s life or satisfaction with specific domains), PA and NA (emotions). Taken together, the construct of SWB includes cognitions and emotions (e.g. Andrews & McKennell, 1980; Argyle, 1987; Diener, 1984; Diener et al., 1999), see Figure 1. This definition is supported by results from factor analytic research on well-being and by findings with multitrait-multimethod analysis of the concept of well-being (Andrews & Withey, 1976; Lucas, Diener & Suh, 1996). The factor analysis was based on 12 measures of SWB and generated three factors: cognitive evaluations, which refer to life satisfaction, PA and NA (Andrews & Withey, 1976). Lucas, Diener and Suh (1996) supported these findings as well as Okun and Stock (1987).
SWB and happiness are often synonymous in the literature, “as an operational definition, SWB is most often interpreted to mean experiencing a high level of positive affect, a low level of negative affect, and a high degree of satisfaction with one’s life. To the extent that one strongly endorses these three constructs, one is said to be high in SWB. The concept of SWB, assessed in this way, has frequently been used interchangeably with ‘happiness.’” Thus, maximizing one’s well-being has been viewed as maximizing one’s feelings of happiness” (Deci & Ryan, 2006, pp.1).

The relation between PA, NA and life satisfaction

As noted, PA and NA represent the affective or emotional components of SWB, whereas life satisfaction represents the cognitive component (i.e. global cognitive evaluations of one’s life) (Diener et al., 1999; Okun & Stock, 1987). These components form a global factor of interrelated variables, whereas each of these factors can in turn be divided into subdivisions: Global life satisfaction can be broken down into domains such as friendship and these domains can in turn be divided. PA can be divided into specific emotions such as joy and pride. NA can be divided into separate emotions such as shame, guilt and sadness (e.g. Diener et al., 1997).

Longitudinal studies have shown that pleasant affect and unpleasant affect show stability across a period of many years (Costa, Zonderman, McCrae, Cornoni-Huntley, Locke & Barbano, 1987; Headey & Wearing, 1992). Some researchers believe that one explanation for the stability of SWB is the person’s temperament and studies have shown that both pleasant and unpleasant affect have a strong genetic basis (Lykken & Tellegen, 1996). In addition, Koivumaa-Honkanen, Kaprio, Hokanen, Viinamäki and Koskenvuo (2005) found that life satisfaction was moderately stable in a 15-year follow-up.

It is important to highlight that the cognitive and affective components are highly related. Cognitive judgements may be expressed in terms of affect. A person who is considered to have high SWB experiences life satisfaction, frequent pleasant emotions such as joy, and only infrequently experiences unpleasant emotions such as anxiety. In addition a person considered to have low SWB is said to be dissatisfied with life, seldom experiences pleasant emotions such as joy, and frequently feels negative emotions such as anxiety (Diener et al., 1997). In addition, PA has a stronger relationship with life satisfaction than NA, but is not synonymous with life satisfaction. Further, NA is more distinct from life satisfaction and is related to distress, such as depression (Lucas et al., 1996).
Figure 1. The general components of SWB

Measuring SWB

Early SWB studies usually posed a single question about people’s happiness or life satisfaction such as “How do you feel about your life as a whole?” (Andrews & Withey, 1976). Psychometric evaluations of single item scales have shown some degree of validity (Andrews & Withey, 1976; Diener, 1984, 1994). However, despite the advantage of brief single items this method has been widely criticized since these scales seem to be less reliable over time (Diener, 1984; Kammann & Flett, 1983). In addition, as research interest increased, several multi-item scales were constructed yielding greater reliability and validity than single-item instruments. A number of happiness, affect and life satisfaction scales have subsequently been developed.

The most common way to measure SWB is to use self-administered scales which validate people’s own feelings (Diener, 1994). A major concern is whether these types of scale are valid. Sandvik, Diener and Seidtltz (1993) found that self-report instruments converge with other types of measures or assessments such as interviews or reports from family and friends. Even so, some researchers argue that, whenever possible, a multimethod-battery should be used to measure SWB (Diener, 1994). Furthermore, since there are different opinions about SWB and its dimensions, it may be difficult to measure it. However, several studies have shown high correlations between the different well-being scales (Comton, Smith, Cornish & Qualls, 1996; Diener, 1984; Samela-Aro, 1996; Sandvik et al., 1993).

Some of the best known subjective well-being scales are “The Psychological General Well-Being Index” (PGWBI) developed by Dupuy (1984), “The Satisfaction with Life Scale” (SWLS) (Diener, Emmons, Larsen & Griffin 1985), and “Affect Balance Scale” (Bradburn, 1969). PGWBI is a scale for general use and consists of 22-items and reflects a sense of subjective well-being or distress. It measures six specific aspects of well-being: anxiety, depressed mood, sense of positive well-being, self-control, general health and vitality. The SWLS is a scale which measures general life satisfaction (which is one component in the more general construct of SWB) and is suitable for all ages, from adolescents to adults (Diener et al., 1985). The scale is a global measure of life satisfaction and consists of 5-items. The “Affect Balance
Scale” (Bradburn, 1969) is a 10-item scale designed to measure positive affects and negative affects (i.e. two components in the more general construct of SWB).

In this doctoral thesis SWB is assessed with a scale that includes emotions and cognitive evaluations, i.e. the WHO (Ten) Well-being index (Bech, Gudex & Staehr Johansen, 1996). The scale is unidimensional and has a reference period of one week. Four items cover symptoms of emotions (affects) and the remaining six concern various aspects of coping skills and adjustment to life (cognitive evaluations). In 1982, the WHO European Regional Office (WHO/EURO) started a multi-centre European cross-over study of alternative forms of treatment for insulin-dependent diabetes. One of the main aims of the study was to compare the respondents’ subjective well-being and quality of life of each treatment. A 28-item Well-being questionnaire was developed based on Zung’s self-rating scale for depression, anxiety and distress (Zung, 1971, 1974); new items for positive well-being were added. After psychometric analyses of data in three countries a 22-item scale (W-BQ) was generated to measure depression, anxiety, energy and positive well-being (Bradley & Lewis, 1990; Bradley, 1994). Bech and colleagues (1996) further analyzed the W-BQ with the main aim of producing a short unidimensional well-being scale while still retaining adequate validity; the WHO (Ten) Well-being index.

Previous research on SWB

Demographics

All together, demographics have been shown to account no more than between 15-20 percent of the variance in SWB (Diener et al., 1999).

Gender

Most studies have shown fairly small gender differences in all age groups (e.g. Diener, 1984; Diner et al., 1999; Headey & Wearing, 1992; Okun & Stock, 1987). A meta-analysis including of 300 empirical studies showed that gender accounted for less than one percent of the variance in SWB (Pinquart & Sörensen, 2001). Nevertheless there have been inconsistent findings but most of previous research has shown that men have slightly higher well-being than females (e.g. Cha, 2003; Haring, Stock & Okun, 1984). For example, a meta-analysis by Haring et al. (1984) of 93 studies supports these findings. However, recently conducted studies have yielded contradictory results. Haller and Hadler (2006) who conducted a study based on data from 41 countries, and Bishop (2006) showed that women scored higher than men on both overall happiness and life satisfaction. Daalen, Sanders and Willemsen (2005) found that men reported better psychological well-being than women, whereas women reported higher life satisfaction, based on 459 women and men between 22-64 years.

Age

People might expect SWB to decrease with age but a number of studies with representative samples have reported the opposite (Argyle, 1987; Diener et al., 1999; Headey & Wearing, 1992). It is important to note that the differences between age-groups have been fairly small (e.g. Diener, 1984; Diener et al., 1999; Headey & Wearing, 1992; Okun & Stock, 1987). In support of this Stock, Okun, Haring and Witter (1983) found in their meta-analysis that the association between age and SWB was close to zero, when controlling for other variables. Findings have shown that a person’s probability of having high levels of both SWB and PWB increased as age,
education and extraversion increased and as neuroticism decreased (Keyes, Shmotkin & Ryff, 2002). In addition, results based on samples from 40 nations found that PA declines with age but life satisfaction and NA do not show this tendency (Diener & Suh, 1998).

**Marriage/cohabitant**

It is well established that marriage is associated with well-being. Married people report higher well-being compared with those who have never been married, widowed or separated/divorced (Argyle, 1987; Diener et al., 1999; Diener, Nickerson, Lucas, & Sandvik, 2002; Marks & Fleming, 1999; Mastekaasa, 1992, 2006; Myers & Diener, 1995; Veenhoven, 1984). Furthermore, researchers in the fields of psychology, sociology, and epidemiology have found that compared to single people, married people have better physical and psychological health. In addition, married people also live longer than single people (Burman & Margolin, 1992; Ross, Mirowski, & Goldsteen, 1990). As noted, married people tend to have better SWB. However, singles tend to be happier than those who have been divorced or widowed. Studies have also shown that men and women report similar levels of SWB. The positive relationship between marriage and SWB has been found in several studies in different countries and time periods (e.g. Stack & Eshleman, 1998). No significant differences were found in the life satisfaction effect between married people and cohabitee (Zimmerman & Easterlin, 2006).

A meta-analysis based on 58 empirical studies showed that there was a little overall association between marriage and SWB, and also that married men had slightly higher well-being than women. Marriage seemed to benefit younger rather than older persons (Haring-Hidore, Stock, Okun & Witter, 1985). Several studies have shown the opposite. Mastekaasa (2006) conducted a study based on students between 19-30 years and reviled that women who were married/co-habitant had less distress, while male students under 23 years felt more distressed but this was reversed beyond the age of 23. Longitudinal findings from the same study showed that termination of marriage or cohabitation were related to increased distress in both men male and females. Similar result was found in a study by Williams (2003). In addition, the direction of the association between marital status and well-being is discussed, since there is evidence that happy and well-adjusted people are more likely to marry and continue to stay married (Haring-Hidore et al., 1985; Mastekaasa, 1992).

**Income and education**

Income has been shown to have a weak association with SWB. Furthermore, when comparing wealthier people with poor people, there is a fairly small difference with wealthier people being only somewhat happier. In addition, positive and negative change in income has also been found to have little effect on SWB (Diener et al., 1999). A study conducted by Brickman, Coate and Janoff-Bulman (1978) showed no differences between lottery winners and controls. Interesting to note is that longitudinal studies have shown that cheerfulness prospectively predicts higher income levels (Diener et al., 2002). Findings from 286 empirical studies showed that income was more strongly associated with SWB than education; the study sample’s mean age was 55 years (Pinquart & Sörensen, 2000). It is important to highlight that financial problems are known to be a risk factor for depression (Kendler, Karkowski & Prescott, 1999).
The relationship between education and SWB has been found to be small but significant (Diener et al., 1999). In wealthy countries, education shows a weaker correlation with SWB than in poor countries (Campbell, 1981; Diener, Sandvik, Seidlitz & Diener, 1993). In addition, education is more strongly related to SWB for people with lower incomes (Diener et al., 1993). There is evidence that the relationship between education and SWB is due to education being indirectly related to SWB since education covaries with income and occupational status (Campbell, 1981). A meta-analysis conducted by Witter, Okun, Morris, Stock and Haring (1984) showed that when controlling for occupational status the effect size changed from .13 to .06. The authors concluded that the correlation between education and SWB is partly due to the relationship of education with income and occupational status.

**Foreign background**

Studies have shown that immigrants, defined as born in a country outside Sweden or having at least one parent born outside Sweden, has higher odds of poor self-rated health compared with Swedish-born individual with two parents born in Sweden. Age migration and length of residence after controlling for socioeconomic status and social network did not influence the result (Leão, Sundquist, Johansson & Sundquist, 2008). Kurdish immigrants aged between 27-60 had a high prevalence of poor self-reported health and psychological distress (Taloyan, Johansson, Sundquist, Koctürk & Johansson, 2008). Stress has been one explanation of the relation between ethnicity and mental ill-health (Bayard-Burfield, Sundquist, Johansson & Träaskman-Bendz, 2008).

**Life circumstances/events**

An important and incontrovertible phenomenon in the analysis of SWB is known as adaptation, i.e. whether people adapt to conditions or not.

Some researchers take the view that major negative or positive life events only affect people temporarily and adaptation is due to personality and heritability (Lykken & Tellegen, 1996; Suh, Diener & Fujita, 1996). In 1978 Brickman and colleagues presented evidence from persons who become paraplegics after a car accident and lottery winners indicating that both groups seemed to quickly adapt and return to their baseline of SWB. Although these results are old they are widely referred to.

As mentioned earlier, socio-demographic factors only affect a relatively small part of the total variance in well-being (about 20%). One explanation for this is the theory named the hedonic treadmill. This theory has dominated the field of SWB and adaptation. The original hedonic treadmill theory was developed by Brickman and Campbell (1971) who suggested that good and bad events only temporarily affect happiness since happiness is determined entirely by a combination of genes and random effects. In sum, trying to improve one’s happiness is meaningless. This theory has raised a good deal of controversy since several studies have shown that people do not always adapt completely. Two large, nationally representative panel studies addressed questions about adaptation to life events. The panel studies were the German Socioeconomic Panel Study (GSOEP) and the British Household Panel Study (BHPS). The GSOEP includes almost 40,000 individuals living in Germany who have been assessed annually for up to 21 years. The BHPS includes more than 27,000 individuals living in Great Britain who have been assessed annually for up to 14 years. The results showed that adaptation is not inevitable although happiness levels are moderately stable over time; people’s happiness levels do change and life
events matter (Lucas & Donnellan, 2007). Similar results can be seen in a study conducted by Diener, Lucas and Scollon (2006). As noted, SWB can be affected by life circumstances over a prolonged period of time (Diener et al., 1997). In a longitudinal study conducted by Bennett (1997) the result indicated that even after several years widowhood had an effect on SWB. Similar results were found by Lucas, Clark, Georgellis and Diener (2003) who found that nearly everyone increased their SWB immediately after marriage. After marriage there were individual differences in the rates of change in SWB; some people declined in SWB after marriage, others returned to baseline after a couple of years and some continued to increase. In addition, other life events such as unemployment seem to affect SWB over a long period of time (Lucas, Clark, Georgellis & Diener, 2004). Due to these longitudinal findings it has been suggested that the hedonic treadmill theory requires revision (Byrnes, 2005). Whether people adapt to conditions or not will be further discussed below.

**Childhood conditions**

There is evidence that problems or difficulties during childhood affect a person’s well-being for a long period of time (Huurre, Junkkari & Aro, 2006). For example, a study conducted by Storksen, Roysamb, Holmen and Tambs (2006) indicates that parental divorce affected both boys and girls several years after the divorce. Depression and anxiety symptoms were reported and girls reported more symptoms than boys. Consistent findings were shown by Spruijt, DeGoede and Vandervalk (2001). In addition, one study conducted in China showed that adolescents reporting conflicts with their parents during childhood experienced less life satisfaction, less self-esteem and more often reported feelings of meaningless in adulthood (Shek, 1998). Shek (1997) showed that a dysfunctional family leads to lower well-being. Adult individuals reporting abuse during childhood experienced lower well-being compared with those reporting no childhood abuse, even after controlling for income, marital status or occupations status (Bell & Belicki, 1998).

**Social support**

It is well-established in the literature that social support is associated with SWB (Diener et al., 1999). There is also evidence that social support have a stress-buffering role (e.g. Cobb, 1976; Cohen & Wills, 1985). Perceived social support and psychological and physical symptoms are negatively correlated (Billings & Moos, 1981) and several studies indicate that perceived social support is negatively correlated with depressive symptoms (Bal, Crombez, Van Oost & Debodeaudhuij, 2003; Dean & Ensle, 1982; Lin & Dean, 1984; Lin & Ensle, 1984).

In a meta-analysis conducted by Wang (1998) the results showed that social support was associated with PA, NA, depression and quality of life. Furthermore, older persons worried less over their social network. Studies have also shown that men who were satisfied with their network reported higher well-being (Neville & Alpass, 2002). Consistent findings can be read in a meta-analysis conducted by Pinquart and Sörensen (2000). This meta-analysis also showed that contacts with friends were more strongly correlated with well-being than contact with children.

It is important to highlight that both social support and parental support can work as a stress-buffering effect for child-reported depression (Kotchick, Summers, Forehand & Steele, 1997) and children with traumatic experiences (Bal et al., 2003). In addition, a study conducted by Walker and Greene (1987) found that family support was
negatively associated with both women and men’s reports of symptomatology. Adolescent males with low peer support reported significantly more symptoms than males with high peer support did. As negative life events increased, the support appeared to be more necessary for the well-being of adolescent females.

**Self-care strategies/interventions**

Jorm, Korten, Jacomb, Christensen, Rodgers and Pollitt (1997) introduced the term "mental health literacy”, which is an extension of the term "health literacy” (Nutbeam, Wise, Baumann, Harris & Leeder, 1993). Mental health literacy refers to “knowledge and beliefs about mental disorders which aid their recognition, management or prevention. Mental health literacy includes the ability to recognise specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes, of self-treatments, and of professional help available; and attitudes that promote recognition and appropriate help-seeking” (Jorm, 2000, pp. 396). When the public rated various interventions for likely helpfulness, self-help interventions were at the top of the list, before help from professionals. Some of the most popular self-help interventions were seeking support from friends, engaging in pleasure activities and exercise. However, the lack of research in this area makes it impossible to say if self-help interventions are as effective as help from professionals. Clearly there is a great need of further research on this topic so that the public can be given appropriate advice (Jorm et al., 1997; Jorm, 2000).

Studies conducted in this area have shown that self-help interventions such as social support (Goldberg & Huxley, 1992), physical exercise (Martinsen, 1994; Hassmen, Koivula & Uutela, 2000), self-help books (Cuijpers, 1997) and certain herbs (Linde, Ramirez & Mulrow, 1996) are likely to help people with milder forms of depression. However, researchers have sometimes found such a relationship and sometimes not (Argyle, 1987; Bowling & Farquhar, 1996; Diener, 1984; Headey & Wearing, 1992). Some researchers have also speculated that just trying to do something for oneself might improve well-being (Diener, 1984).

There is evidence that physical exercise has a positive effect on SWB, and studies have shown such a relationship in most age groups. In a review based on intervention studies of older persons the findings showed that various forms of physical exercise improved coronary heart diseases, depression and anxiety (Tayler et al., 2004). In addition, Ransford and Palisi (1996) found that exercise had a positive relation with SWB among both younger and older individuals. The relationship was stronger among those who were between 36-64 years compared with individuals between 20-35 years of age. Studies have also shown that children who participated in various physical activities reported higher SWB (Donaldson & Ronan, 2006). A recently conducted study in China based on interviews, found that physical activity could enhance SWB in persons aged 55-78 (Ku, McKenna & Fox, 2007).

As mentioned above, there is a need to further explore the helpfulness of effective self-help interventions. Furthermore, most previous studies of self-help interventions are not based on what people consciously do in order to improve their well-being. To further investigate this might be one important aspect in order to promote and increase people’s well-being. This was examined in Study II.
Personality

Headey and Wearing (1989) describe their data in terms of a "dynamic equilibrium," in which life events cause changes in SWB, but in which over time people move back toward their baseline of SWB that is determined by their personality. The dynamic equilibrium was initially proposed to explore the relation between personality, life events, and SWB.

Research has shown that personality is one of the strongest determinants of SWB and is relatively stable across the adult years (e.g. Costa & McCrae, 1980a; DeNeve & Cooper, 1998). The strong association between SWB and personality is one of the explanations of SWB stability since most research has shown that personality seems to stabilise across the life span. Personality consists of several dimensions but most researchers agree that the dimensions of neuroticism and extraversion are part of the construct. Other dimensions that have been shown to be strongly related to SWB are optimism and self-esteem (Cha, 2003). However, of these dimensions, neuroticism seems to be strongest related (e.g. Costa & McCrae, 1980b; DeNeve, 1999; DeNeve & Cooper, 1998; Vitterso, 2001; Vitterso & Nilsen, 2002). As noted, it is well-documented that heritability and personality are important for SWB (DeNeve & Cooper, 1998; Diener et al., 1999; Lykken & Tellegen, 1996; Myers & Diener, 1995; Okun & Stock, 1987; Stock et al., 1983). In addition, Lykken and Tellegen (1996) state that heritability explains approximately 44% to 52% of the variance in well-being.

Despite these facts, long-term stability in SWB can be affected by life circumstances (e.g. Headey and Wearing, 1989; Diener et al., 1997). These findings suggest that SWB does change, but that there is some constancy in it even over a prolonged period. This was mentioned earlier in the background section.

The affective part of SWB (i.e. PA and NA) is more related to extraversion and neuroticism compared to the cognitive one (i.e. life satisfaction) (McCrae, 1983). Neuroticism is more related to NA and extraversion is more related to PA (Costa and McCrae, 1980b; Vitterso, 2001). Naturally, a person who is extravert and emotionally stable seems to have a higher level of SWB than a person who is more neurotic and unstable.

In addition, a person that is extravert is, for example, outspoken, social, and has many friends compared with one who is introvert. On the other hand, a neurotic person experiences more anxiety, sadness and other negative emotions than those who are emotionally stable. In the present thesis the personality dimension of neuroticism is in focus (Study III).

Depression

Depression is one of the leading causes of disability in the adult population in the Western World (Regier et al., 1993; American Psychiatric Association, 1994). In this thesis we focus on major depression which is the most severe form of unipolar depression. There is evidence that major depression might lead to increased risk for developing chronic physical conditions, such as coronary heart diseases (Gilmour, 2008; McFarlane et al., 2001; Shively, Musselman & Willard, 2008; Surtees et al., 2008) and addictive disorders (Kessler et al., 1996).
Negative life events, heritability, and stressful events in childhood are common risk factors for depression (Kendler et al., 1999). Depression is twice as common in women (Levinson, 2006).

Despite available effective treatment, undertreatment is considerable amongst persons suffering from depression. Studies have shown that many people identified as having mental health problems do not seek help either from primary or secondary services (Bebbington et al., 2003). In addition, one explanation of the reluctance to seek help is the lack of confidence in the effectiveness of the treatments. Also people tend to consider help-seeking as a weakness (Meltzer et al., 2000), or lack insight regarding the problematic nature of their state (Zwaanswijk, Van der Ende, Verhaak, Bensing & Verhulst, 2003). Untreated depressive symptoms can hamper everyday functioning and well-being and are a primary risk factor for suicide.

It is of importance for society to estimate the prevalence of mental health problems correctly in order to meet people’s care needs. Psychiatric interviews may be performed in defined populations, but this is expensive. In- and outpatient registers are seldom of use since, as mentioned above, only a minority of people with mental problems access health services. Based on these facts, questionnaire surveys are the most cost-efficient and common way to estimate the prevalence of mental health problems in populations. However, results from surveys have shown a large variation in prevalence (55-90%) and often low response rates (Ayuso-Mateos et al., 2001; Lehtinen & Väisänen, 1981; Lundberg, Damström-Thakker, Hällström & Forsell, 2005; The WHO World Mental Health Survey Consortium, 2004). One explanation for the large variation in prevalence might be the many different screening scales used to assess psychiatric symptoms. Further, low participation rates might be due to the large amount of sensitive questions which are commonly used or prejudice towards mental disorders. In Study IV we examined if the well-being scale used in the present thesis could work as a screening instrument for depression.

**Mental health and SWB**

Clearly, mental health is an important issue worldwide. Despite this fact, mental health has long been overlooked in health and public health practice (Ustün, 1999; WHO, 2008). Mental health problems cause great suffering for the affected person and also for relatives and friends, as well as incurring major costs for society. According to WHO almost 40 percent of countries lack mental health policies and consequently, health care facilities, and necessary treatments for people with mental illness are not given the priority they deserve. It is important to reduce the burden of mental health problems and promote mental health. In 2003 the Swedish Parliament accepted the Government’s Public Health Objectives Bill and the Bill changes the perspective within the Swedish public health policy to focus more on factors determining health and less on illness, as was earlier the case (Ågren, 2003).

Studies have shown that negative life events can have a serious impact on people’s mental health (Kendler et al., 1999). Therefore, it is of importance to help reduce the likelihood of mental health problems by identifying factors that can help promote mental health. One approach in accord with this is to further explore factors that increase or decrease people’s SWB since research has shown that there is a relationship between mental problems and low SWB (e.g. Fava, Rafanelli, Ottolini, Ruini, Cazzaro & Grandi, 2001; Hays et al., 1995).
THE OBJECTIVES OF THE THESIS

The overall aim of this doctoral thesis is to extend current knowledge of various factors associated with SWB using both cross-sectional and longitudinal designs in a population-based sample. We also aimed to examine if the well-being scale used in all studies can be used as a simple screening instrument for depression.

The specific aims of the four studies included in the thesis are:

- To examine if earlier findings regarding various factors association with well-being could be replicated in a population-based sample of 10,311 persons (Study I).

- To describe what kind of self-care strategies people report that they used to improve or maintain their SWB. Furthermore, to investigate whether reports of using self-care strategies were associated with better SWB (Study II).

- To extend the knowledge of how changes in cohabiting, social support, or the financial situation influenced SWB, after controlling for personality, i.e. neuroticism in a three year follow-up (Study III).

- To evaluate the association between the WHO (Ten) Well-being index and Major Depression assessed by the Major Depression Inventory (MDI) and Schedules for Clinical Assessment in Neuropsychiatry (SCAN) in order to examine how well the WHO (Ten) Well-being index worked as a screening instrument for depression in a population-based sample (Study IV).
**MATERIAL AND METHODS**

**The PART study**

All data in the four studies were derived from the PART study (In Swedish: Psykisk hälsa, Arbete och RelaTioner), a current population-based study on mental health, work, and relations in the Stockholm County, Sweden. The first set of data was gathered between the years 1998-2000. A random sample of 19,742 Swedish citizens, aged between 20-64 years, living in Stockholm County, was included. The subjects were selected from the Stockholm County council register of inhabitants. Data were gathered using questionnaires and interviews. For further information about the PART study, see Hallström, Damström-Thakker, Forsell, Tinghög and Lundberg (2004).

**Participants first phase (baseline)**

In total, 10,441 participated (53%), 4,643 men and 5,798 women. An extensive non-participation analysis was carried out using available official registers (The Hospital Discharge Register 1987-1998, The register on Income and Wealth 1998, and The Disability Pension Register 1971-2000). Participation was found to be related to female gender, higher age, higher income and education, being born in the Nordic countries and having no psychiatric diagnosis in the hospital discharge register as well as in the early retirement register. The associations between age, gender, income, country of origin, sick leave and in-patient hospital care due to psychiatric diagnosis were calculated for participants and non-participants separately. The odds ratios (OR’s) for these associations were similar among participants and non-participants (Lundberg et al., 2005).

**Questionnaires**

At baseline, between 1998-2000, the participants received a questionnaire by post including questions such as demographics, social network, SWB and life events. Psychiatric screening scales were also included as well as scales measuring harmful alcohol use and social disability. The questionnaire consisted of 21 pages and took approximately 1 hour to complete.

**Interviews**

Of those who answered the questionnaire, 1,367 were selected for interviews. The interviews were performed within two weeks of the questionnaires being returned. Schedules for Clinical Assessment in Neuropsychiatry, SCAN, 1998, version 2 was used as interview guide. SCAN is a semi-structured diagnostic interview instrument that incorporates the tenth edition of the Present State Examination (Wing, Cooper & Sartorius, 1974) and later revised by World Health Organisation (WHO) (Wing et al., 1990). Reliability has been reported to be good (Tomov & Nikolov, 1990). Trained psychiatrists and one trained psychologist performed the interviews. Of the selected persons, 75 percent (1,093) completed, 884 were cases, i.e. reported many psychiatric symptoms in the questionnaire and 209 were controls, i.e. reported no or few psychiatric symptoms in the questionnaire. There were no differences between participants and non-participants in terms of gender, welfare allowance, unemployment benefits, country of origin, sick leave or income (Forsell, 2005). At the end of the interview the respondent answered an open-ended question i.e. “what
kind of self-care strategies do you use to improve or maintain your psychological well-being?” Study II is based on this open-ended question.

**Participation second phase (follow up)**

At follow-up, between 2001-2003, all subjects who participated at baseline (n=10,441), received a second questionnaire by post. This was three years after their initial participation and comprised almost the same questions as in the initial screening. In total, 8,613 persons participated. The data from this phase were used in Study III. For an overview of the study design of the PART- study, see Figure 2.

**Figure 2. Overview of the study design of the PART- study**

**SWB measure (study I-IV)**

As mentioned earlier, in this thesis we measured SWB with the “WHO (Ten) Well-being index” which is a unidimensional scale assessing both cognitive evaluations and emotions (Bech et al., 1996). The scale includes ten items with a reference period of one week. Four items cover emotions (i.e. symptoms of depression, anxiety and vitality) and the remaining six questions cover cognitive evaluations (i.e. various aspects of coping skills and adjustment to life), see Table 1. In 1982, the WHO European Regional Office (WHO/EURO) started a multicentre European cross-over study on alternative forms of treatment for insulin-dependent diabetes. One of the main aims of the study was to compare the respondents’ subjective well-being and quality of life of each treatment. A 28-item Well-being questionnaire was developed based on Zung’s self-rating scale for depression, anxiety and distress (Zung, 1971, 74) and new items for positive well-being were added. After psychometric analyses
of data in three countries a 22-item scale (W-BQ) was generated to measure depression, anxiety, energy and positive well-being (Bradley & Lewis, 1990; Bradley, 1994). Bech et al. (1996) further analyzed the W-BQ with the main aim of producing a short uni-dimensional well-being scale while still retaining adequate validity; the WHO (Ten) Well-being index. The wordings of all items and response categories and the frequency of responses to each item, at baseline are presented in Table 1.

Table 1. The participants’ response to each item in The WHO (Ten) Well-being index (n=10,311) at baseline.

<table>
<thead>
<tr>
<th>How have you felt in the last week?</th>
<th>All of the time</th>
<th>often</th>
<th>sometimes</th>
<th>never</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>1. I have felt downhearted and blue</td>
<td>197 (1.9)</td>
<td>1106 (10.7)</td>
<td>4894 (47.5)</td>
<td>4114 (39.9)</td>
</tr>
<tr>
<td>2. I have felt calm and peaceful</td>
<td>1200 (11.6)</td>
<td>4741 (46.0)</td>
<td>3718 (36.1)</td>
<td>652 (6.3)</td>
</tr>
<tr>
<td>3. I have felt energetic, active or vigorous</td>
<td>910 (8.8)</td>
<td>4420 (42.9)</td>
<td>4246 (41.2)</td>
<td>735 (7.1)</td>
</tr>
<tr>
<td>4. I have been waking up feeling fresh and rested</td>
<td>723 (7.0)</td>
<td>3005 (29.1)</td>
<td>4465 (43.3)</td>
<td>2118 (20.5)</td>
</tr>
<tr>
<td>5. I have been happy and, satisfied, or pleased with my personal life</td>
<td>2053 (19.9)</td>
<td>4233 (41.1)</td>
<td>3277 (31.8)</td>
<td>748 (7.3)</td>
</tr>
<tr>
<td>6. I have felt well adjusted to my life situation</td>
<td>2203 (21.4)</td>
<td>4352 (42.2)</td>
<td>2979 (28.9)</td>
<td>777 (7.5)</td>
</tr>
<tr>
<td>7. I have lived the kind of life I wanted</td>
<td>1988 (19.3)</td>
<td>4090 (39.7)</td>
<td>3272 (31.7)</td>
<td>961 (9.3)</td>
</tr>
<tr>
<td>8. I have felt eager to tackle my daily tasks or make new decisions</td>
<td>1563 (15.2)</td>
<td>4708 (45.7)</td>
<td>3375 (32.7)</td>
<td>665 (6.4)</td>
</tr>
<tr>
<td>9. I have felt I could easily handle or cope with any serious problem or major change in my life</td>
<td>1995 (19.3)</td>
<td>4609 (44.7)</td>
<td>3126 (30.3)</td>
<td>581 (5.6)</td>
</tr>
<tr>
<td>10. My daily life has been full of things that were interesting to me</td>
<td>2586 (25.1)</td>
<td>4228 (41.0)</td>
<td>3034 (29.4)</td>
<td>463 (4.5)</td>
</tr>
</tbody>
</table>

Personality measure (study III)

In Study III the personality trait of neuroticism was assessed using the Swedish Universities Scales of Personality (SSP) (Gustavsson et al., 2000), which is a revised version of the Karolinska Scales of Personality (KSP) (Schalling, 1970). Accordingly, Gustavsson et al. (2000) made a thorough revision of the KSP and the revised version was labelled SSP. The items were presented as statements, e.g. “I get tired and hurried too easily”, and were assessed on a four-point scale, ranging from “does not apply at all” (1) to “applies completely” (4). The total score of the scale was summarised and mean sum was calculated.
Demographics and psychosocial variables (study I-III)

In Study I
Age, gender, cohabiting, foreign background, education, financial strain, support from friends, negative life events and childhood conditions were included. Age was divided into three age groups; 20-34, 35-49, and 50-64. Education was divided into three categories; primary (i.e. education up to and including 9 years), secondary (i.e. education spanning between 10-16 years), and university (i.e. graduated from university >16 years). Financial strain, support from friends and childhood conditions were treated as continuous variables.

In Study II
Age (treated as a continuous variable), and gender were included.

In Study III
Age (treated as a continuous variable), gender, financial strain, support from friends, and cohabiting were included. Financial strain and social support were dichotomised.

Financial strain
Financial strain was assessed with the question “Would you be able to obtain 14 000 Swedish crowns (approximately 2000 US dollars) within a week if you had to?” The answers ranged from “yes, definitely”, coded (1), “yes, probably”, coded (2), “no, probably not”, coded (3) to “No”, coded (4). In Study I this variable was treated as a continuous variable. In Study III the variable was dichotomised; where answers 1 and 2 indicated ‘yes” and answers 3 and 4 indicated “no”.

Social support
Social support was assessed with one of the questions included in the scale: availability of attachment (AVAT) developed by Undén and Orth-Gomér (1989). The item was given the form of a statement “Besides those at home, there are persons I can turn to, easily meet and get help from when I have difficulties.” The answers ranged from “agree completely”, coded (1), “agree to some extent”, coded (2), “disagree to some extent”, coded (3) to “disagree completely”, coded (4). In Study I this variable was treated as a continuous variable. In Study III the variable was dichotomised; where answers 1 and 2 indicated “yes” and answers 3 and 4 indicated “no”.

Cohabitation
Cohabitation was assessed with a question “do you live together with partner?” The response was either “yes” or “no”.

Foreign background
Foreign background was assessed with the question “Are you born in Sweden?” The response was either “yes” or “no”.

Childhood conditions
Childhood conditions were assessed with the question “Have there been any serious problems in your family while growing up?” The responses ranged from “no, nothing
worth mentioning”, coded (1) to “yes, seriously and/or long periods of problems”, coded (3).

Negative life events

Negative life events were assessed by asking the respondents whether any of 21 events had happened to them during the past 12 months (e.g. conflicts or death).

Major depressive diagnosis

Schedules for Clinical Assessment in Neuropsychiatry (SCAN)

After the interview the SCAN algorithm for major depression was followed (American Psychiatric Association, 1994).

Major Depression Inventory (MDI)

Self-reported depression was assessed using MDI (Bech & Wermuth, 1998). This scale is based on the universe of symptoms in DSM-IV major depression and ICD-10 moderate to severe depression and includes duration criteria. The symptoms must have been present for more than two weeks; depressed mood, loss of interest or pleasure almost all of the time, and accompanied by at least four of the following symptoms: significant change in appetite or weight, sleep disturbance, psychomotor disturbance, feelings of guilt or worthlessness, concentrations problems, fatigue or loss of energy, and suicide attempt or suicidal thoughts (American Psychiatric Association, 1994).

The scale can be used both as a measuring instrument with a total score in order to calculate cut-off scores and as a diagnostic instrument with algorithms leading to the DSM-IV or ICD-10 categories of major or moderate to severe depression. For further information see Bech, Rasmussen, Olsen, Noerholm and Abildgaard (2001). In Study IV we used both the DSM-IV algorithm and the total score.

Self-care strategies (open-ended question)

At the end of the psychiatric interview an open ended question was asked, i.e. “what kind of self-care strategies do you use to improve or maintain your psychological well-being?” The answers were noted by the interviewer using the respondent’s (n=871) own words. To simplify the procedure only the two first answers were taken into account in the analysis. In order to categorise the responses, they were initially all read through to obtain a clear overview. The classification process resulted into ten different categories, presented in Table 2.

METHODOLOGICAL APPROACH

In this thesis, qualitative (Study II) and quantitative (Study I, III and IV) methods were used. This combination of methods gives the possibility for both an objective and a subjective approach to investigate the influence of various factors on SWB. Quantitative data which is drawn from large samples are often strong in terms of generalisizability. The strength of qualitative studies is the potential to yield insight into the nature of a complex phenomena (Polit & Beck 2006). Studies I, III and IV in this thesis were based on quantitative data, while Study II had a qualitative approach using an open-ended question.

All statistical analyses were performed using the statistical package SPSS for Windows (SPSS inc., version 11.5-14; Chicago, IL). The data were analysed by
univariate analysis of variance (ANOVAs) and univariate analysis of covariance (ANCOVAs), T-tests and multiple regression analyses. ANCOVAs with neuroticism as covariate in Study III, age and gender were performed on the separate life circumstances data. Multiple regression analyses were carried out in order to determine possible associations between reported self-care strategies and SWB (Study II) controlling for chronological age and gender, for further information see Table 3.

ETHICAL CONSIDERATIONS

The Part study was approved by the ethical committee at Karolinska Institutet, registration numbers: 96-260; 01-218. Informed consent was obtained from all the participants included in the Part study. No treatments were offered but person identified as having mental health problems were encouraged to seek help. Information was given about available treatments and care-units. All persons stating that they had suicidal thoughts in the questionnaire were contacted and offered an interview.
OVERVIEW OF THE STUDIES

An overview of the study samples, study designs, the statistical methods and variables in studies I-III are presented in Table 3.

Table 3. Study samples, study designs, summary of variables, and statistical analysis across Study I, II and III.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Independent variables</th>
<th>Dependent variable</th>
<th>Study sample</th>
<th>Study design</th>
<th>Statistical analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Age, gender, cohabitation, education, financial strain, foreign background, support from friends, negative life events, childhood conditions</td>
<td>SWB</td>
<td>N=10,311</td>
<td>Cross-sectional</td>
<td>T-tests, ANOVAs, Cronbach alpha, multiple regression analyses</td>
</tr>
<tr>
<td>II</td>
<td>Age, gender, plan/set limits, positive thinking, physical exercise, relaxation, social support, professional contacts, engaging in pleasurable activities, physical health, work, others</td>
<td>SWB</td>
<td>N=871</td>
<td>Cross-sectional</td>
<td>Qualitative approach and quantitative approach (i.e. multiple regression analyses)</td>
</tr>
<tr>
<td>III</td>
<td>Age, gender, neuroticism, support from friends, financial strain, cohabiting</td>
<td>SWB</td>
<td>N=8,324</td>
<td>Longitudinal</td>
<td>Effect Size, t-tests, ANCOVAs</td>
</tr>
</tbody>
</table>

An overview of the study sample, study design, and the statistical methods used in study IV is presented in Table 4.

Table 4. Study samples, study design, depression diagnoses and the statistical analysis used in Study IV.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Total samples and study samples in each depression group</th>
<th>Study design</th>
<th>Statistical analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>SCAN n=69, total sample n=1002</td>
<td>Cross-sectional</td>
<td>Roc-curves, Area under the curve, Sensitivity, Specificity</td>
</tr>
<tr>
<td></td>
<td>MDI/algorithm n=735, total sample n=10,311</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDI/cut-off ≥21 n=1217 total sample n=10,311</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDI/cut-off ≥26 n=842, total sample n=10,311</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Study I

As mentioned in the background, several studies have demonstrated that there is still a lack of identifying factors that strongly affect individuals SWB. Demographics and psychosocial factors have explained only a relatively small part of the variance in well-being (approximately 15-20%) across countries, whereas personality has been found to explain around 40-50 percent of the variance (Lykken & Tellegen, 1996). However, most of these studies are based on relatively small sample sizes, younger
persons, and on old measurements. We believed it would be of great interest to examine if our data would be in line with previous findings since this study is based on a large sample (n=10,311), relatively new measurement, and based on a population between 20-64 years of age. Therefore, the main objective of the study was to examine whether earlier findings concerning the association between SWB and various factors could be replicated in our population.

The data were analysed in two ways. First, in order to examine the association between age, gender, cohabitation, foreign background (i.e. born in Sweden or not), education, financial strain, childhood conditions, social support, negative life events, and SWB, t-tests and ANOVAs were conducted, as shown in Table 3. Second, in order to identify and quantify predictors of SWB, linear regression analysis was performed. The result from the regression analysis revealed that male gender, higher age, cohabiting, good childhood conditions, support from friends, sound financial situation and absence of negative life events were positively associated with SWB and explained 20 % of the variance, as shown in Table 5.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Standardized Betas</th>
<th>and the adjusted $R^2$ Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>0.092***</td>
<td></td>
</tr>
<tr>
<td>Cohabiting</td>
<td>0.111***</td>
<td></td>
</tr>
<tr>
<td>Greater age (50-64 years)</td>
<td>0.082***</td>
<td></td>
</tr>
<tr>
<td>Good childhood condition</td>
<td>0.109***</td>
<td></td>
</tr>
<tr>
<td>Support from friends</td>
<td>0.258***</td>
<td></td>
</tr>
<tr>
<td>Financial problems</td>
<td>-0.142***</td>
<td></td>
</tr>
<tr>
<td>Absence of negative life events</td>
<td>0.149***</td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$ Square</td>
<td>(0.20)</td>
<td></td>
</tr>
</tbody>
</table>

The main conclusion that can be drawn from this study is that factors associated with SWB seem to remain the same, and are still explaining only a small part of the total variance, despite different measurements, time, sample sizes or country of origin. Therefore, we agree with Diener et al. (1999) who suggests that research in this area needs to take a new turn and place less focus on external factors, such as demographics and more focus on internal factors such as personality and coping strategies.

**Study II**

As mentioned in the background section, only a minority of people who meet diagnostic criteria for mental health problems seek professional health (e.g. Jorm et al., 1997). Studies conducted by Rippere (1979), Parker and Brown (1982) and Jorm et al. (1997) showed that when the public were asked to rate various interventions for likely helpfulness, self-help interventions were at the top of the list, before help from professionals. Some of the most popular self-help interventions were seeking support from friends, engaging in pleasure activities and exercise. However, the lack of research in this area makes it impossible to say if self-help interventions are as
effective as help from professionals. Clearly there is a great need for further research on this topic so that the public can be given appropriate advices (Jorm, 2000).

Most of previous studies on self-help interventions are not based on what people consciously do to improve their well-being. Exploring this is one important aspect in order to promote and increase people’s well-being. The aim in this study was to examine what kind of self-care strategies people report using to improve or maintain their well-being. Furthermore, we investigated whether reports of using self-care strategies were associated with SWB. The respondents’ answers were based on an open-ended question posed at the end of the psychiatric interview; “what kind of self-care strategies do you use to improve or maintain your psychological well-being?” The interviewers wrote down the respondents own words. Answers were obtained from 871 persons.

Both quality and quantity approaches were used. First the answers were read trough and then divided into various categories. Only the first two answers were taken into account. The answers from the open-ended question resulted into ten different self-care strategies, i.e. physical exercise (e.g. running, cycling, walking), physical health (e.g. healthy food, sleep, reduce smoking and drinking, vitamins, health care products), engaging in pleasurable activities (e.g. bridge, music, read, cinema, travel, golf, go fishing), relaxation (e.g. be alone and think, be out in the nature, relax, calm down, do nothing, be outdoors), plan/set limits (e.g. take care of the problem, create a plan how to act, plan my days, set limits), social support (e.g. be with my family, be with friends, talk to my wife, maintain contact with my friends), professional contacts (e.g. go to my psychologist, talk to a priest), positive thinking (e.g. never worry, everything will be fine in the end, enjoy life), work (e.g. my job is important, work, make a career) and others (e.g. find love, have money, be wealthy). The results revealed that the most commonly reported self-care strategy was physical exercise, social support, engaging in pleasurable activities, and relaxation. Professional contacts and work as self-care strategies was less reported, see Table 2.

<table>
<thead>
<tr>
<th>Self-care strategies</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical exercise</td>
<td>288 (31)</td>
</tr>
<tr>
<td>Social support</td>
<td>268 (29)</td>
</tr>
<tr>
<td>Engaging in pleasurable activities</td>
<td>188 (20)</td>
</tr>
<tr>
<td>Relaxation</td>
<td>171 (19)</td>
</tr>
<tr>
<td>Physical health</td>
<td>141 (15)</td>
</tr>
<tr>
<td>Plan/set limits</td>
<td>88 (10)</td>
</tr>
<tr>
<td>Positive thinking</td>
<td>67 (7)</td>
</tr>
<tr>
<td>Professional contacts</td>
<td>31 (3)</td>
</tr>
<tr>
<td>Work</td>
<td>25 (3)</td>
</tr>
</tbody>
</table>

The regression analysis, controlling for age and gender, showed that physical exercise, social support, relaxation, and physical health were associated with SWB. The result suggests that reports of using certain self-care strategies are associated with SWB. However, causality cannot be ascertained, see Table 6.
Table 6. Self-care strategies and their association with SWB

<table>
<thead>
<tr>
<th>Variables</th>
<th>Standardized betas</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.009</td>
<td>.803</td>
</tr>
<tr>
<td>Sex</td>
<td>-.130</td>
<td>.000</td>
</tr>
<tr>
<td>Others</td>
<td>.055</td>
<td>.186</td>
</tr>
<tr>
<td>Plan/set limits</td>
<td>.026</td>
<td>.499</td>
</tr>
<tr>
<td>Positive thinking</td>
<td>.074</td>
<td>.056</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>.110</td>
<td>.009</td>
</tr>
<tr>
<td>Relaxation</td>
<td>.111</td>
<td>.006</td>
</tr>
<tr>
<td>Social support</td>
<td>.138</td>
<td>.002</td>
</tr>
<tr>
<td>Professional contacts</td>
<td>.011</td>
<td>.746</td>
</tr>
<tr>
<td>Engaging in pleasurable activities</td>
<td>.032</td>
<td>.431</td>
</tr>
<tr>
<td>Physical health</td>
<td>.106</td>
<td>.007</td>
</tr>
<tr>
<td>Work</td>
<td>.063</td>
<td>.071</td>
</tr>
</tbody>
</table>

*p<0.05

Study III

The main aim of the present study was to extend knowledge concerning changes in cohabiting, social support, or the financial situation and their influence on SWB, after controlling for personality (i.e. neuroticism) in a 3-year follow-up in an adult population-based sample. Furthermore, the change in the study sample’s overall well-being was also studied during the three year interval. A random sample of Swedish citizens, aged between 20-64 years residing in Stockholm County received a questionnaire by post, comprising items pertaining to demographics, personality, social support and SWB. All participants from baseline received a second questionnaire three years after their initial participation. In total, 8,324 persons were included in the present study.

Persons who experienced a positive change concerning social support and financial situation between baseline and the follow up had increased their well-being, while persons who had experienced a negative change had decreased well-being. Finally, persons reporting living alone at baseline but reported living together with a partner at the follow up had increased well-being and persons reporting the opposite had decreased well-being.

Additionally, the analyses were performed in three ways; In order to incorporate the correlation between measures on the same person, we first computed the difference for each person (diff=score_after – score_before) and then computed the Effect Size (ES). Second: in order to examine how positive and negative changes in the financial situation, social support, or cohabiting influenced SWB t-tests were performed. Finally, to examine if there was a relationship between changes in the financial situation, cohabitant or social support and well-being when neuroticism, age, and gender were used as covariates, three separate analyses of ANCOVAs were carried out. P-value was set at 0.05. The result showed that the overall well-being of the study sample was relatively stable. Separate analyses of the respective life circumstance indicated that after controlling for personality, positive and negative changes in each sphere of life still affected SWB.
Taken together, in a period of three years the study samples overall SWB was relative stable. However, changes in cohabiting, social support, or the financial situation influenced SWB, in a three-year perspective. It is of importance for the heath-care services to be aware of that a negative change in each of these circumstances might lead to decreased well-being over several years.

**Study IV**

The main objective in Study IV was to examine how well the Well-being-scale used in all four studies; the WHO (Ten) Well-being index worked as a screening instrument for depression in a population-based sample. This study is based on the questionnaire used at baseline. The questionnaire included the well-being scale; the WHO (Ten) Well-being index and the scale; the major depression inventory (MDI) and was sent out to a randomly selected adult Swedish population, as mentioned earlier. In this study 10,311 persons were included. Psychiatrists using SCAN interviewed a selected sample (n=1 093). Sensitivity, Specificity, Receiver Operating Characteristics (ROC) and Area Under the Curve (AUC) were calculated.

The results showed that when a cut-off score $\leq 8$ for the Well-being-scale was used and depression according to SCAN was the index of validity the sensitivity was 0.81 and the specificity 0.81. When depression according to the algorithm of the MDI was used the sensitivity was 0.89 and the specificity was 0.86 at a cut-off score of $\leq 12$. The AUC was good (0.86) when using SCAN and when using the DSM-IV algorithm of the MDI excellent (0.93).

To conclude, these preliminary findings indicate that the WHO (Ten) Well-being index can be used as a simple screening instrument for depression in population-based studies.
**DISCUSSION**

The main aim of the current thesis was to gain more knowledge about various factors associated with SWB. This was accomplished by examining how age, gender, cohabitation, education, financial strain, foreign background (i.e. born in Sweden or not), social support, childhood conditions, personality (i.e. neuroticism), negative life events, and self-care strategies influenced SWB using both cross-sectional and longitudinal design. We also aimed to examine if the well-being scale used in study I-III could be used as a simple screening instrument for major depression. As mentioned earlier in the background section most previous research in this area is not based on a large general population, in their adult years. This is important to highlight since our data is based on a population aged 20-64 years and provide large samples and used a relatively new well-being scale.

**Impact of demographics and psychosocial factors**

The relationship between demographics and psychosocial factors and SWB in Study I was low: explaining 20% of the variance in SWB. This finding is consistent with previous research (Diener et al., 1999). In addition, men had higher SWB than women and previous studies have shown the same pattern (e.g. Haring et al., 1984; Cha, 2003). It is important to note that recently conducted studies have shown the opposite. Results from a study based on data from 41 countries, showed that women reported higher scores than men on both overall happiness and life satisfaction (Haller & Hadler, 2006). Similar findings were found by Bishop (2006). Daalen et al. (2005) found that men reported better psychological well-being than women, whereas women reported higher life satisfaction based on a study sample aged 22-64 years.

Our results also showed that positive childhood conditions were positively associated with SWB and there is evidence that problems or difficulties during childhood affect a person’s well-being for a long period of time (e.g. Storksen et al., 2006). Bell and Belicki’s (1998) findings based on men and women, with a mean age of 45 years, showed that those who had reported abuse during childhood had lower well-being compared with those who did not. It would have been interesting to have more information about the participants’ childhood conditions in Study I.

Research has shown that married people experience higher SWB than those living alone. This was confirmed by our study. Although our data did not enable us to distinguish between married or/and cohabiting participants, other studies have shown no significant differences for the two types of union (Zimmerman & Easterlin, 2006).

In addition, consistent with previous findings, greater age, sound financial situation, absence of negative life events and support from friends were all positively correlated with well-being in our data (e.g. Diner et al., 1999). Several studies with representative samples have reported that well-being increases with age (Argyle, 1987; Diener et al., 1999; Headey & Wearing, 1992). When comparing wealthier people with poor people, it has been found that the former are only somewhat happier. Change in income has also been found to have small effect on SWB (Diener et al., 1999). Negative life events affect SWB, although the long term effects are not clear, as mentioned earlier in the present thesis (Diener et al., 1999). In addition, social support is known to have a positive effect on well-being. Of all variables included in the regression analysis in study I, social support had the strongest association with SWB. A meta-analysis based on 21 articles, conducted by Wang
(1998) showed that social support was associated with positive affect and quality of life. Neville and Alpass (2002) suggest that it is the quality and not the quantity of the network that is important. In the present thesis we used only one item to assess social support. To get a broader overview about the people’s social network we could have included more questions concerning this issue. We do not know anything about the quantity of the network; it would also be of great interest to have examined this.

Foreign background (i.e. born in Sweden or not) and education were not significantly correlated with well-being in the regression analysis. Research has shown that native Swedes are generally in better health than immigrants (Leão et al., 2008), as previously mentioned. This might depend partly on socio-demographic factors and unemployment. One explanation of our findings might be that those who were not Swedish citizens were excluded from the present study and this could thus have affected our result. Another explanation could be that those who agreed to participate were more often born in Nordic countries. For further information about the non-participation see Lundberg et al. (2005).

In addition, the association between education and SWB diminished in the regression analysis. Previous findings have shown that education is more strongly related to SWB for people with lower incomes (Diener et al., 1993; Diener et al., 1999). Furthermore, there is also evidence that the relationship between education and SWB is due to the fact that education is indirectly related to SWB since education covariates with income and occupational status (Cambell, 1981; Witter et al., 1994). In our data those who answered the questionnaire had more often higher income, and higher education than those who did not participate and this might have effected these associations. Our main conclusion from Study I is that research in this area needs to take a new turn and place less focus on external factors, such as demographics and more focus on internal factors such as personality and coping strategies. In Study II we aimed to investigate associations between self-care strategies people report using and SWB.

**Self-care strategies**

The results from study II showed that there were no differences between persons who reported no self-care strategy (n=132) and persons who reported using strategies, with regard to gender, socio-economic status, age and psychiatric diagnosis according to SCAN.

Furthermore, physical exercise was the most commonly reported self-care strategy followed by social support, engaging in pleasurable activities, and relaxation. Our findings also suggested that social support, relaxation, physical exercise and physical health are associated with higher SWB. All associations were independent of age and sex.

In the 1990s the research on self-care increased. In addition, there has been research on different types of self-care practices primary to prevention and illness management (e.g., Wister & Gutman, 2001). Research has defined self-care as a broad range of subjective factors (e.g. attitudes) and objective perspective (e.g. disability or type of illness), in addition “Self care is a term representing the range of health related decision-making and care undertaken by individuals on their own behalf” (Dean & Kickbusch, 1995. pp. 36). Barofsky (1978) defines self-care in terms of; Regulatory self-care (e.g. sleeping); Preventive care (e.g. exercising); Reactive self-care (e.g. responding to symptoms without doctor’s intervention); Restorative self-care (e.g.
actions to restore health). Despite the fact that this theory has now been in existence for a long time it still suffers from a lack of conceptual clarity (Hibbard, Greenlick, Jimison, Kunkel & Tusler, 1999). Most of the studies of self-care are based on samples suffering from physical problems such as diabetes (Ahmed Karter & Liu, 2006).

There are some studies of helpful interventions for persons suffering from mental problems/disorders (Cuijpers, 1997; Hassmen et al., 2000; Martinsen, 1994). However it is important to note that instead of using open-ended questions to discover what actions people take themselves, researchers have limited participants responses by using scales or questions requiring "yes" / “no” responses (Jorm, Medway, Christensen, Korten, Jacomb & Rodgers, 2000). Jorm et al. (2000) asked the respondents what they believed would be helpful for a person suffering from major depression as described in a case vignette. At the follow up the participants were also asked what action they had taken themselves in the past 6 month when feeling emotional problems, such as depression or anxiety. The authors listed various actions based on the open-ended question about beliefs of what would be helpful to the depressed person described in the case vignette.

However, to our knowledge there have not been any studies examining what people consciously are doing without the use of forced-choice categories. In Study II we did not define self-care in a particular way since the main aim was to investigate which self-care strategies people consciously employ without any specially context. In order to achieve this respondents answered the open-ended question at the end of the SCAN interview, describe earlier in this thesis. An interesting finding was that most people reported some kind of strategy. Of the 1,093 persons who were selected for interview, 884 were cases, i.e. reported many psychiatric symptoms in the questionnaire and 209 were controls, i.e. reported no or few psychiatric symptoms in the questionnaire. Some might argue that people feeling psychological distress seldom take any action but this was not the case in the present study. Our results are in line with Diener (1984) who states that just trying to do something for yourself might improve your well-being.

As noted, both physical exercise and social support were associated with SWB, in accord with previous research. For example, a review conducted by Meyer and Brocks (2000) revealed that physical exercise is effective with regard to both physical and mental health. Interesting to note was that of all strategies examine in study II social support was strongest associated with well-being, similar to the result in study I. Two more strategies, i.e. relaxation and physical health were also associated with SWB in the present study. To our knowledge no research has investigated these types of strategies in relation to SWB. It would therefore be interesting to further examine these two strategies in other samples. It is of great importance to find strategies that could help endorse people’s well-being since only a minority of people who fulfil the criteria for a mental disorder seek help (Henderson, Andrews, & Hall, 2000; Jorm et al., 1997). There is also a lack of resources, thus making it impossible for society to fulfil people’s care needs.

It is important to stress that our findings are based on cross-sectional data and that studies of persons using strategies in order to improve or maintain their mental health are necessary in order to found out more about causality.
Stability and changes in SWB

The results from Study I revealed that the overall SWB was relatively stable over a period of three years, in accord with earlier research. For example, a nine-year longitudinal study including 4,942 persons aged 25-74 revealed no significant age, cohort or time effects (Costa et al., 1987). Similar results were found in a longitudinal study over a period of 15 years, with 9,679 participants aged 18-45 years (Koivumaa-Honkanen et al., 2005).

As indicated earlier, adaptation is an important and much discussed issue and there have been contradicting findings regarding how changes in life affect a person's SWB. Most studies have shown that changes in life circumstances only influence a person temporarily, after controlling for personality (e.g. Suh et al., 1996). Headey and Wearing (1992) described their data in terms of a ‘dynamic equilibrium’, in which life events cause changes in SWB, but where people move back towards their baseline SWB over time. This return to baseline is due to personality and heritability (Lykken & Tellegen, 1996). As mentioned in the background section, personality is known to be one of the strongest determinants of SWB. Of all personality dimensions; neuroticism seems to have the most influence. However, despite evidence for stability due to personality, there are also indications that SWB may be affected by events/changes, and even long-term levels can be affected by circumstances (Diener et al., 1997). Therefore, we believed that it was of importance to control for personality (i.e. neuroticism) in the present study.

Our results suggest that life events/circumstances have an impact on SWB even after several years. The results showed that changes in financial strain affected SWB over a period of at least three years. This in an interesting finding since few studies have controlled for personality. It is important to highlight that previous longitudinal studies have shown that these events also have a substantial causal relationship with depression (Kendler et al., 1999).

Furthermore, persons who had experienced a negative change in social support had decreased well-being. Previous research has shown that adults who reported not having anyone close to talk to when they were upset revealed a higher level of depressive symptoms than those who felt that they had someone close to talk to (e.g. Wang, 1998). Another finding in our data was that persons who lived alone at follow-up but not at baseline had decreased well-being while those who reported the opposite had increased well-being. A number of studies have found that marriage or partnership have a positive association with well-being (Diner et al., 1999) and results have also shown that termination of marriage/cohabitation is associated with increased distress (Mastekaasa, 2006).

The results of the present study also reveal that those who had experienced a negative change regarding financial strain also had decreased well-being and previous research indicates that having little money or being overly concerned with financial success is associated with reduced well-being (Diener et al., 1999). It is of importance for society and the health care services to be aware that a negative change in any of these life circumstances might lead to decreased well-being for a period of at least three years. This is especially important since some researchers suggest that these events have a substantial causal relationship with depression (Kendler et al., 1999) as mentioned earlier.
The well-being scale as a screening instrument

Preliminary findings
Our results from Study IV showed that the (WHO) Ten Well-being index, which assessed well-being in Study I-III could be used as a screening instrument for depression. Research has suggested that depression affects a person’s SWB and that this in turn gives rise to physical disability and affects the capacity to work (Mintz, Mintz & Arruda, 1992). Furthermore, Bonicatto, Dew, Zaratiegui, Lorenzo and Pecina (2001) found that patients with major depression showed poorer quality of life compared to those suffering from chronic physical illness.

In addition, the WHO (Ten) Well-being index appears to be useful in identifying people with reduced well-being or quality of life (Heun, Burkart, Maier & Bech, 1999). It is important to estimate the prevalence correctly in order to fulfill care needs. One explanation of the large variation in prevalence might be due to the many different scales used to assess psychiatric symptoms. Further, the low participation rate might be due to the great number of sensitive questions, commonly included. The very subject of the investigation might also be one explanation of the low response rates. One way of increasing the response rate might could be to use well-being scales instead of psychiatric screening scales. Hence, using well-being scales instead of psychiatric screening scale might increase the response rate in surveys focusing on mental health. Therefore, we aimed to examine if the well-being scale could work as a screening instrument for depression in population based samples. Using well-being scales could also be useful in the primary health care in order to detect depression or other mental problems. Hence, it would also be easier for doctors or other professionals who work in primary health care services to provide a person a short form well-being scale with positive stated items rather than a psychiatric screening scale, especially if the people who seek primary health care for physical symptoms rather than depression or other personal problems. Studies have shown physical problems are related to depression (Barkow, Heun, Ustun & Maier, 2001).

The well-being scale includes few positive asked questions. Psychiatric screenings scales often consist of sensitive questions that might be “too personal” to respond to. Sensitive items is a complex concept and it depends on the respondents concerns about disclosing information about certain topics (Tourangeau, 2003; Tourangeau & Yan, 2007), disclosing information to an interviewer, and about disclosing information to a third part. Sometimes the first two are lumped together and called “privacy concerns” and about disclosing information to a third part reefer to worrying about “confidentially” (Singer, Van Hoewyk & Neugebauer, 1993; Tourangeau & Smith, 1996). In addition, when asking sensitive questions people seem to underreport undesirable characteristic and overreport socially desirable characteristic. The WHO (ten) well-being index do not include as sensitive items as psychiatric screening scales such as MDI and therefore we believe that this scale would facilitate for the respondent to respond to and due to this is a useful complement when predicting depression.

A recently conducted study evaluated if a SWB subscale, including four items, could be used to detect major depressive episodes (MDE) in primary health care. The result suggests that the scale could be useful in order to detect current MDE (Muhwezi, Ågren and Musisi (2007). Interesting to note is that, two of these items were similar to the ones including in Well-being scale in study I-IV in the present thesis. The time period of one week was the same within the two scales.
Two important measures of screening instruments’ validity in clinical settings are sensitivity and specificity. Sensitivity is defined as the percentage of all patients with a condition, in this case depression, according to MDI and SCAN. The latter is a semi-structured diagnostic interview and its reliability has been reported to be good. Several studies have used SCAN as the “gold standard” for psychiatric diagnoses.

When choosing a cut-off score of $\leq 8$ for the Well-being scale the sensitivity and specificity regarding depression according to SCAN was 0.81 for both measures. Thus, a sensitivity of 81 percent indicates that the instrument correctly identifies 81 percent of all depressed people in the sample. A specificity of 81% indicates that the instrument correctly identifies 81 % of the non-depressed in the sample. We also compared the well-being scale with MDI (defined in three ways, described in the method section). The preliminary results also indicate that the WHO (ten) well-being index can work as a screening instrument for depression when MDI is the index of validity.

**SWB and the WHO (ten) well-being index**

As mentioned in the background section, two traditions have emerged in the well-being research called eudaimonistic (psychological) and hedonistic (subjective). The hedonic perspective focuses on experiences of happiness and satisfaction, and SWB is a central phenomenon in this tradition (e.g. Deci & Ryan, 2006). According to Ryan and Deci (2006) most recent research on well-being has been more closely aligned from the hedonistic point of view.

It is common to divide SWB in cognitive evaluations (i.e. life satisfaction) and emotions (PA and NA) (Diener et al., 1999). The well-being scale used in the present thesis, measures overall index of positive and negative well-being and consist of ten items, including cognitive evaluations and emotions. The well-being scale was unidimensional and in order to test the reliability of this scale Cronbach's alpha was calculated. Cronbach's alpha is used to examine if the items in a scale are measuring the same underlying construct. Cronbach’s alphas for the well-being scale was high; 0.91 which means how well, in this case the well-being scale, the items measure a single unidimensional latent construct. A Cronbach’s alphas above 0.70 are considered acceptable (Nunnally & Bernstein, 1994).

**The relation between SWB and mental health problems**

Research has shown that there is a relationship between depression and low well-being (e.g. Hays et al., 1995), as mentioned earlier. In clinical psychiatric settings, impaired levels of psychological well-being have been found in remitted patients with panic disorder and agoraphobia (Fava et al., 2001). Fava, Rafanelli, Cazzaro, Conti and Grandi (1998) results showed that patients with current depression or panic disorder with agoraphobia, or social phobia, or generalized anxiety disorder, or Obsessive-compulsive disorder reported lower levels of residual symptoms after well-being and cognitive-behavioral therapies. A significant advantage of well-being therapy over cognitive-behavioural strategies was discovered. Ruini, Ottolini, Rafanelli, Tossani, Ryff and Fava (2003) found that psychological well-being was negatively correlated with distress (i.e. anxiety, depression, somatization).

It is therefore of great importance to extend our knowledge about factors that might help to increase a person’s SWB. Hopefully this thesis has contributed to more knowledge in this area.
Methodological reflexions

Of the randomly selected sample in the PART-study (n=19,742), 53 % agreed to participate (n=10,441). The non-participation rate was 47 % and an extensive dropout analysis was carried out using available registers. Higher participation rate was found to be related to female gender, higher age, higher income and education, being born in the Nordic countries, and having no psychiatric diagnosis in the hospital discharge register as well as in the early retirement register.

Hence, male gender, being under 50 years of age, low income, low education, living alone and foreign background (i.e. outside the Nordic countries) were strong determinants of non-participation. There is known that there is a strong relation between such conditions and mental disorders, therefore the prevalence of mental disorders based only on participants in our study, are likely to be somewhat underestimated (Lundberg et al., 2005). However, this does not affect the results in study I-IV since our studies did not aim to investigate this.

The associations between age, gender, income, country of origin, sick leave and in-patient hospital care due to psychiatric diagnosis were calculated for participants and the entire target population. The odds ratios (OR's) for these associations were similar among participants and non-participants (Lundberg et al., 2005). Those who choose not to participate were contacted by telephone, the main reason for not participate was the topic of the investigation, i.e., the questions concerned issues which were too sensitive. Another explanation of the low participation rate was the extensive questionnaire of 21 pages, which took approximately 1 hour to complete.

Those who did not respond to the questionnaire were reminded by post 2 weeks after the expected arrival. A second reminder was made by telephone another 2 weeks later. All together, the participants were reminded twice by mail and twice by telephone. The internal response rate was high since the questionnaire was completed by telephone in case of missing answers.

Regarding the interview, there were no difference between those who did and those who did not participate in terms of gender, country or origin, welfare allowance, unemployment benefits, sick leave or income, for more information see Forsell (2005). The participation rates among the screening-positive were 74% and 70% among the screening-negative.

An important methodological issue in Study I is the large sample size, because of this only effects with p<.001 were considered significant. Furthermore, since Study I and II were based on a cross-section causality cannot be ascertained.

The non participation rate was high (47%). However, it is unlikely that the dropout rate would have affected the result in study I, since there is no reason to believe that the relationships between the independent and dependent variables would be different among participants and non participants.

Some of the questions were based only on a single item. Research has shown that single items have low reliability. However, studies have also shown the opposite (Andrews & Robinson, 1991; Andrews & Withey, 1976; Cunny & Perri 1991; Diener et al., 2002).
In Study II the answers from the open-ended question were sorted into ten different categories. In order to do so the participant’s answers were first read through to obtain an overview. The answers were then read through a second time, and the initial categorisation started. After this process the co-authors re-reviewed the answer and categories in order achieve trustworthiness in the findings. Only the first two answers were taken into account in order to reduce the large amount of data, this might be a limitation. However, we believe that the first strategies mentioned are the once that one most often use. One hundred thirty two persons reported no strategy. There were no differences between persons who reported no self-care strategy and persons, who reported using strategies, regard to SWB, gender, socio-economic status, age and psychiatric diagnosis according to SCAN. A major limitation is that the Study had a cross-sectional design and therefore causality cannot be ascertained. In addition, we do not know the compliance of use of self-care strategies, and furthermore, studies have shown that the respondent sometimes spontaneously thinks out a answer meanwhile the question is asked (Schwartz & Strack, 1999). We did not base our categorization on any methodological theory.

The WHO (Ten) Well-being index is not a commonly used well-being measure; therefore it would have been a strength to include a more well-known well-being scale within the questionnaire in order to compare the results. However, research in the well-being area has shown that despite numerous of well-being scale they are highly correlated with each other and therefore is no reason to believe that our scale would be different. One explanation from this is that most the results in the present thesis are line with previous research.

The use of a longitudinal design is a strength. However, one consideration when using longitudinal data is whether the same result would have been obtained if a different cohort or generation of the same age had been followed for the same length of time but over a different period of time. In Study I the length of time between baseline and the follow-up was three years and there were not any major changes during this period that might have influenced our results. The results in Study IV are preliminary, and the methodical issues needs to be further discussed. It is important to be aware of this when interpreting the findings.

**Future research**

External circumstances have been known to have only a small influence on SWB, in accord with the present findings. Despite this, most research on SWB has focused on external factors instead of internal factors such as personality, genetics, and goals and activities. These variables have been known to have greater influence on SWB than external circumstances. Therefore, there is a need to start to focus on internal factors. Four self-care strategies, i.e. social support, relaxation, physical exercise and physical health reported in the present thesis were all associated with higher SWB. Naturally, this finding needs to be confirmed in other samples. Furthermore, in order to investigate if self-care strategies are helpful in order to prevent mental problems and promote mental health there is a great need for longitudinal intervention studies. It would be of great interest to increase research in developing and evaluate well-being scales aimed at screening for depression or other mentally problems.

There is also a need to focus on longitudinal data in order to find out more about the casual direction and also to gain more knowledge about life events impact on people’s SWB.
CONCLUSIONS

The present thesis attempts to contribute to the knowledge within SWB research. The findings suggest that;

- Men had higher SWB than women, positive childhood conditions, cohabiting, greater age, sound financial situation, absence of negative life events, and support from friends were all positively correlated with SWB. Social support was strongest associated. Together, these factors explained 20% of the variance in SWB. The findings replicated earlier research.

- Most people reported some kind of strategy; physical exercise, physical health, engaging in pleasurable activities, relaxation, plan/set limits, social support, professional contacts, positive thinking, work, and others.

- The most commonly reported self-care strategy was physical exercise, followed by social support, engaging in pleasurable activities, and relaxation. Professional contacts and work as self-care strategies were reported less frequently.

- Social support, relaxation, physical exercise and physical health were associated with higher SWB. Social support was strongest associated. All associations were independent of age and sex.

- SWB was relatively stable over a period of three years.

- Changes in financial situation, social support, or cohabiting influenced SWB after controlling for neuroticism, over a period of three years.

- The WHO (Ten) Well-being index can be used as a simple screening instrument for depression in population-based studies (this is a preliminary finding).
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