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Cultural Differences in Optimism, Pessimism and Eudaimonic Well-Being from a Neurobiological Perspective

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Declaration of authorship

Thesis title: *Cultural Differences in Optimism, Pessimism and Eudaimonic Well-Being from a Neurobiological Perspective*
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The above noted work is submitted to the School of Bioscience at the University of Skövde, as a final year Bachelor project toward the degree of Bachelor of Science in Cognitive Neuroscience. The project has been supervised by Judith Annett.

I, Alexsandra Plan, hereby declare that:

1. The above noted work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any other degree.
2. The above noted work is the result of my own investigations, except where otherwise stated. Where corrections services have been used, the extent and nature of the corrections have been clearly marked.

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Signature Date

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Abstract

The present thesis provides a theoretical overview, including a neurobiological perspective, of well-being (WB), eudaimonic well-being (EWB), optimism, pessimism and cultural differences between Western and Eastern societies. In addition, an empirical study investigated these concepts in Japanese and Swedish participants. Definitional problems and scarce neurobiological findings are two current problems to date within research on WB, EWB and cultural differences especially when looking at comparisons between Europe and East Asia. Interpretations and conclusions are therefore hard and tentative to make as more research is yet needed. This thesis empirical part therefore investigated the association between these concepts. In the best of the authors knowledge have this type of explorative study never been done before. 142 Swedish participants and 68 Japanese participants between the ages of 20 to 40 answered the self-reporting questionnaires; revised life orientation test (LOT-R), psychological well-being scale (SPWB) and the minimalist well-being scale (MWBS). The findings demonstrate that Swedish people report higher levels of optimism compared with Japanese people whom in turn report higher levels of pessimism when measured with LOT-R. Findings further demonstrate that Swedish people report higher levels of EWB when measured with SPWB. In comparison do Japanese people report higher levels of EWB when measured with MWBS. A difference was found in response pattern between MWBS and SPWB. And last did the findings suggest correlations in total scores of MWBS, SPWB and LOT-R but not within all sub-dimensions. Discussion of the results, limitations of the thesis and suggestions for future research concludes the thesis.

Keywords: Well-being, Eudaimonic well-being, Optimism, Pessimism, Cultural differences, Sweden, Japan

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For centuries, many professional thinkers from various disciplines have shown interest in the study of well-being (WB) and what makes life good (Ryan & Deci, 2001). This has resulted in various different interpretations and conceptualizations of WB (Urry et al., 2004). However, the majority of researchers tend to build their conceptions on the philosophical division between hedonism and eudaimonism (McMahan & Estes, 2011), further conceptualized as hedonic well-being (HWB) and eudaimonic well-being (EWB) (Ryan & Deci, 2001; Schueller, 2013). Despite the long history of WB research the concept is new to study within the field of neuroscience (Kringelbach & Berridge, 2009).

Other concepts with a long history are optimism and its opposite pessimism. Optimism and pessimism were first studied within the fields of personality- and health psychology. Today the most commonly used definition of optimism is that developed by Scheier and Carver (1985) and referred to as dispositional optimism (Chang, D'Zurilla & Maydeu-Olivares, 1994). Optimism as a personality trait has generated a number of studies within the field of neuroscience.

Research in WB, optimism and pessimism are all impacted by cultural differences (Markus & Kitayama, 1991; Chang, 1996). Cultural differences are in turn influenced by history and religion (Uchida, Norasakkunkit, & Kitayama, 2004). Commonly in such research is the division between America and Europe as ‘Western’ society compared to East Asia referred to as ‘Eastern’ society. However studies in optimism are not so common within European countries (Daukantaitė & Zukauskiene, 2012). Few neurobiological studies have examined cultural differences.

This thesis have several aims. The first, is to provide a theoretical overview of EWB, optimism and pessimism including a neurobiological perspective. In addition, cultural differences

mainly between Sweden and Japan will also be overviewed. The second aim is to conduct an empirical study looking on cultural differences in optimism and pessimism correlated to EWB between people in Sweden and Japan. Previous studies have looked separately on cultural differences in EWB (e.g., Kan, Karasawa, & Kitayama, 2009; Asano, Igarashi, & Tsukamoto, 2014), optimism and pessimism (e.g., Chang, 1996) but in the best of this authors knowledge have no other study previously investigated the correlation between these concepts in a cross-cultural context. Online surveys in native speaking language will be the main source for data collection. The research questions posed for the study are: do we interpret optimism and pessimism in the same way across cultures? Or do we interpret one as being more advantageous compared to the other? If so, how is EWB effected by different interpretations? Further, do any associations between optimism, pessimism and EWB exist? If so, what would these associations indicate?

These questions are important to understand how culture may or may not influence EWB, optimism and pessimism. A better understanding is important for the development of measurements and interventions aimed to improve WB. This knowledge will further be improved with a better understanding of the neurobiological differences between cultures. Hence, one focus in this thesis will be on presenting recent neurobiological research with linkage to EWB, optimism, pessimism and cultural differences. Following the same order within the theoretical overview each topic will first be presented at a general level followed by recent neurobiological findings. Then the empirical study will be presented including participants, measurements, procedure, statistical analysis and results. A discussion will follow with implications and future directions drawn from the current study. The paper will finish with a conclusion summarizing all the central findings.

Theoretical Background

Definition of Well-Being

Philosophers, religious followers and scientists are among some who have tried to define WB and its different components for centuries (Mindoljevic, 2012). Many different interpretations and conceptualizations have therefore been formulated (Urry et al., 2004). Some of the most known views are the subjective state theories (e.g., Mill, 1861/1979) where focus is on subjective pleasure and enjoyment and absence of negative feelings; objective list theories (e.g., Arneson, 2006) in which the belief are that individual happiness depends on item attainment from a list containing objectively intrinsically valuable things; desire fulfilment theories (e.g., Griffin, 1986; Heathwood, 2006) believes WB comes from the subjective satisfaction of desire; life-satisfaction theories (e.g., Tiberius & Hall, 2010) address satisfaction with life overall from the individual's own interpretations and nature fulfilment theories (e.g., Norton 1977) where the belief is that WB consists of fulfilment or realization of one's true nature. The nature fulfilment theory will be further elaborated later in this thesis as a central foundation to the chosen scope of WB research.

The diversity of perspectives challenges empirical work on WB and there is still no systematic or unified overview of WB (Huta & Waterman, 2014). Furthermore, there is little cross-disciplinary agreement on definitions of WB, happiness, utility, and quality of life resulting in frequent interchangeable use (Ruta, Camfield, & Donaldson, 2007).

The most commonly used measurement in WB research is self-report scales (Delle Fave, Brdar, Freire, Vella-Brodrick, & Wissing, 2011), resulting in concerns that the participants' own perception of WB may be limited (Delle Fave et al., 2011). Others are concerned that positive

subjective reports may not fully capture the essence of WB as non-acceptable behaviour such as drug or alcohol misuse may induce positive experiences (Tiberius & Hall, 2010). Additionally, the measurement scales used in WB research are mostly developed for the western society and less for the eastern society, further adding on the concerns (Lu & Gilmour, 2006; Markus & Kitayama, 1991). When evaluating WB, the western society tends to take an individualistic perspective where focus is on attention to self and uniqueness. In comparison, the eastern society tends to take a collective perspective where focus is on attending to others and harmonious fitting in everyone together (Markus & Kitayama, 1991). These cultural differences make it hard to study WB cross-cultural (Lu & Gilmour, 2006). Thus, two different scales of measurements will be used within this study, one developed for western culture and one developed for eastern culture. Both scales will be further elaborated later in this thesis.

Despite the complexity facing WB research, most scientists agree that WB refers to optimal psychological functioning and experience (Ryan & Deci, 2001). However, the precise nature of optimal functioning is not yet clear as many psychologists and philosophers provide different conceptualizations of WB. Although manifold and sometimes complex, these conceptions tend to revolve around two related but distinct philosophies, hedonism and eudaimonism (McMahan & Estes, 2011). To limit the current diversity in WB definitions this thesis will focus on the conceptual division of hedonia and eudaimonia, which will be elaborated below.

Two Philosophical Traditions: Hedonism and Eudaimonism

Although a detailed review of hedonism and eudaimonism is beyond the scope of this paper, a brief review is necessary to provide context for the essay.

Hedonic Well-Being. The hedonic tradition can be traced back to philosophers such as Aristippus, Hobbes, and Epicurus, who argued that maximizing pleasure and minimizing pain was the ultimate goal in life (Waterman, 2008). Hedonism as a view of WB has been shown in varied forms such as physical pleasures, appetites and self-interests. Commonly scientist's narrows focus to the subjective pleasure from the mind and body (Ryan & Deci, 2001). The most common concept used in research of HWB is subjective well-being (SWB), defined as high life satisfaction, high positive affect and low negative affect (Diener, 1984). The connection between HWB and SWB was established in the publication of the book *Well-being: Foundations of Hedonic Psychology* (Kahneman, Diener, & Schwarz, 1999). Although, some scientists disagree with including the term life satisfaction in HWB (Sumner, 1996).

To date, the majority of research on WB has been within the hedonic tradition (Waterman, 2008; Gallagher, Lopez, & Preacher, 2009). In the search for an understanding of HWB do some neuroscientific studies examine how pleasure is generated by brain mechanisms (Berridge & Kringelbach, 2011) or how the immune system reacts to positive affect (Barak, 2006). The concept of hedonia and eudaimonia are often compared and discussed within the same investigations and contexts (Kashdan et al., 2008). The definitions of HWB and EWB differ but the research indicates an overlap when using self-measures of WB (Berridge & Kringelbach, 2011). Berridge and Kringelbach (2011) say that it is challenging for neuroscience to study EWB. However, by identifying neural correlates of HWB an indication may be given into identifying EWB. EWB will be the focus in this thesis and further explored next.

Eudaimonic Well-Being. The eudaimonic tradition is often viewed as the opposite to the hedonic tradition (Deci & Ryan, 2008). Aristotle was the first to explain and divide the concept of eudaimonia from hedonia (as cited in Ryff & Singer, 2008). However, other philosophers such

as Plato and Zeno of Citium have also been linked to the conceptualization of eudaimonia (Grinde, 2012). The nature fulfilment theories are linked to Aristotle's view of eudaimonia where the ideals are grounded in the realization of one's true nature or 'daimon' (Norton 1977). Aristotle argues that the highest state that human action can bring is eudaimonia (as cited in Ryff & Singer, 2008). Eudaimonia is about acting virtuously and behaving in a way that is authentic and developmental for its own sake. Hence, humans flourish when they fulfil their true nature. Eudaimonia further distinguishes between pleasure or hedonism and the good life. Aristotle believed hedonism made humans slaves of desire and positive emotional experiences were therefore not central in Aristotle's conception of the good life. However, hedonic pleasure or happiness often comes as a by-product when one performs eudaimonic actions (as cited in Ryff & Singer, 2008). Hence, Aristotles definition of eudaimonia has been considered an objective approach as living according to one's true nature is judged from the outside (McDowell, 1980). Some argue that the objective approach to eudaimonia brings measurement issues when using subjective reports of happiness or subjective pleasure, since this state can be brought not only by positive inputs (Henderson & Knight, 2012). Others argue that the modern understanding of eudaimonia also includes the outcomes and not only the pursuits (Huta & Waterman, 2014).

A debate has been raised around the common understanding that eudaimonia equals happiness (Ryff, 1989) making it difficult to separate the view from hedonia as happiness previously been equally termed as hedonia (Waterman, 1984). Additionally, eudaimonia is a broad concept which has been examined within different fields such as spirituality, philosophy, ethics and psychology (Huta, 2013). The broad operationalization makes it hard to find a common definition of EWB within research (Huta & Waterman, 2014; Kashdan et al., 2008). According to Huta and Waterman (2014), the earliest research in EWB as a separate concept

from HWB was first conducted in 1993 by Waterman. For a new topic within research as with EWB, it may be beneficial to have a broad definition as it contributes to a better understanding. However, this multiplicity is also one of the biggest challenges for research in EWB (Huta & Waterman, 2014). Huta and Waterman (2014) have therefore suggested a classification system aimed for a unified terminology attempting to solve the problematic situation with definitions in EWB research. Their suggestion includes a hierarchical summary of current established definitions ranging from core definitions to major correlations. Hence, the researchers understanding of different variables in EWB categorized as core or close-to-core and then most or some attention are given respectively. The summary further includes suggestions for researchers to clarify the different elements or variables within the definitions such as orientations, behaviours, experiences or functioning in general. Hence, the why or what causes a behaviour, emotion, cognitive appraisal or well-functioning mental- or physical health. Lastly, the summary includes a level of measurement aimed to identify if there are any comparisons of WB definitions to a trait and/or state (Huta & Waterman, 2014). As this suggestion for a classification system is very recent it is not yet applied within EWB research.

There are currently too many different operationalization's and conceptualizations of EWB to fit them all within the scope of this thesis. Focus will therefore be on the two views used within this study (for more extensive review see Kashdan et al., 2008: Huta & Waterman, 2014; Ryff & Singer, 1998).

The first view of EWB used in this study was influenced by the Aristotelian view of eudaimonia and referred to as psychological well-being (PWB; Ryff, 1989). PWB is defined in term of six core dimensions essential for quality in life, which are autonomy (AU), environmental mastery (EM), personal growth (PG), positive relations with others (PRWO), purpose in life

(PL), and self-acceptance (SA) (Ryff, 1989). Each dimension will be further elaborated starting with AU, which refers to that one lives according to one's own personal beliefs without following the mass of others or searching for approval. EM refers to how well a person manages their life situation, both mentally and physically. PG refers to the personal talents and potentials a person have and how well they make use of these. PRWO means how good connections or how deep a person's ties are to significant others. PL means to what extent a person feels meaning, purpose, and direction with their life. And last, SA refers to the awareness of personal limitations and the knowledge and acceptance a person holds of themselves (Ryff, 1989). PWB is measured with the self-report measurement called the six-factor psychological well-being scale (SPWB; Ryff, 1989). SPWB is one of the measurements used in this study. The choice was influenced by the fact that SPWB is one of the most widely used scales measuring EWB within the field of neuroscience (Ryff, 2014) and in research of EWB overall (Ryff, 2014; Huta & Waterman, 2014; Archontaki, Lewis, & Bates, 2013; Lewis, Kanai, Rees, & Bates, 2014). Additionally SPWB has been translated into more than 30 languages and applied within different fields of research such as humanistic psychology, personality, health and biology (Ryff, 2014). SPWB further has several versions ranging from 120 items down to 18 items (Abbott et al., 2006), which will be further elaborated under the method section of this paper. The choice to use SPWB was also influenced by the use of a previously translated version, also further explored later in this paper.

As stated, research in WB faces some difficulties due to cultural differences in the interpretation of the concept of self (Lu & Gilmour, 2006; Markus & Kitayama, 1991). Bearing this in mind, EWB will also be explored from an eastern viewpoint within this thesis. The current existing WB measurements are developed for a western individualistic interpretation of WB (Christopher, 1999). Kan et al. (2009) argue that the existing WB measurements might fail to

capture the eastern cultures collective interpretation of WB. Results from WB research might therefore be biased to show that eastern cultures are in general unhappier than western cultures (Kan et al., 2009). Hence, in this study will EWB be measured with both SPWB as a western developed scale and a recently developed eastern scale called the minimalist well-being scale (MWBS; Kan et al., 2009). MWBS is a self-report measurement evaluating EWB from the two dimensions gratitude and positive disengagement. Both dimensions are grounded in the eastern fundamental idea of nothingness, meaning that reality changes all the time and one has to put effort into adjusting for each moment. Gratitude therefore captures the appreciation of just being alive and positive disengagement captures the disengagement from self and reality. Hence, peace and calmness may arise if one can disengage from the ever changing reality and just enjoy the fundamental idea of nothingness (Kan et al., 2009). Kan et al. (2009) do not explicitly state that their interpretation of WB is related to Aristotle's interpretation of EWB. However, the author suggests that making this link is given Aristotle's argument that humans flourish when they fulfil their true nature (as cited in Ryff & Singer, 2008) and Kan et al. (2009) argument that WB arises when easterners just enjoy the fundamental idea of nothingness. It seems reasonable to suggest that the fulfilment of one's true nature may arise when one just enjoys the fundamental idea of nothingness. Additionally, others have also linked the eastern collective view of WB towards EWB (e.g., Joshanloo, 2014). EWB will therefore be the term used within this paper when interpreting results from both western and eastern studies.

Eudaimonic Well-Being and Neuroscience

Despite the long history of WB research, WB as topic is new within the field of neuroscience (Kringelbach & Berridge, 2009). It was first after 2004 that neural correlates of WB

were directly studied (Urry et al., 2004). Consequently, not a lot of research have yet been conducted for WB within neuroscience and even less so for EWB within neuroscience (Lewis, Kanai, Rees, & Bates, 2014). In turn this limits the presented research within this section of the thesis but is still necessary to include as it provides an overview of the field.

Magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) are some of the brain measurements used within neuroscience investigating HWB and EWB. A MRI scan would create a detailed 2D image of the brain with the use of strong magnetic fields and radio waves. fMRI is an advancement of the MRI scanner. An fMRI scan creates 3D maps of the brain with the measure of hemodynamic responses to passing neural activity called blood oxygenation level dependent (BOLD). An EEG measures electrical activity along the scalp with the use of electrons which are placed systematically along the scalp. The electric activity results from voltage fluctuations generated from synaptic activity within the brain (Gazzaniga, Ivry, & Mangun, 2009).

Urry et al. (2004) used EEG together with self-reports such as 84-item version of SPWB, Diener's satisfaction with life scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and the positive and negative affect schedule (PANAS; Watson, Clark, & Tellegen, 1988) to study neural correlates of HWB and EWB (N = 84). SPWB was used to measure EWB. HWB was measured with SWLS and PANAS. The results showed that both HWB and EWB were associated with higher levels of frontal activation in the left hemisphere compared to the right hemisphere. Further analysis on each hemisphere specifically demonstrated that EWB but not HWB were associated with left prefrontal activation after removal of approach related positive affect. Approach oriented behaviours would be the opposite from avoidance oriented behaviours and positive affect would be opposite from negative affect. Previous studies have associated

approach related positive affect with higher activation in left compared to right prefrontal cortex (PFC) (Tomarken, Davidson, Wheeler, & Doss, 1992; Harmon-Jones & Allen, 1997). The PFC is important for cognitive functions such as planning and executing both internal and external appropriate behavioural responses. Creativity, ability to plan and execute as well as personality changes are commonly associated with impairment of the PFC (Miller & Cohen, 2001). Urry et al. (2004) findings therefore suggests that approach oriented behaviours may be more important for maintaining a EWB compared to HWB.

Telzer, Fuligni, Lieberman and Galván (2014) conducted a longitudinal study measuring (N = 47) predictions of depressive symptoms. fMRI, two different tasks examining decision making and a test examining depressive symptoms in youth was used as measurements. The predictions examined were hedonic and eudaimonic rewards and the neural sensitivity towards these. Hedonic rewards were defined as selfish and developed from risky decisions. Eudaimonic rewards were defined as collective and developed from prosocial decisions. Results found that the brain region called ventral striatum activated differentially to eudaimonic and hedonic decisions indicating that eudaimonic decisions decline depressive symptoms and hedonic decisions increase depressive symptoms (Telzer et al., 2014). Ventral striatum has previously been linked with reward processing (Fliessbach et al., 2007). A previous similar study (N = 72) used measures of fMRI, SPWB and an imagination task involving negative, positive and neutral images to view in order to find links between health, EWB and reward processing (Heller et al., 2013). Results showed that sustained activity within dorsolateral prefrontal cortex (DLPFC) and striatum during exposure of positive images was related to higher levels of EWB and lower levels of the stress related hormone cortisol (Heller et al., 2013). DLPFC is a brain area more known for its involvement in working memory (Owen, McMillan, Laird, & Bullmore, 2005) and attention

(Corbetta, Patel, & Shulman, 2008). However the authors suggest that the DLPFC is also involved in emotional regulation (Heller et al., 2013).

Taken together the two studies of Telzer et al. (2014) and Heller et al. (2013) indicate that higher levels of EWB compared to HWB may work as prevention against depression and stress. However caution should be taken when interpreting results from correlational studies using fMRI and self-reports within studies of emotion, personality, and social cognition as presented correlations often tend to be perhaps unrealistically high (Vul, Harris, Winkielman, & Pashler, 2009). Vul et al., (2009) successfully analysed 53 studies and 28 of these have use methods amplifying demonstrated results by for example only choosing to show one voxel without subtracting for noise or including whole image. Highest correlation reported in these correlational studies was .96. According to Vul et al., (2009) have previous research within the same area found correlations as high as .80 very uncommon.

Lewis et al. (2014) were the first to study the relationship between EWB and its linkage to cortical brain regions. 70 participants were scanned with MRI, measured with SPWB and further analysed with voxel-based morphometry (VBM). VPM is a neuroimaging analysis technique that allows investigation of volume in grey matter (GM) in the brain between two groups of subjects. Using high-resolution images from brain scanners taken on the whole brain or its subparts to calculate the volume enclosed of specific regions of interest (Ashburner & Friston, 2000). GM volume may increase or decrease as we adapt or learn new behaviours. GM consists of glial cells and cell bodies of neurons (Gazzaniga et al., 2009). The results from Lewis et al., (2014) showed that the right insular cortex GM volume were positively correlated to EWB (r=.46). This correlation was also seen within the SPWB three dimensions PG (r=.48), PL (r=.46) and PRWO (r=.51). Additionally, the left insular cortex GM volume positively was correlated with PG

(*r*=.45) and PRWO (*r*=.50). The insular cortex is suggested to be involved in emotional regulation, motor function, sensory function and different cognitive processes (Augustine, 1996; Li et al., 2014). Previous research has further demonstrated negative correlations between depression and insula volume (Hwang et al., 2010; Bechdolf et al., 2012; Sprengelmeyer et al., 2011). Together, this might suggest that EWB and depression share some biological links (Lewis et al., 2014). However, as Lewis et al. (2014) did not involve any measure of HWB it is impossible to know if their correlations seen within insular cortex is solely to EWB. It is also impossible to make any causal inference with the correlation. Further research is therefore needed (Lewis et al., 2014).

Previous research has also found a positive linkage between EWB and the SPWB three dimensions PG, PL and PRWO were higher levels demonstrated lowered risk for cardiovascular diseases and improved neuroendocrine regulation by lowering salivary cortisol throughout the day (Ryff, Singer, & Love, 2004). Further have higher levels of PL and PRWO been correlated with lower levels of interleukin-6 (IL-6) (Friedman, Hayney, Love, Singer, & Ryff, 2007). IL-6 is a cytokine, also called a small protein which influences the immune system. Higher levels of IL-6 have previously been linked with negative health outcomes (Hirano & Kishimoto, 1989). Hence, health and WB gets promoted by lowering levels of IL-6 (Steptoe, Dockray, & Wardle, 2009). Additionally, have Schaefer et al. (2013) demonstrated that PL enhance automatic emotional regulation after presented with a negative loaded emotional event. Hence PL may offer resilience and work protectively against negative events (Schaefer et al., 2013).

Gigantesco et al., (2011) twin study (*N* = 742) used a 3-item version of SPWB to examine genetic factors and environmental factors in correlation to all six dimensions of SPWB. Results demonstrated that individual differences are influenced by both genes and non-shared

environment (Gigantesco et al., 2011). However, caution should be taken when interpreting these results as criticism against the use of overly shortened versions of SPWB indicates a decline of the psychometric properties (Gallagher et al., 2009).

Singleton et al. (2014) investigated whether or not mindfulness meditation may improve individuals EWB and how this relates to the brain. Mindfulness is defined as a non-judgmental and meaningful awareness of the present moment (Kabat-Zinn, 2003). Participants (N = 14) underwent an 8-week-mindfulness-based stress reduction (MBSR) course and were measured before and after the MBSR course with MRI scans and a 54-item version of SPWB (Singleton et al., 2014). Results demonstrated a significant increase in EWB both in the total score (mean-pre = 224.64, SD = 28.62; mean-post = 252.75, SD = 26.89; t = -4.03, p = 0.001) and in five of the dimensions. Only PRWO did not show any significance increase of EWB. VPM analysis further demonstrated increased GM volume in brainstem areas called locus coeruleus, nucleus raphe pontis, pontine tegmentum and the sensory trigeminal nucleus bilaterally. All of these brainstem areas are known to be involved in mood and arousal regulation (Singleton et al., 2014). For example impairment of locus coeruleus has been associated with depression and anxiety (Aston-Jones & Cohen, 2005), and the pontine tegmentum has been linked with regulation of functions such as wakefulness, sleep, reward, learning, and selective attention (Kobayashi & Okada, 2007; Wang & Morales, 2009). All brainstem areas mentioned in Singleton et al. (2014) study correlated positively with EWB and no negative correlations was found. Taken together, increased GM volume within the brainstem areas mentioned may give an indication of a higher EWB (Singleton et al., 2014).

According to Schueller, (2013), optimism correlated to eudaimonia could expand the understanding of EWB and contribute with additional empirical work. Optimism, pessimism and

its relation to WB and neuroscience will be topics explored next in this paper. As there would appear to be a lack of research relating specifically EWB to optimism and pessimism, the research presented in the following sections will be on WB in general.

Definition of Optimism and Pessimism

The history of optimism has shown a celebration to live in the best of all possible worlds to a celebration of oneself and others misfortune (as cited in Peterson, 2000). Optimism is one's positive expectancies for the future or in life as general. Pessimism, as opposed to optimism, views the future or life in general with negative expectancies (Scheier & Carver, 1985; Dember, Martin, Hummer, Howe, & Melton, 1989). Most researches use Scheier and Carver's (1985) definition of optimism referred to as dispositional optimism (Chang et al., 1994) and this will also be the central view of optimism in this study. Optimism is generally regarded as a personality trait including motivational, cognitive and affective constructs which allow optimists to think and feel positively about the future (Peterson, 2000), although, all researchers do not agree that optimism is a personality trait. Some argue that optimism should be viewed from a variety of domains or together with other similar concepts (Boyle, Saklofske, & Matthews, 2014). According to Carver and Scheier, (2014) different conceptualizations are very similar to optimism and sometimes used interchangeably or together in research. For example, *hope* (e.g., Tiger, 1979; Snyder, 1994) defined according to an individual's determination that goals can be achieved as well as the successful planning believed to aid the completion of goals. Another conceptualization is *self-efficacy* (e.g., Bandura, 1997) defined as cognitive, motivational, affective, and decisional processes which together regulates human functioning in the way individuals think of self (positive or negative), motivation and perseverance in face of adversity.

Research on optimism began within the fields of personality- and health psychology during the mid-1980s. The 5-factor model of personality is usually referred to in relation to traits and has also been associated with optimism (Carver & Scheier, 2014; McCrae & Costa Jr, 1997). Five different broad traits summarize the 5-factor model, namely; openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. According to Marshall, Wortman, Kusulas, Hervig and Vickers Jr (1992) and Boland and Cappeliez (1997) optimism is a mixture of extraversion and neuroticism. According to Sharpe, Martin and Roth (2011) optimism also overlaps partially with conscientiousness and agreeableness. Taken together, optimism seems to overlap with almost all traits within the 5-factor model. Recent work adds further confusion where indications show that optimism is distinct from these five broad traits (e.g., Kam & Meyer, 2012; Alarcon, Bowling, & Khazon, 2013). Although, different versions of the 5-factor model scale seem to be used within the different studies. It is beyond the scope of this thesis to explain the association between optimism and the 5-factor model any deeper as the relation is to complex (Carver & Scheier, 2014). Further is it not of relevance for the aim of this study where focus is on the correlation between optimism and EWB as well as cultural differences between Sweden and Japan.

Two of the most prominent research approaches within optimism (Zhang et al., 2014) are namely, dispositional optimism (Scheier & Carver, 1985) and explanatory style optimism (Peterson & Seligman 1984). Only a brief description will follow of the explanatory style as the scope for this thesis will be on dispositional optimism.

The explanatory style originates from Seligman's (1975) learned helplessness theory (Zhang et al., 2014). A brief description of learned helplessness theory proposes that the experience of bad uncontrollable events intrinsically teaches animals and humans to become

unresponsive and passive as they have learnt that there is no contingency between actions and outcomes (Peterson, 2000). Hence, the explanatory style refers to how people explain the causes of bad or good events (Buchanan & Seligman, 1995). The explanatory style consists of three dimensions which are internal versus external, unstable versus stable and global versus specific causes. Optimistic descriptions associate bad events to external, unstable, and specific causes. Pessimistic descriptions associate bad events to internal, stable, and global causes. The opposite relationship is seen when describing associations towards good events (Buchanan & Seligman, 2013). Explanatory style is measured either with a self-report questionnaire called the attributional style questionnaire (for details, see Peterson et al., 1982), it's children's version called children's attributional style questionnaire (for details, see Seligman et al., 1984) or with a content analysis procedure called the content analysis of verbatim explanations (for details, see Peterson, Schulman, Castellon & Seligman, 1992). Explanatory style is also commonly referred to as learned optimism or attributional style (Seligman, 2011).

Dispositional optimism originates from Carver and Scheier's (1981) self-regulation model in which behaviour is thought to form around the expectancies towards pursuing a goal. Hence, if chances of success towards a goal are expected to be favourable the engagement in effort pursuing the goal despite adversity is bigger. People are more likely to give up on threatening goals if their doubts of success are too great (Scheier, Carver, & Bridges, 1994). The former expectation towards pursuing a goal relates to an optimistic view and the latter towards a pessimistic view. Dispositional optimism is measured with a self-report questionnaire called the life orientation test (LOT; Scheier & Carver, 1985) or its follower, the revised life orientation test (LOT-R; Scheier et al., 1994). A children's version also exists named the youth life orientation test (Ey, 2005). LOT-R will be the measurement used for optimism in this study. The choice was

mainly influenced by the fact that LOT-R is the most frequently used measurement of optimism today (Herzberg, Glaesmer, & Hoyer, 2006; Rauch, Schweizer, & Moosbrugger, 2007). Additionally, same as the choice to use a previously translated version of the SPWB was the choice to use LOT-R also influenced by this. Dispositional optimism can also be measured with the optimism and pessimism scale (for details, see Dember et al., 1989) which provides independent scores for optimism and pessimism. There is also a measurement for pessimism called the hopelessness scale (Beck, Weissman, Lester, & Trexler, 1974). The question if optimism and pessimism should be viewed as a bipolar or unipolar dimension is an issue of interest for researchers as it effects how to measure and analyse the results (Chang et al., 1994; Dember et al., 1989; Herzberg et al., 2007; Bailey, Eng, Frisch, & Snyder, 2007). When optimism and pessimism is viewed as bipolar both optimism and pessimism are believed to be on a single dimension, also referred to as a one dimensional view. In turn, this means that one can be both optimistic and pessimistic at the same time having higher levels of one and lower levels of the other. In comparison, when optimism and pessimism is viewed as unipolar the two traits are believed to be independent from one another, meaning that one is either a pessimist or an optimist. The unipolar view is also referred to as a two dimensional view. The current on-going debate originates from the fact that some personality dimensions are bipolar, whereas others are unipolar. Many studies have tried to answer the question (e.g., Chiesi et al., 2013; Glaesmer et al., 2012; Rauch et al., 2007; Eichner, Kwon, & Marcus, 2014) but reached opposite conclusions and therefore is the question still unresolved (Carver & Scheier, 2014). In this thesis optimism and pessimism will be viewed as one dimension as most of the studies presented share this viewpoint.

Optimism, Pessimism and Well-Being

Optimism and pessimism relates to how people feel and think about the future (Peterson, 2000). Differences in optimism therefore relates to the balance among feelings and thoughts. Eagerness, anger, anxiety and depression are commonly known feelings associated to optimism and pessimism (Carver & Scheier, 2001; Scheier & Carver, 1992). A lot of research, including cross-sectional and longitudinal studies in optimism has demonstrated benefits in people's physical- and SWB (e.g., Rasmussen, Scheier, & Greenhouse, 2009; Scheier et. al., 1989; Daukantaitė & Zukauskiene, 2012) as well as better relationships (Brissette, Scheier, & Carver, 2002). Furthermore, research has demonstrated associations between optimism and self-esteem (e.g., Dunn, 1996; Tan & Tan, 2014; Barkhuizen, Rothmann, & Vijver, 2014) indicating higher resilience against stress and adversity as well as higher levels of success in work and education; life satisfaction (e.g., Chang, 1998; Lang, Weiss, Gerstorf, & Wagner, 2013; Veronese, Castiglioni, Tombolani, & Said, 2012) indicating that older age relates to better health outcomes, again higher resilience in stressful or traumatic life events; lower depression rates (e.g., Carver & Gaines, 1987; Marshall & Lang, 1990; Sánchez, Martín-Brufau, Méndez, Corbalán, & Limiñana, 2010) and lower negative emotions (e.g., Curbow, Somerfield, Baker, Wingard, & Legro, 1993; Zenger, Borowski, Stolzenburg, & Hinz, 2010; Weinberg, Besser, Zeigler-Hill, & Neria, 2015) showing that higher optimism may work as protection against depression and negative emotions such as anxiety, sadness and anger. Optimists and pessimists cope differently with adversity where optimism seems to boost resilience and thereby lowering chances of stress (Billingsley, Waehler, & Hardin, 1993; Nes & Segerstrom, 2006; Stanojević, Krstić, Jaredić, & Dimitrijević, 2014). Optimists seem to use problem-focused strategies where they approach a problem.

Pessimists instead seem to avoid problems and prevent dealing with the problem (Wrosch et. al., 2007). However, a recent study shows that care should be applied when interpreting results as test stability and predictive accuracy of optimism and pessimism was seen to be highly reduced among older adults compared to younger adults (Armbruster, Pieper, Klotsche, & Hoyer, 2015).

Despite the accumulating evidence showing how beneficial optimism seems to be for health and WB there is also evidence showing that optimism has downsides. One downside has been named unrealistic optimism or optimism bias. Both concepts refer to the same and have received much attention within optimism research (e.g., Weinstein, 1980; Weinstein & Klein, 1996; Bortolotti & Antrobus, 2015). Unrealistic optimism is defined as the difference between a person's expectation and the outcome that follows. The bias is optimistic if the expectations are better than reality and the bias is pessimistic if the expectations are worse than the reality (Sharot, 2011). Gambling is one area associated with unrealistic optimism which may have a bad outcome as a consequence from overly optimistic future anticipation (Gibson & Sanbonmatsu, 2004). Unrealistic optimism has further been studied across culture (Chang, 2001), age (Isaacowitz, 2005) and species (Harding, Paul, & Mendl, 2004) shown to significantly impact different life domains such as health and WB. Unrealistic optimism is just briefly mentioned here as part of the optimism WB research and will be further explored in the next part of this thesis.

The Biology and Neuroscience of Optimism and Pessimism

As stated, a great deal of research has linked optimism to positive health outcomes as opposed to pessimism (Rasmussen et al., 2009; Carver, Scheier, & Segerstrom, 2010).

Psychological resources have been shown with many twin studies to be heritable (Alessandri et al., 2010; Mosing, Zietsch, Shekar, Wright, & Martin, 2009; Plomin et al., 1992).

Independent reports for optimism have shown a range from 20 percent to 36 percent in heritability (Alessandri et al., 2010). The genetic bases for this heritability have yet not been clarified. However, a recent study (N = 326) suggests that a gene called OXTR is linked to optimism and pessimism (Saphire-Bernstein, Way, Kim, Sherman, & Taylor, 2011). Subjects with the A allele called *OXTR SNP rs53576* showed higher levels of depressive symptomatology and lower levels of self-esteem, personal mastery and optimism (Saphire-Bernstein et al., 2011). Other studies have previously supported associations between oxytocin, socioemotional function and positive emotions (for extensive review, see Campbell, 2010; IsHak, Kahloon, & Fakhry, 2011). Although, optimism and pessimism are viewed as one dimension within this paper, a very recent article suggests a bipolar dimension when examining 852 pair of twin's genetic influences on optimism and pessimism (Bates, 2015).

Optimism has been linked to lower mortality rate in coronary heart disease and cardiovascular disease (Giltay, Kamphuis, Kalmijn, Zitman, & Kromhout, 2006; Scheier et al., 1989; Scheier & Carver, 1992), slower progression of carotid atherosclerosis and acquired immune deficiency syndrome (AIDS) (Scheier et al., 1999; Matthews, Räikkönen, Sutton-Tyrrell, & Kuller, 2004), as well as faster recovery rate after coronary artery bypass graft surgery (Ronaldson et al., 2014; Scheier et al., 1989). On the contrary, pessimism has been associated with death from coronary heart disease (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001) and increased rate for hypertension in relation to socioeconomic status (Grewen et al., 2000). Optimists have more healthy habits including increased physical activity, diets with more fruits, vegetables and whole grains, moderate alcohol consumption and non-smoking, all of which are known risk factors for cardiovascular diseases (Giltay, Geleijnse, Zitman, Buijsse, & Kromhout, 2007; Kohut, Cooper, Nickolaus, Russell, & Cunnick, 2002; Tinker et al., 2007).

Differences between optimists and pessimists have further been reported in relation to stress effecting the autonomic nervous system (ANS) and hypothalamic-pituitary-adrenal (HPA) axis. The ANS regulate and maintains balance within internal organs and glands. The HPA axis is activated during stressful events and sends out hormones aimed to increase blood pressure, heart rate and other bodily responses needed for survival of a stressful situation (Gazzaniga, Heatherton, Halpern, & Heine, 2006). Reports show that optimism may downregulate the ANS and HPA (Pressman & Cohen, 2005; Taylor et al., 2008) and pessimism may have the opposing effect (Das & O'Keefe, 2006; Freres & Gillham, 2006). Optimism as opposed to pessimism has further been associated with IL-6, promoting health by reducing levels of inflammatory markers induced by stress (Steptoe, O'Donnell, Badrick, Kumari, & Marmot, 2008; Brydon, Walker, Wawrzyniak, Chart, & Steptoe, 2009; Roy et al., 2010). As previously stated, lower levels of IL-6 promotes health and WB (Steptoe et al., 2009).

Sharot, Riccardi, Raio and Phelps (2007) examined (N = 15) the imagination of positive future events opposed to negative ones with the measurements fMRI and LOT-R. Results showed that imagination of positive future events opposed to negative ones enhanced activation in amygdala and in the rostral anterior cingulate cortex (rACC) (Sharot et al., 2007). Previous studies have shown the amygdala to be involved with emotions of fear and anxiety (Davis, 1992) and that the rACC have inhibitory effects on the amygdala during emotional stimuli (Bissière et al., 2008; Etkin, Egner, Peraza, Kandel, & Hirsch, 2006). Additional brain areas involved in the imagination of positive future events are the ventromedial prefrontal cortex (vmPFC) and posterior cingulate cortex (PCC) as shown in Blair et al. (2013) study. Blair et al. (2013) examined optimistic bias (N = 33) and its neural basis with fMRI and LOT-R by asking participants to imagine positive future events opposed to negative ones. Blair et al. (2013) further

demonstrated a positive relation between optimistic bias and rACC as well as a negative relation associated with anterior insula (AI) and dorsomedial prefrontal cortex (dmPFC) for negative events. All of these brain areas are known to be involved with emotional processing, decision-making and memory (Lamm & Singer, 2010; Maddock, Garrett, & Buonocore, 2003; Valla, Berndt, & Gonzalez-Lima, 2001; Elliott, Rees, & Dolan, 1999; Clark et al., 2008). A previous study demonstrated differences in the brain when imagining near or far future events (D'Argembeau, Xue, Lu, Van der Linden, & Bechara, 2008) (N = 12). Imagining near future events involved the caudate nucleus, a brain area known for involvement in executive functioning and attentional tasks due to its connections to other brain areas (Castellanos et al., 1994; Divac, Rosvold, & Szwarcbart, 1967). Imagining far future events involved the anterior part of vmPFC (D'Argembeau et al., 2008). Taken together, these studies show that optimism associates to a reduction in negative directed future thoughts (Yang, Wei, Wang, & Qiu, 2013).

A recent study investigated differences between healthy (n = 15) and depressed individuals (n = 15) measured with fMRI comparing estimation errors made when presented with bad news (Garrett et al., 2014). Estimation errors occur when participants make incorrect estimates about the future, either overestimate or underestimate their own involvement. When stimuli presented called for an adjustment it were less likely that healthy individuals updated their beliefs. Estimation errors showed a strong neural coding in left inferior frontal gyrus (IFG) and bilateral superior frontal gyrus in response to good news and in right inferior parietal lobule and right IFG in response to bad news for depressed individuals. Healthy individuals showed a weak neural coding in comparison (Garrett et al., 2014). These four brain areas are thought to be involved with executive functions including inhibitory control especially within the working memory (Chochon, Cohen, Moortele, & Dehaene, 1999; du Boisgueheneuc et al., 2006; Swick,

Ashley, & Turken, 2008; Costafreda, Lee, Everitt, Brammer, & David, 2006).

Optimism has also been associated with physiological activity in the left hemisphere of the brain while pessimism has been associated with the right hemisphere (Hecht, 2013). This association is based on converging evidence from different fields such as psychiatry, neurology, psychology and physiology demonstrating that the fundamental approach towards life involves the two cerebral hemispheres differentially (Hecht, 2013). As stated, previous research has shown that approach oriented behaviours are related to greater left rather than right hemispheric activation (Harmon-Jones & Allen, 1997). Left versus right hemispheric activation have also shown better recovery from challenges involving negative emotions (Jackson et al., 2003) and the ability to suppress unwanted emotions (Jackson, Burghy, Hanna, Larson, & Davidson, 2000).

Several recent studies have examined the relation between optimism, pessimism and pain with the use of conditioned pain modulation (CPM) (Goodin et al., 2013; Goodin & Bulls, 2013; Hanssen, Vancleef, Vlaeyen, & Peters, 2014). CPM use cold compression tasks where a person inserts a body part in cold water (4-5 °C) for a certain amount of time. After removal a second pain stimuli is applied to the participant. Perceived level of pain is measured between different intervals (Yarnitsky, 2010). The results from studies using CPM indicate that optimists show a greater tolerance towards pain and this did not vary across people's ethnical background (Goodin et al., 2013; Goodin & Bulls, 2013; Hanssen et al., 2014).

A recent study using VPM and LOT-R to investigate individual associations between brain structure and optimism (N = 361) showed greater volume of GM in areas including the left thalamus/left pulvinar extended to the left parahippocampal gyrus (Yang et al., 2013). Evidence suggests that the left thalamus/left pulvinar are involved with functions such as perception, speech and memory (Fedio & Van Buren, 1975; Van Buren & Borke, 1969; Johnson & Ojemann,

2000) and further linked to the limbic system known for its function in emotional regulation (Yang et al., 2013). The left parahippocampal gyrus is thought to be important for the function of memory recollection (Diederen et al., 2014). Further is this area thought to be involved in patients with panic disorders (Massana et al., 2003) and psychotic disorders such as Schizophrenia were it has shown to be impaired (Diederen et al., 2014). Yang et al. (2013) study is the first of its kind to investigate individual differences between optimism and brain structures using VPM. The results may give an indication to a biological basis for optimism. Subjects with a greater level of optimism are suggested to have a better emotional regulation due to the association with GM volume in thalamus/pulvinar. The study further suggests more positive emotions and feelings associated to the GM volume in left parahippocampal gyrus (Yang et al., 2013).

New evidence links the drug called dihydroxy-L-phenylalanine (L-DOPA) to unrealistic optimism which seems to be enhanced by the dopaminergic function (Sharot, Guitart-Masip, Korn, Chowdhury, & Dolan, 2012). Hence, the ability to think more positively when negative information about the future comes up. L-DOPA is a precursor to the neurotransmitter called dopamine (Malmlöf et al., 2014). Dopamine influences much different behaviours by its function to bind extrasynaptic receptors and transporters by escaping the synaptic cleft within the brain. Dopamine is known to circuit within the basal ganglia which in turn involve functions of movement (e.g., Albin, Young, & Penney, 1989; Alexander & Crutcher, 1990), reward and motivation (e.g., Tanaka et al., 2004), as well as cognition and emotion (e.g., Cancelliere & Kertesz, 1990; Levy & Dubois, 2006). If the dopamine circuit becomes abnormal it may result in different neurologic disorders such as Parkinson's, Schizophrenia, and Huntington's disease (An, Choi, Lee, & Choi, 2014). Depression has previously shown absence of unrealistic optimism and

been linked to pessimistic expectations (Strunk, Lopez, & DeRubeis, 2006; Korn, Sharot, Walter, Heekeren, & Dolan, 2014), hence, viewing information about the future more negatively than what the reality indicates. L-DOPA is therefore suggested to work as treatment in the future for depression so that depressed people may view negative future information with positive expectations (Sharot et al., 2012).

Cultural differences

History and religion has both contributed to cultural differences between western and eastern societies today (Uchida, Norasakkunkit, & Kitayama, 2004). As stated, the western view in European-American culture tends to define WB as the experience that comes from personal achievements. Christianity is the most common religion in western society where the belief of self is predestined to be either 'selected' to heaven or 'banished' to hell. Hence, contributing to the view of self as unique and that maximization of personal achievements leads to higher levels of WB. In comparison, the eastern view in East Asia tends to define WB as the experience of social harmony where focus is on attending to others for gaining this achievement. Ideologies such as Taoism, Confucianism and Buddhism are common in East Asia and share the view that everything is connected with everything else. Further is the belief that good personal domains (e.g., success in/or by self) often develops into certain social problems (e.g., envy or jealousy by others) (Markus & Kitayama, 1991; Uchida et al., 2004). Markus and Kitayama (1991) defined the different views of self between the cultures as *independent* for west and *interdependent* for east. This will also be the concepts used for separation in this paper. However, it seems that especially young people in Japan start to focus more on individualism and uniqueness. This difference is believed to arise due to a shifting trend in institutions within Japan (Uchida,

Takahashi, & Kawahara, 2014).

An fMRI study between Chinese (n = 30) and Danish (n = 30) college students investigated differences in judgments of personality traits, social roles and physical attributes in relation to public figures and themselves (Ma et al., 2012). Results showed greater activity in temporoparietal junction (TPJ) during judgements of self in relation to social attributes in the Chinese compared to Danish participants. Danish compared to Chinese participants showed greater activation in the medial prefrontal cortex (mPFC) regardless of attribute dimensions for judgements. Both TPJ and mPFC are brain areas known to be involved with functions of social cognition such as empathy and theory of mind crucial for distinction of self and others (Gusnard, Akbudak, Shulman, & Raichle, 2001; Decety & Lamm, C. (2007). The authors therefore suggests that their findings indicate cultural differences adopted and/or learned strategies for self-reflection indicated by the differences shown in the social brain network including the mPFC and TPJ (Ma et al., 2012).

Research on emotions, cognition and motivation have all shown cultural differences between the west and the east (Uchida et al., 2004). Kitayama, Mesquita and Karasawa (2006) conducted two self-report studies investigating the relationship between independent and interdependent context of experienced emotions. Results showed that Japanese people tend to experience more engaging emotions (e.g., friendly emotions towards others and guilt) compared to Americans. In comparison, Americans tend to experience more disengaging emotions (e.g., emotions directed towards oneself such as anger or pride) compared to Japanese. Evidence from a recent meta-analysis analysing 35 fMRI studies further support these differences, showing differences in neural activity within brain areas such as dmPFC, lateral frontal cortex, TPJ for East Asians and anterior cingulate, vmPFC and bilateral insula for Westerners in relation to social

cognitive processes; left inferior parietal cortex, left middle occipital and left superior parietal cortex for East Asians and right lingual gyrus, right inferior parietal cortex and precuneus for Westerners in relation to non-social processes; right dorsal lateral frontal cortex for East Asians and left insula and right temporal pole for Westerners in relation to social affective processes. (for more extensive review, see Han & Ma, 2014). Further, emotional control such as controlling for emotional expression by suppression is highly valued in Asia (Matsumoto et al., 2008). In comparison, European-American value emotional expression instead and view suppression of emotions unhealthy and undesirable (Kim & Markus, 1999; Mauss & Gross, 2004). These cultural differences further seem to effect the immune system when measuring levels of IL-6 (Miyamoto et al., 2013). Miyamoto et al. (2013) examined the relationship between IL-6 and negative emotions in American (n = 1044) and Japanese (n = 382) adults using blood samples, height, weight and several self-report measurements for health, personality traits and emotions. Results from their regression analysis demonstrated that higher levels of IL-6 correlated with negative emotions among Americans, b = 0.06, S.E. = 0.02, $t(1363) = 2.68$, p = .001, but not for Japanese, b = -0.01, S.E. = 0.03, $t(1363) = 0.35$, p = .73.

Additional differences in emotional processing have been seen with event-related potentials (ERP) showing late positive potential (LPP) (Murata, Moser, & Kitayama, 2013). The responses which are recorded via EEG are called ERP (Kitayama & Murata, 2013). “The LPP is a long-lasting positivity that peaks ~300–400 ms after the onset of a stimulus and extends for the duration of the stimulus.” (Murata et al., 2013, p. 596). European Americans (n = 17) and Asian (n = 17) undergraduates were compared in suppression of emotional expressions under instructions to attend or suppress emotions when presented with unpleasant or neutral pictures. The LPP was used as an objective indicator of emotional processing in the ERP. Both groups

equally showed activation in the parietal lobe 600 ms post stimulus. European Americans showed complete absence of parietal LPP suppression but an increase in the frontal lobe during suppression compared to the attend condition. By comparison, Asians showed a significant decrease of the parietal LPP in the suppression compared to the attend condition and completely disappeared 2000 ms post-stimulus (Murata et al., 2013).

Taken together, results show that Asians compared with European Americans require less neural activity for suppression of emotions (Murata et al., 2013). In turn this supports the cultural value put in emotional suppression, demonstrated less valued in western compared to eastern societies (Kim & Markus, 1999; Mauss & Gross, 2004; Matsumoto et al., 2008). Research on attentional versus holistic processing indicates that holistic perception is stronger in Asian Americans compared with a narrowing perception in European Americans (Kitayama & Murata, 2013). Additionally, patterns for face perception has shown that Japanese people are more configural compared to Caucasian Americans (Miyamoto, Yoshikawa, & Kitayama, 2011).

Research on motivation has shown that the engagement of self-criticism is associated with the will and the action to work harder for Asians but not for Americans (Heine et al., 2001; Heine, Lehman, Markus, & Kitayama, 1999; Yamaguchi & Kim, 2015). Japanese and Americans both seem to use explicit self-criticism while maintaining an implicit positive self-regard (Kitayama & Uchida, 2003). However, Japanese compared with Canadians seems to less often rate themselves as relatively better compared to how one rates others (Heine, Takata, & Lehman, 2000). A recent study using ERP showed indications that Americans work harder to gain gifts for themselves compared to Asians who worked just as hard for themselves as for a friend (Kitayama & Park, 2014).

Research on optimism and pessimism has shown that Asian Americans compared to

Caucasians evolve a more positive problem-solving behaviour when pessimistic (Chang, 1996). As stated, this is opposite from previous findings in the west where problem-solving behaviour associates with optimism (Wrosch et. al., 2007). Further have eastern compared to western societies generally lower scores in optimism (Chang, 1996; Lai & Yue, 2000). Yamaguchi and Kim (2015) argue that this has to do with the differences in independence and interdependence when viewing self. Meaning that an independent view of self are more related to optimism and self-esteem as it involves the WB of self firstly and how this in turn may influence other people. In contrast, the interdependence view of self would be more related to self-criticism and discipline as the focus is more how a person can adjust towards others (Yamaguchi & Kim, 2015). Most of the studies comparing optimism and pessimism across western and eastern cultures have been conducted between America and Asia while studies among European countries are rare (Daukantaitė & Zukauskiene, 2012). This current study will focus on comparison of Sweden, a European country and Japan, an Asian country. To the best knowledge of the author, this type of comparison has not been reported in any existing study to date relating to optimism, pessimism and wellbeing.

The first hypothesis in the current study predicts cultural differences in optimism and pessimism with higher reported levels of optimism measured with LOT-R in the Swedish compared to the Japanese sample. This hypothesis is based on previous findings reporting a more positive problem-solving behaviour in pessimistic Asian Americans compared to Caucasians (Chang, 1996), generally lower reported scores in optimism for eastern societies (Chang, 1996; Lai & Yue, 2000) as well as the cultural differences demonstrated in emotions cognition and motivation (see above). The second hypothesis predicts cultural differences in EWB measured with SPWB with higher reported levels in the Swedish compared to the Japanese sample. The

third hypothesis predicts cultural differences in EWB measured with MWBS with the Japanese reporting higher levels of EWB compared to the Swedish sample. The fourth hypothesis predicts a difference in response pattern between the measurements of SPWB and MWBS. The second, third and fourth hypothesis are all based on previous findings where culture demonstrated differences in the interpretation of WB (Markus & Kitayama, 1991). In turn these findings further result in a possible bias in WB research currently showing that eastern are in general unhappier than western cultures (Kan et al, 2009; Asano et al., 2014). The fifth hypothesis is that associations exist between the different measurement scales. This is based on previous correlations seen between LOT-R and SWB measures (e.g., Zhang et al., 2014; Glaesmer et al., 2012; Bailey et al., 2007) as well as correlations seen between SPWB and MWBS (Kan et al, 2009).

Method

Participants

Participants were from Sweden (n = 142) and Japan (n = 68). The Swedish sample included 51 males (mean age = 26.94, SD = 5.42) and 91 females (mean age = 26.45, SD =5.68) of whom 63,4% were students, 25,4% were working and 11,3% did something else as occupation. The Japanese sample included 27 males (mean age = 23.96, SD = 5.83) and 41 females (mean age = 24.59, SD = 6.76) of whom 66,2% were students, 25% were working and 8,8% did something else as occupation. Information about the study was spread via the online social network site called Facebook. Participation was voluntary and anonymous. Age range was restricted to 20 -40 years with no further demographic restriction. No payment was offered for participation. No participants were rejected by the researcher.

Measurements

Shortened versions were used in this study for all three measurements scales; LOT-R, SPWB and MWBS. These measurement scales has previously been translated from the original English versions to Japanese in order to compare America and Japan (Ryff et al., 2008). For convenience and for reducing respondent's burden for lengthy questionnaire the same Japanese versions were used in this study (see Appendix A for final versions used in this study). Repeated backward translation was used for the Swedish versions performed separately by two independent bilingual translators (see Appendix B for final versions used in this study). As stated, two EWB measurement scales, one developed from a western perspective (SPWB) and the other developed from an eastern perspective (MWBS) was used in order to notice cultural differences in response pattern. Only LOT-R, developed from a western perspective was used as measurement for optimism and pessimism. To the best of the author's knowledge do no eastern developed measurement scale for optimism and pessimism exist to date.

Revised Life Orientation Test. LOT-R was used to measure optimism and pessimism as one dimension (Scheier et al., 1994). LOT-R developed after a re-evaluation aimed to address the criticism directed towards the original life orientation test (LOT) scale (Scheier et al., 1994; Scheier & Carver, 1985). LOT is a self-report measure consisting of eight items plus four filler items. Out of these eight items, four items are positively directed and four items negatively directed. Respondents are asked to indicate the extent of their agreement on a scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*.). Criticism against LOT mainly involves the third variable problem (Scheier et al., 1994) questioning whether or not LOT measures only optimism or the variance of optimism shared with trait anxiety (Smith, Pope, Rhodewalt, & Poulton, 1989)

or self-mastery (Marshall & Lang, 1990). Further criticism has been directed toward the potential conceptual and empirical overlap between optimism, neuroticism, self-mastery and self-esteem (Scheier et al., 1994). Scheier et al. (1994) respond to the criticism with their findings of moderate correlations arguing that previous studies found high correlations due to small sample sizes. Thus, LOT-R distinguishes optimism from neuroticism, self-mastery, trait anxiety and self-esteem. Further findings resulted in removal of two positively directed items which did not explicitly refer to the expectation of favourable outcomes. Additionally, one negative directed item was removed and one new positive directed item was added in order to make equal numbers for scoring between positive and negative worded items. The final version of LOT-R showed a high correlation of .90 to the original LOT scale indicating that usage of LOT-R will not give any appreciable differences in findings (Scheier et al., 1994).

The final version of LOT-R is a six-item self-report measure plus four filler items, assessing generalized outcome expectancies. Of the six items scored, three are positively directed and three are negatively directed. Respondents are asked to indicate how much they agree to each statement using the following response format: 0 = *strongly disagree*, 1 = *disagree*, 2 = *neutral*, 3 = *agree* and 4 *strongly agree*. Negatively directed items are reverse coded before scoring. Summing the responses from the reverse coded items plus the positive directed items computes an overall optimism score. Higher scores indicate greater level of optimism. Filler items are not scored. Filler items are included in a measurement for distracting participants from the purpose of the study (Graziano & Raulin, 2010). Filler items were excluded from the version used within this current study due to usage of shortened translated versions (Ryff et al., 2008) mentioned above. An error had been made in the original published version of the Japanese questionnaire which was noticed and corrected after 11 participants had already taken part, (response format of

disagree and *agree* swopped places). This error will be considered further within the result section later in this paper.

The English version of LOT-R has an internal consistency of .78 for all six items (Scheier et al., 1994). The English version of LOT-R has over time showed a fairly stable test-retest reliability with correlations of .68 over 4 months, .60 over 12 months, .56 over 24 months and .79 over 28 months.

Psychological Well-Being scale. SPWB was used to measure EWB from six different factors: autonomy (AU), environmental mastery (EM), personal growth (PG), positive relations with others (PRWO), purpose in life (PL), and self-acceptance (SA) (Ryff, 1989). Validity and reliability of the scale with a primary focus on empirical support for a six-factor model has been evaluated to date by more than 25 publications (Ryff, 1989; Ryff, 2014). The first version of SPWB was a self-report measure including 120 items (20 per factor) divided approximately equal between positive and negative items. Respondents themselves rated on each item according to a six-point Likert type scale ranging from *strongly disagree* to *strongly agree*. Negatively directed items are reverse coded before scoring. Summing the responses from the reverse coded items plus the positive directed items computes an overall EWB score. Higher scores indicate greater levels of EWB. The first version of SPWB showed internal consistency coefficients of .86 in AU, .90 in EM, .87 in PG, .91 in PRWO, .90 in PL, and .93 in SA. Further, this version showed test-retest reliability coefficients over a six week period on .88 in AU, .81 in EM, .81 in PG, .83 in PRWO, .82 in PL, and .85 in SA (Ryff, 1989). The SPWB have later been modified as an attempt to ease respondent's burden for lengthy questionnaire (Ryff, 2014). The modification resulted in different versions of length including: 84 items (14 per factor), 54 items (9 per factor), 42 items (7 per factor) and 18 items (3 per factor) (Abbott et al., 2006). However, criticism against SPWB

shows that when the versions are shortened the psychometric properties seems to decline (Gallagher et al., 2009). Suggestions have shown that versions containing 42 items or more are more reliable (Gallagher et al., 2009; Morozink, Friedman, Coe, & Ryff, 2010; Ryff, 2014).

The most frequent criticism against SPWB argues that SPWB measure less than six factors as indications have shown an overlap in some of the six factors (Ryff, 2014). Ryff (1989) was first to notice intercorrelations between some of the factors ranging from .32 to .76. EM and SA showed the largest correlation of .76 followed by SA and PL with .72, PG and PL with .72, and last EM and PL with .66. More studies have further investigated the overlapping between the factors and found that SPWB insufficiently capture higher levels of WB as it seems that some factors do overlap (e.g., Abbott, Ploubidis, Huppert, Kuh, & Croudace, 2010; Kafka & Kozma, 2002; Springer, Hauser, & Freese, 2006). Ryff challenge the criticism by lifting that there are more than 25 publications primarily focusing on supporting a 6-factor model to date and evidence for validity and reliability has been found (Ryff, 1989; Ryff, 2014). Additionally, a number of cultural studies suggest the same (e.g., Ryff, & Singer, 2006; Cheng & Chan, 2005; Lindfors, Berntsson, & Lundberg, 2006). Others have further challenge the criticism by showing that usage of the overly short scales could be a possible reason, rather than the theoretical model itself (Gallagher et al., 2009).

A 42 item (7 per factor) version of the SPWB was used in this current study. A previous longitudinal study using the 42 item version of SPWB showed an internal consistency for the six factors ranging from .69 to .85 (Morozink et al., 2010). A Swedish translated SPWB 18 item version showed to be adequate and in line with reports of the original measure of the Ryff scales (Lindfors et al., 2006). Respondents were asked to indicate how much they agree to each item using the following response format: 1 = *disagree strongly*, 2 = *disagree some*, 3 = *disagree a*

little, 4 = *neutral* 5 = *agree a little*, 6 = *agree some* and 7 = *agree strongly*. Scoring was interpreted the same way as in the first 120 item version mentioned above.

Minimalist Well-Being Scale. MWBS was used to measure EWB (Kan et al., 2009). MWBS was developed by Kan et al. (2009) and initially proposed as a self-report measure of 16 items divided in 3 distinct factors namely, positive feelings in the present moment, peaceful disengagement and gratitude for life. Further development resulted in the final 12 item version of MWBS divided into two distinct factors, namely gratitude and peaceful disengagement. Of the 12 items scored, 7 items reflect peaceful disengagement and 5 items reflect gratitude. The scale has now been presented as a shortened version with 10 items, respectively 5 items from each factor (Ryff et al., 2008). This 10 item version was used in the current study. Here should be mentioned that confusion occurred during backward translation into Swedish of item 46 in part two of the questionnaire (see Appendix B). Item 46 was translated according to Ryff et al. (2008) 'Documentation of Scales' saying "tt. I appreciate life, because it is full of moments like this" (p. 64). However this sentence does not correspond fully with the same sentence presented in the 'English Questionnaire' saying "tt. What we call life is like a succession of present moments." (p. 31). This confusion resulted in that item 46 within the Swedish (see Appendix B) and the Japanese version (see Appendix A) are not exact translations as the Japanese version follows the second translation saying 'What we call life is like a succession of present moments'. Additionally, item 46 used within the Swedish version (see Appendix B) does not exist in the development of the MWBS (Kan et al., 2009). However, in the factor analysis by Kan et al. (2009) does the sentence "I feel content in the moment" (p. 309) having similar meaning to 'I appreciate life, because it is full of moments like this'. The factor analysis further demonstrates almost the same loading within the gratitude factor for both 'I feel content in the moment' and

'What we call life is like a succession of present moments' (Kan et al., 2009). Hence, the difference in translation can be considered to not be a significant problem as the factor analysis show much the same loading in the gratitude factor for both items.

Only 10 items were included in this study, respectively 5 items from each factor. Respondents were asked to indicate how much they agree to each statement using the following response format: 1 = *disagree strongly*, 2 = *disagree some*, 3 = *disagree a little*, 4 = *neutral* 5 = *agree a little*, 6 = *agree some* and 7 = *agree strongly*. Gratitude and Positive Disengagement were constructed by calculating the sum of each set of items. Higher scores reflect greater levels of EWB. When data collection started was the MWBS in the best of my knowledge the only EWB measurement developed today specifically for eastern cultures and this is why I chose to use this scale. However, a more recent scale has also been developed called the eudaimonic motives for activities (HEMA) scale (Asano et al., 2014). Although, the article only seems available in Japanese making it impossible for me to make any inference from it as I do not know the language of Japanese.

Procedure

All self-reported measurements used in this study were filled in online by participants for practical reasons. A tool for making online surveys called *Webrepol* was used by the researcher to set up all the questionnaires online. A review made by Birnbaum (2004) showed that criticism against web-based surveys is directed towards special characteristics of respondents (e.g., must have access to a computer) and that increased sampling bias may occur as a result of participants self-selection to participate in the study. In support, research indicates that web-based surveys are just as effective as a study conducted in the lab if the web-survey is properly designed.

Additionally, research has shown that most people have access to the internet today and one can therefore gather a greater sample size (Birnbaum, 2004).

The publication of the questionnaires occurred on the social network site called *Facebook* and also via email to friends of the researcher. Participants were informed that the study was looking for participants ages 20-40, that the questionnaires measure cultural differences between Sweden and Japan and that the questionnaires include a total of 58 questions or statements and needed around 10 minutes to complete. Participants were also asked to spread the information to friends and family so that more people could participate in the study. A link to the questionnaire was provided which directed the participants to the online questionnaires (for Japanese version see Appendix A; for Swedish version see Appendix B). Participants' informed consent was collected prior to completion of the questions by clicking a box at the questionnaires webpage. Informed that there are no right or wrong answers or trick questions, participants were asked to give the first answer which came to mind for each statement. Participants were instructed to answer as truthfully as possible, and to email any concerns or questions to the study assistant. All data was collected between 19th of February 2015 (CET/GMT+1) to 2nd of April 2015 (CET/GMT+1), during which time the link to the questionnaires was available online.

Statistical Analysis

IBM SPSS Statistics Version 22 software was used for analysing the data. Cultural differences was a between group independent variable (Japanese; Swedish). Total score from test results from each of the measurements used and each of their dimensions were treated as the dependent variables. A Shapiro-Wilk test of normality showed non-normal distribution of the independent variable analysed on each of the dependent variables (Pallant, 2013). Additionally, a

large difference in sample size are found between Swedish (n = 142) and Japanese (n = 68) participants. On the basis of this was decision made to use Mann-Whitney U test for analyses between groups. Wilcoxon Signed Rank test was used for analyses within groups. Spearman's rank correlation coefficient was used for the correlational analyses within groups (Pallant, 2013). Cronbach's alpha was used to estimate the reliability of each measurement scale on both Swedish and Japanese sample. Values above .7 are suggested as acceptable when a measurement includes 10 or more items. Mean inter-item correlations are suggested to be reported for measurements including less than 10 items with a suggested optimal range between .2 and .4 (Pallant, 2013). On the basis of this did all measurements demonstrate a satisfactory internal reliability consistency between the Swedish and the Japanese versions used (for Swedish version see Appendix B; for Japanese version see Appendix A). Cronbach's alpha for the Swedish SPWB was .900, and for the Japanese SPWB.881. Cronbach's alpha for the Swedish MWBS was .763, and for the Japanese MWBS .749. Mean inter-item correlations for the Swedish LOT-R was .539, and for the Japanese LOT-R .258.

Results

Descriptive statistics on total scores for LOT-R between the Swedish and Japanese sample are presented in Table 1. There was no statistically significant difference between the 11 first Japanese respondents and the rest of the Japanese sample on total LOT-R score, U = 358, p = .457. All participants were therefore included within all the analyses (see earlier).

In relation to hypothesis 1, a greater median (*Mdn*) score for LOT-R was obtained in the Swedish (*Mdn* = 21) compared with the Japanese (*Mdn* = 19) sample, although this difference was not statistically significant, U = 4529.5, p = .468. The optimistic items (Q1, Q3 and Q6) and

pessimistic items (Q2, Q4 and Q5) were computed separately in SPSS. Further analysis did not show any statistically significant difference on total score for optimism, $U = 4848$, $p = .961$, and pessimism, $U = 4238.5$, $p = .150$, between Swedish (optimism *Mdn* = 10, pessimism *Mdn* =10) and Japanese participants (optimism *Mdn* = 10, pessimism *Mdn* =10). Further analysis on all six individual items within LOT-R did not show any statistically significant difference within the optimism items (Q1, Q3 and Q6) as following; Q1, $U = 5348$, $p = .193$, Q3, $U = 4649.5$, $p = .654$, and Q6, $U = 4638.5$, $p = .635$. However, all pessimistic items (Q2, Q4 and Q5) did show a statistically significant difference as following; Q2, $U = 3659$, $p = .004$, Q4, $U = 3723$, $p = .006$, and Q5, $U = 5634$, $p = .044$.

Descriptive statistics on total scores for SPWB between the Swedish and Japanese sample are presented in Table 2. In relation to hypothesis 2, a statistically significant difference were found greater in the Swedish (*Mdn* = 206) than Japanese (*Mdn* = 193) participants on total SPWB, $U = 3580$, $p = .002$. A statistically significant difference were also seen on each dimension as following; AU, $U = 2986.5$, $p = .000$, EM, $U = 3774.5$, $p = .010$, PG, $U = 4011.5$, $p = .047$, PL, $U = 3673$, $p = .005$, and SA, $U = 3892.5$, $p = .023$. Only one dimension did not show statistically significant difference namely, PRWO, $U = 4724.5$, $p = .801$.

Descriptive statistics on total scores for MWBS between the Swedish and Japanese sample are presented in Table 3. In relation to hypothesis 3, a statistically significant difference were found greater in the Japanese (*Mdn* = 53.5) than Swedish (*Mdn* = 49) participants on total MWBS, $U = 3460$, $p = .001$. A statistically significant difference was also seen on each dimension as following; gratitude, $U = 3735$, $p = .008$ and peaceful disengagement, $U = 3715.5$, $p = .007$.

Table 1.

Mann-Whitney U differences between groups for LOT-R

Measure	Total *N*	Swedish *n*	Swedish *Mdn*	Swedish Range	Japanese *n*	Japanese *Mdn*	Japanese Range	*P*-value
LOT-R								
Total	210	142	21	24	68	19	20	,468
Total Optimism	210	142	10	12	68	10	9	,961
Total Pessimism	210	142	10	12	68	10	12	,150
Q1 Optimism	210	142	3	4	68	3,5	4	,193
Q3 Optimism	210	142	4	4	68	4	4	,654
Q6 Optimism	210	142	4	4	68	3	4	,635
Q2 Pessimism	210	142	3,5	4	68	3	4	,004
Q4 Pessimism	210	142	4	4	68	3	4	,006
Q5 Pessimism	210	142	4	4	68	4	4	,044

Note. Mdn = Median

Table 2.

Mann-Whitney U differences between groups for SPWB

Measure	Total *N*	Swedish *n*	Swedish *Mdn*	Swedish Range	Japanese *n*	Japanese *Mdn*	Japanese Range	*P*-value
SPWB								
Total	210	142	206	133	68	193	142	,002
AU	210	142	34	37	68	29	31	,000
EM	210	142	32	29	68	29	31	,010
PG	210	142	35	21	68	36,5	32	,047
PRWO	210	142	35	26	68	35	32	,801
PL	210	142	36	32	68	33	30	,005
SA	210	142	33	36	68	30	27	,023

Note. Mdn = Median

Table 3.

Mann-Whitney U differences between groups for MWBS

Measure	Total *N*	Swedish *n*	Swedish *Mdn*	Swedish Range	Japanese *n*	Japanese *Mdn*	Japanese Range	*P-value*
MWBS								
Total	210	142	49	50	68	53,5	51	,001
Gratitude	210	142	25,5	30	68	27	24	,008
Peaceful disengagement	210	142	24	26	68	27	27	,007

Note. Mdn = Median

Table 4.

Wilcoxon Signed Rank differences within groups for total average item score on SPWB and MWBS

Measure	Total *N*	Swedish *n*	Swedish *Mdn*	Swedish Range	Japanese *n*	Japanese *Mdn*	Japanese Range	P-value
SPWB	210	142	4,90	3	68	4,60	3	,109
MWBS	210	142	4,90	5	68	5,35	5	,000

Note. Mdn = Median

The average item score for each participant on SPWB and MWBS was computed in SPSS in order to analyse the response pattern for each sample. The total score on SPWB for each participant was divided by the number of items (42 items). The same procedure was made for MWBS but the divided number of items was 10. Descriptive statistics for the Swedish and Japanese sample for SPWB and MWBS on average item score are presented in Table 4. In relation to hypothesis 4, a statistically significant difference were found greater on average item score for MWBS (*Mdn* = 5.35) compared to SPWB (*Mdn* = 4.60) within the Japanese sample, *Z* = 2024, *p* = .000. No statistically significant difference was found within the Swedish sample, *Z* = 4288.5, *p* = .109, and the average item score was the same for MWBS (*Mdn* = 4.90) compared with SPWB (*Mdn* = 4.90).

Correlations between LOT-R, SPWB and MWBS are presented in Table 5 for the Swedish sample and in Table 6 for the Japanese sample. In relation to hypothesis 5, a statistically significant positive correlation was found between total score for LOT-R and total score on SPWB in both the Swedish, ρ = .680, *p* = .000, and Japanese sample, ρ = .534, *p* = .000. A statistically significant positive correlation was also found between total score for LOT-R and total score on MWBS in both the Swedish, ρ = .415, *p* = .000, and Japanese sample, ρ = .282, *p* = .020. Additionally, the total score on SPWB and total score on MWBS demonstrated a statistically significant positive correlation for both the Swedish, ρ = .506, *p* = .000, and Japanese sample, ρ = .305, *p* = .011.

Table 5. Correlatio

2	.680**	*

Measures	11	10	9	8	7	6	5	4	3
1. LOT-R Total	.209*	.494**	.415**	.700**	.539**	.442**	.105	.620**	.361**
2. SPWB Total	.221**	.598**	.506**	.872**	.819**	.761**	.256**	.746**	.528**
3. AU	.245**	.130	.211*	.394**	.247**	.255**	.076	.308**	
4. EM	.244**	.448**	.425**	.636**	.566**	.535**	.014		
5. PG	.069	.117	.109	.257**	.185*	.119			
6. PRWO	.209*	.528**	.461**	.605**	.553**				
7. PL	.009	.455**	.284**	.633**					
8. SA	.232**	.606**	.521**						
9. MWBS Total	.799**	.826**							
10. Gratitude	.356**								
11. Peaceful disengagement									

Table 6.

Spearman's rho Correlations for Japanese sample (n = 68) of LOT-R, SPWB and MWBS

Measures	11	10	9	8	7	6	5	4	3	2
1. LOT-R Total	.054	.374**	.282*	.697**	.256*	.292*	.294*	.455**	.375**	.534**
2. SPWB Total	-.003	.480**	.305*	.757**	.632**	.618**	.642**	.798**	.686**	
3. AU	.002	.177	.109	.426**	.217	.211	.249*	.622**		
4. EM	-.012	.342**	.197	.612**	.386**	.363**	.327**			
5. PG	.039	.426**	.306*	.447**	.518**	.466**				
6. PRWO	-.013	.469**	.302*	.459**	.304*					
7. PL	-.165	.205	.038	.341**						
8. SA	.131	.559**	.432**							
9. MWBS Total	.797**	.798**								
10. Gratitude	.332**									
11. Peaceful disengagement										

* Correlation is significant at the 0.05 level (two-tailed) with Spearman's rho correlation coefficient

** Correlation is significant at the 0.01 level (two-tailed) with Spearman's rho correlation coefficient

Discussion

Results from the current study did not demonstrate any statistically significant difference between Sweden and Japan in total LOT-R score of optimism and pessimism as the first hypothesis predicted, although Swedish compared with Japanese people did report higher levels of optimism. This is consistent with previous research indicating that eastern people tend to score generally lower optimism scores compared with western (Chang, 1996; Lai & Yue, 2000). However, the current results could be influenced by the exclusion of filler items since the purpose of filler items are to distract participants so that they do not understand the purpose of the study (Graziano & Raulin, 2010). Previous findings demonstrated that Asian Americans problem-solving behaviour positively associates with pessimism compared with optimism (Chang, 1996) when measured as two dimensions. On the basis of this it seemed interesting to know if the Japanese participants would be significantly more pessimistic than optimistic compared with the Swedish participants within the current study where optimism and pessimism are viewed as one dimension. Although not hypothesized from the beginning a decision was made to conduct further analyses for LOT-R reviewing responses from all items grouped as optimistic and pessimistic respectively. This analysis did not show any statistically significant difference. Further analysis was therefore conducted to review responses from all individual items separately. The results than demonstrated a statistically significant difference for each pessimistic directed item associated with Japanese lower scores compared to Swedish participants. As the pessimistic directed items are reverse coded this result indicate that Japanese people are somewhat more pessimistic compared with Swedish people. However, care should be applied when interpreting the results from LOT-R as the statements in the scale may not be appropriate for a person from eastern collectivist culture due to cultural differences between the west and the

east (Nes & Segerstrom, 2006; Markus & Kitayama, 1991; Yamaguchi & Kim, 2015). For example all six items in LOT-R (for Japanese version see Appendix A; for Swedish version see Appendix B) are directed towards the independent view of self rather than interdependent. The results are further somewhat strange as the overall pessimistic score did not demonstrate any statistically significant difference but each of the individual items did. Additionally, the Cronbach alpha was outside the optimal range for the Japanese version of LOT-R compared with the acceptable value in the Swedish version of LOT-R. Although tentative, taken the results measured with LOT-R together it does seem to suggest that Swedish people are somewhat more optimistic than Japanese people and that Japanese people are somewhat more pessimistic than Swedish people.

Optimism and pessimism both involve motivation, emotion and cognition (Peterson, 2000) and it therefore seems reasonable to think that differences in neural activity between cultures seen in motivation, emotion and cognition plays a central role on the current study. For example the value in emotional suppression are valued differently across cultures (Kim & Markus, 1999; Mauss & Gross, 2004; Matsumoto et al., 2008) and further demonstrated with differences in neural activity (Murata et al., 2013). As positive emotions are more valued in western societies it seems only natural that optimism is further associated with higher levels of WB. Interestingly is the view within eastern society were neither positive nor negative emotions are more or less valued. Although tentative, why do the current results indicate that higher levels of pessimism associates with higher WB for Japanese people? Are there more collective or altruistic emotions associated with pessimism rather than optimism when interpreted from an interdependent perspective? Or do the results have something to do with a more positive problem-solving behaviour as previously demonstrated in pessimistic Asian Americans (Chang,

1996)? We know that the use of problem-focused strategies has been associated with lower depression rates (Carver & Gaines, 1987; Marshall & Lang, 1990; Sánchez et al., 2010). It seems reasonable to suggest that EWB and optimism share many functional and structural brain areas looking on the neurobiological findings demonstrated within this paper. For example have left hemispheric activation in relation to approach oriented behaviours been demonstrated for both EWB (Urry et al., 2004) and optimism (Hecht, 2013). In turn, left hemispheric activation has been associated with suppression of unwanted emotions (Jackson et al., 2000) and faster recovery from emotional challenges (Jackson et al., 2003). Sense the eastern culture require less neural activity when suppressing emotions (Murata et al., 2013) and pessimists within the east use problem-focused strategies opposed to optimists in the west (Wrosch et. al., 2007) it seems reasonable to suggest that eastern people might have a balance of left and right hemispheric activation associated with higher EWB. This would however have to be confirmed by future research further discussed within the next section of this paper.

In line with the second hypothesis did results from the current study demonstrate a difference between Sweden and Japan in EWB on SPWB were higher levels of EWB were reported for the Swedish sample. Additionally, higher median scores were found within the Swedish compared to the Japanese sample on four of the six dimensions in SPWB, namely AU, EM, PL and SA. The two dimensions that did not show a higher median score for the Swedish sample was PG and PRWO. The former showed a higher median score for the Japanese compared to Swedish and the latter did not show any difference between Sweden and Japan at all. Interesting are the results showing the largest difference within the dimension AU. This is consistent with previous research indicating that western societies have a focus on maximization of self and uniqueness (Markus & Kitayama, 1991). Further interesting is the results from the

dimension of PG which goes against previous research by saying that Japanese score higher in their use of personal talents and potentials as a person (definition of PG). One could argue that this is contradictive to their belief in certain social problems such as envy or jealousy often develops from good personal domains such as empathizing a personal success (Markus & Kitayama, 1991; Uchida et al., 2004). On the other the new trend towards individualism and uniqueness within young Japanese people (Uchida et al., 2014) could possibly find further support here sense the mean age of 24.34 within the current Japanese sample is relative young. However, this does not explain the large difference seen within the dimension AU, which would then be expected to be more evenly distributed among Swedish and Japanese participants.

Research on western participants demonstrated increased GM volume in brainstem areas known to be involved in mood and arousal regulation such as locus coeruleus, nucleus raphe pontis, pontine tegmentum and the sensory trigeminal nucleus bilaterally when correlated to the SPWB dimension PG (Singleton et al., 2014). As the brainstem is one of the first areas within the brain to develop it would be interesting to see if any difference would appear when looking on an eastern sample. From the current knowledge of the brain we know that the brain is supposed to be the same for all humans. Yet, brain differences have been demonstrated when using emotional suppression for example (Murata et al., 2013) indicating that the brain may adapt to culture. This would make sense as previous research demonstrated that EWB is both influenced by genetics and the environment (Gigantesco et al., 2011). But does the ability to adapt extend towards the brainstem in relation to culture?

The third hypothesis was also supported by the results from the current study. Results demonstrated a difference between Sweden and Japan in EWB on MWBS were higher levels in EWB were reported for the Japanese sample. Further did both dimensions of the MWBS

demonstrate higher medians for the Japanese compared to the Swedish sample. This in turn strengthen previous research hypotheses saying that WB might be interpreted differently within eastern culture (Markus & Kitayama, 1991) and presented with measurements developed for eastern culture might show higher levels of WB when compared to western culture (Kan et al., 2009). On the other hand, the current results might be influenced by the difference in translation of item 46 between the Swedish and Japanese versions of questionnaire (for Swedish version see Appendix B; for Japanese version see Appendix A). However the Cronbach alpha did show an internal reliability consistency for both versions of the measurement scale. One might wonder why Ryff et al. (2008) chose to add the two equivalent sentences to item 46 causing confusion in the first place within their translated 10 item version of MWBS seeing as the same two sentences were originally removed by Kan et al. (2009) in their final 12 item version of MWBS due to previously noted translation issues.

The fourth hypothesis was partly supported by the current results demonstrating a difference in response pattern between SPWB and MWBS. A difference was demonstrated within the Japanese sample but not within the Swedish sample. Japanese participants scored a higher average item score on MWBS compared with SPWB. This is interesting as it may indicate a difference in interpretation between the scales seeing as both scales are supposed to measure EWB. In turn, it would further strengthen previous research hypotheses regarding the different interpretation of WB within eastern culture (Markus & Kitayama, 1991) and that higher levels of WB might be found if presented with measurements developed for eastern culture (Kan et al., 2009; Asano et al., 2014). However, as stated, a translation difference does occur between the Swedish and the Japanese version on item 46 (for Swedish version see Appendix B; for Japanese version see Appendix A) within the gratitude dimension of MWBS and this may impact the

results. On the other hand, looking on differences between median scores (see Table 1) on both dimensions is the largest difference appearing within peaceful disengagement and not within the gratitude dimension where item 46 belongs. One would expect the opposite results within the median scores if the translation difference on item 46 were to impact majorly.

In line with the fifth hypothesis the results demonstrated positive associations between each of the total scores of the measurement scales, both in Swedish and Japanese sample. This is in line with previous research correlating LOT-R and different measures of SWB, all showing positive associations (e.g., Zhang et al., 2014; Glaesmer et al., 2012; Bailey et al., 2007). However, looking more closely at the correlations within the current results between different dimensions of the measurements it does seem to indicate some differences between SPWB and MWBS. For example in the Swedish sample is the dimension of PG in SPWB the least correlating variable out of all variables available. In contrast, the Japanese sample show least correlations in SPWB dimensions PL and AU as well as the MWBS dimension peaceful disengagement viewed in relation to all other variables. Kan et al. (2009) correlational results did come to a similar conclusion correlating MWBS two dimensions with SPWB six dimensions. In Kan et al. (2009) study did gratitude correlate with the majority of the SPWB dimensions while peaceful disengagement only correlated with SA. In the current study were no correlations for peaceful disengagement seen at all between MWBS two dimensions and SPWB six dimensions within the Japanese sample. Another interesting finding is the least correlating SPWB dimension AU within the Japanese sample when put in relation to the previously demonstrated difference under hypothesis two seen within the SPWB dimension PG. In comparison did the Swedish sample show the least correlation within the SPWB dimension PG while previous demonstrated difference under hypothesis two was seen within the SPWB dimension AU. Hence, the opposite

results are demonstrated for the Japanese and Swedish sample respectively. This finding is interesting because it is a rather strange relationship between the two findings. One would expect that the variable demonstrating the largest appearing difference would also demonstrate to be the least correlating variable. However, the current results demonstrate the opposite relationship. In turn, this might imply that the current study is missing some important factor. Some differences are further seen when looking on the correlations between LOT-R in relation to all other dimensions and total scores. Within the Swedish sample does LOT-R correlate with all except for the SPWB dimension PG. In comparison, within the Japanese sample does LOT-R correlate with all except for the MWBS dimension peaceful disengagement. The Japanese correlation makes more sense as the disengagement of self and reality (definition of peaceful disengagement) would not associate well with individualistic thoughts and feelings (definition of optimism) as this requires some self-focus. The Swedish correlation is more interesting as the use of personal talents and potentials a person (definition of PG) does not associate with individualistic thoughts and feelings (definition of optimism). In turn this might imply that Swedish people use emotional regulation or emotional suppression when estimating what talents and potentials they got and how to use them. As stated, neurobiological findings demonstrate that optimism opposed to pessimism seem to associate with better emotional regulation (Yang et al., 2013; Sharot et al., 2007) seen in brain areas such as amygdala, rACC (Sharot et al., 2007) and GM volume within the left thalamus/left pulivar extending to parahippocampal gyrus (Yang et al., 2013). Hence, previous neurobiological research seems to support the current findings. It further seems reasonable to suggest that even though west opposed to east use more neural activity for emotional suppression (Murata et al., 2013) the enhanced ability for emotional regulation

associated with optimism (Yang et al., 2013; Sharot et al., 2007) might equalize the costs of emotional suppression.

Limitations and Future Research

A limitation of this paper was the small amount of studies existing within neurobiology in relation to EWB and cultural differences. In turn this made it hard to make any comparisons and interpretations of the current research to date. The neurobiological research in optimism and pessimism is more substantial but it lacks the cross cultural aspect as most studies to date are conducted within the west. In turn, this made it hard to integrate the collected data within a neurobiological framework. Future research needs to continue exploring the neurobiology of human WB, EWB, optimism and pessimism and especially with cross cultural studies looking on both west and east. Definitional problems of WB and EWB further made comparisons and interpretations of consisting research hard. However, Huta and Waterman's (2014) suggested classification system might be a solution for this current problem.

Factors which might have impact the current study results are the length and order of all the measurements. For example, it might have been better to include the filler items for LOT-R. Cohort effects are another possible confounding variable. Limiting the sample to ages 20 to 40 was one attempt made to minimize the cohort effects. However, since the study is examining cultural differences cohort effects could not fully be avoided. The large difference in sample size between Swedish (n = 142) and Japanese (n = 68) is further problematic. Randomization of the sample as well as the fairly equal distribution in occupation and age do however increase the samples reliability and validity. Unforeseen consequences such as the translation error of item 46 in MSWB, the change of order between the choices *agree* and *disagree* within the Japanese LOT-

R questionnaire and other environmental/demographical related issues that might have occurred as the questionnaires was up and running also problematize inference of the current results.

What would be interesting to examine in future research is the impact of optimism in eastern culture. Using interventions aimed to improve optimism and then measure the consequences. Would optimism show a good or bad relationship with WB in the east? Previous research has demonstrated that optimism opposed to pessimism is good for our health and WB in the west (Rasmussen et al., 2009; Carver et al., 2010). But optimism might actually be of disadvantage within the eastern culture sense pessimism seems to contribute to a higher WB. A wider sample and more questionnaires including a physical examination of health would be required to examine this relationship closer. It would be further interesting to see if the brain differs in both optimism and pessimism between the eastern and western culture. A suggestion is to replicate the current study together with a pre- and post fMRI scan of the brain. Previous research conducted on twins in the west has demonstrated that both EWB and optimism is genetically heritable (Alessandri et al., 2010; Gigantesco et al., 2011). In relation, it would be interesting to know if people in the east would have a genetic heritability for pessimism and EWB. Overall I hope that the current study will inspire future research to replicate, as stated, with a broader sample size and more questionnaires also including a physical examination of health. More neurobiological studies in relation to cultural differences are also needed. Together I believe this could contribute to a better proactive treatment for mental illnesses such as depression and in turn contribute to a flourishing society. This belief is based on the previous neurobiological findings suggesting a biological link between depression and EWB (Lewis et al., 2014).

Conclusion

The aim of this thesis was to provide a theoretical overview taken from a neurobiological perspective of EWB, optimism, pessimism and cultural differences between western and eastern societies. Further was the aim to conduct and present an empirical study focusing on cultural differences in optimism and pessimism correlated to EWB between Sweden and Japan. The current study was explorative in nature as no other study (in the best of the author's knowledge) previously investigated the association between these concepts. Only individual studies have been presented for EWB, optimism, pessimism and cultural differences respectively. And even here, the presented findings are scarce when looking on Europe and East Asia especially. Further problematic is the current definitional problems within WB research, and the scarce neurobiological findings within research on WB, EWB and cultural differences to date. Interpretations and conclusions are therefore hard and tentative to make as much more research is yet needed. The current study proposed five hypotheses in total, all based on previous findings presented within this paper. The first, predicted to find cultural differences in optimism and pessimism with higher reported levels of optimism measured with LOT-R in the Swedish compared to the Japanese sample. The second, predicted to find differences in EWB measured with SPWB with higher reported levels in the Swedish compared to the Japanese sample. The third, predicted to find differences in EWB measured with MWBS where the Japanese compared to the Swedish sample report higher levels of EWB. The fourth, predicted to find a difference in response pattern between the measurements SPWB and MWBS. And last, the fifth hypothesis predicted to find associations between the different measurement scales LOT-R, SPWB and MWBS. All hypotheses were fully or partially supported by the demonstrated results. These results are important for the understanding in how culture may or may not influence EWB,

optimism and pessimism. It is also important for the development of measurements and interventions aimed to improve WB, specifically between cultures. Although, the current study is small and the interpretation are somewhat tentative, it may still contribute with some understanding and serve as inspiration for further investigations of cultural differences in EWB, optimism and pessimism in relation to neurobiology.

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Appendix A

Japanese version of questionnaire

パート１：人生観について

次の６つの質問はあなたの人生観についてです。１から５の中から自分に合うと思うものを選んでください。１は「全くあてはまらな い」２は「どちらかといえばあてはまらない」３は「どちらともいえない」４は「どちらかといえばあてはまる」５は「とてもあては まる」として考えてください。他の人の考えではなく、自分の考えで答えてください。

	全くあてはまらない	どちらかといえばあてはまらない	どちらともいえない	どちらかといえばあてはまる	とてもあてはまる
1. 不確実な場合は、いつも最善を期待する	❍	❍	❍	❍	❍
2. 何か私に悪いことが起こりそうだと思う と、本当に そうなる	❍	❍	❍	❍	❍
3. 私は、自分の将来に対して、常に楽観 的である	❍	❍	❍	❍	❍
4. 私は、「自分の思い通りに物事がはこ ぶ」とは、とても 思えない	❍	❍	❍	❍	❍
5.「よいことが起こりそうだ」など	❍	❍	❍	❍	❍

と期待 することは めったにない						
6. 私には、悪いことより良いことのほうが 起こると思う	❍	❍	❍	❍	❍	

パート２：心理的健康

次の５２個の質問はあなたの心理的健康についてです。１から７の中から自分に合うと思うものを選んでください。１は「全くあて はまらない」２は「あてはまらない」３は「どちらかというとあてはまらない」４は「どちらともいえない」５は「どちらかというとあ てはまる」６は「あてはまる」７は「とてもあてはまる」として考えてください。他の人の考えではなく、自分の考えで答えてくださ い。

	全くあてはまらない	あてはまらない	どちらかというとあてはまらない	どちらともいえない	どちらかというとあてはまる	あてはまる	とてもあてはまる
1. たとえ他の人と意見が反対であっても、 私は自分の意見を言うことを恐	❍	❍	❍	❍	❍	❍	❍

れない							
2. 一般的に、私は目の前の状況を把握し ていると感じる	❍	❍	❍	❍	❍	❍	❍
3. 私は、自分の視野をひろげることにつな がる活動に興味がない	❍	❍	❍	❍	❍	❍	❍
4. たいていの人は、私のことを誠実で情に 厚いと思っている	❍	❍	❍	❍	❍	❍	❍
5. 私は、今、一日一日を生きているので あって、将来のことを深く考えたりしない	❍	❍	❍	❍	❍	❍	❍
6. 私は、自分の人生を振り返ってみて、 結果として起きていることをうれしく思う	❍	❍	❍	❍	❍	❍	❍
7. 私はものを決めるとき、他のみんながす ることに、影響されたりはしない	❍	❍	❍	❍	❍	❍	❍
8. 毎日の生活でやらなけ	❍	❍	❍	❍	❍	❍	❍

ればならないこと に、しばしば愕然（がくぜん）とする							
9. 自分や世の中についての考え方を変えさ せるような新しい経験をすることは、大切 だと思う	❍	❍	❍	❍	❍	❍	❍
10. 親密な関係を維持することは、私にとっ て難しく、また欲求不満のもとになってい る	❍	❍	❍	❍	❍	❍	❍
11. 私は、人生の方向や目的について、 考えをもっ ている	❍	❍	❍	❍	❍	❍	❍
12. 一般的に、私は、自分自身に対して、 自信があ り肯定的だ	❍	❍	❍	❍	❍	❍	❍
13. 私は、強い意見を持つ人に影響されが ちだ	❍	❍	❍	❍	❍	❍	❍
14. 私は、自分の周りの人や地域社会にあ まりとけ 込んでいない	❍	❍	❍	❍	❍	❍	❍
15. 振り返ってみると、	❍	❍	❍	❍	❍	❍	❍

過去何年も私は人 間とし て 本当には成長していな い							
16. 自分の悩みをうちあ ける親友がほとん どいな い ので、私は孤独だとし ばしば感じ る	❍	❍	❍	❍	❍	❍	❍
17. 人生で何を成し遂げ ようとしているの か、私 は よくわかっていない	❍	❍	❍	❍	❍	❍	❍
18. 知っている人の多く は、私に比べて、 人生か ら より多くのものを得て きたと感じ る	❍	❍	❍	❍	❍	❍	❍
19. たとえ一般に合意さ れていることに反し ても 、 私は自分の考えに自信 をもってい る	❍	❍	❍	❍	❍	❍	❍
20. 毎日の生活でいくつ もある責任をやりく りす ることに、私は長 た １ けている	❍	❍	❍	❍	❍	❍	❍
21. 私は、これまで人と して、とても成長し てき	❍	❍	❍	❍	❍	❍	❍

た と思う							
22. 家族や友だちと個人的なやりとりを、私 は楽し む	❍	❍	❍	❍	❍	❍	❍
23. 自分が日常していることは、些細 ささ い で、大切なこ とではないように、しばし ば感じる	❍	❍	❍	❍	❍	❍	❍
24. 私は、自分の性格をおおかたにおいて 好きだ	❍	❍	❍	❍	❍	❍	❍
25. 議論の分かれる事柄について、自分の 意見を言 うことが、私には難しい	❍	❍	❍	❍	❍	❍	❍
26. 自分の責務にしばしば押しつぶされそう になる	❍	❍	❍	❍	❍	❍	❍
27. 私にとって、人生とは、学び続け、変 化し続け、 成長し続けるものである	❍	❍	❍	❍	❍	❍	❍
28. 人は私のことを、「他の人のために時 間を費	❍	❍	❍	❍	❍	❍	❍

やす 面倒見のいい人だ」というだろ う							
29. 私は、将来の計画をたて、それを実現 させるこ とに楽しみを見いだす	❍	❍	❍	❍	❍	❍	❍
30. 私は、自分が人生で成してきたことの 多くに失 望している	❍	❍	❍	❍	❍	❍	❍
31. 他の人が、私のことをどのように思うか 心配し がちだ	❍	❍	❍	❍	❍	❍	❍
32. 自分にとって満足できるように生活をや りくりすることは、私には難しい	❍	❍	❍	❍	❍	❍	❍
33. 人生をとてもよいものにしようとか、変 えよう とかすることは、とうの昔にあきらめ た	❍	❍	❍	❍	❍	❍	❍
34. 心温まり信頼できる人間関係をもったこ とは、 それほどない	❍	❍	❍	❍	❍	❍	❍
35. 自分自身に対する態	❍	❍	❍	❍	❍	❍	❍

度に関して、私 は、おそら く他の人ほど肯定的ではない							
36. 私は、他の人が大切だと考える価値観 ではなく、 自分が大切だと考えることで自 分を判断する	❍	❍	❍	❍	❍	❍	❍
37. 私は、自分の好みにとても合った生活 環境やライフスタイルを作ることができてい る	❍	❍	❍	❍	❍	❍	❍
38. 慣れ親しんだやり方を変えないといけな いので、新しい環境は楽しめない	❍	❍	❍	❍	❍	❍	❍
39. 私は友だちを信頼できると自分でわか っている し、友だちは私を信頼できるとわ かっている	❍	❍	❍	❍	❍	❍	❍
40. 目的を持たずに人生を放浪する人もい るが、私 はそのような人間ではない	❍	❍	❍	❍	❍	❍	❍
41. 友だちや知人と自分	❍	❍	❍	❍	❍	❍	❍

を比べてみて、私 は自分が どんな人間であるかということに 満足を感じている							
42. 私は、ときどき、人生でなすべきことは すべて なしてきたかのように感じる	❍	❍	❍	❍	❍	❍	❍
43. あるがままに受け入れている	❍	❍	❍	❍	❍	❍	❍
44. 生まれてきて良かったと感じる	❍	❍	❍	❍	❍	❍	❍
45. ボーっとしている時間が心地よい	❍	❍	❍	❍	❍	❍	❍
46. 人生というものは瞬間瞬間の積み重ね のような ものである	❍	❍	❍	❍	❍	❍	❍
47. 何もしないで過ごす時は満ちたりた気分 になる	❍	❍	❍	❍	❍	❍	❍
48. 今生きていることのありがたみを感じる	❍	❍	❍	❍	❍	❍	❍
49. 私が今存在している	❍	❍	❍	❍	❍	❍	❍

こと自体に意味が あると感 じる							
50. 自分だけのために使える時間がある と、自由な 気持ちになる	❍	❍	❍	❍	❍	❍	❍
51. 目的もなく一人でぶらぶらするのが好き だ	❍	❍	❍	❍	❍	❍	❍
52. 幸せなのは、他者のおかげである	❍	❍	❍	❍	❍	❍	❍

Appendix B

Swedish version of questionnaire

Första delen: hur du ser på livet

Följande 6 frågor handlar om hur du ser på livet över en skala 1-5 där 1 motsvarar "Starkt oenig", 2 "Lite oenig", 3 "Neutral", 4 "Lite enig" och 5 "Starkt enig". Svara enligt dina egna känslor, istället för vad du tänker att de flesta folk skulle svara.

	Starkt oenig	Lite oenig	Neutral	Lite enig	Starkt enig
1. I ovissa tider brukar jag förvänta mig det bästa.	❍	❍	❍	❍	❍
2. Om något kan gå fel för mig, så gör det.	❍	❍	❍	❍	❍
3. Jag är alltid optimistisk om min framtid.	❍	❍	❍	❍	❍
4. Jag förväntar mig sällan att saker går min väg.	❍	❍	❍	❍	❍
5. Jag räknar sällan med att bra saker händer mig.	❍	❍	❍	❍	❍
6. Jag förväntar mig att fler bra saker händer mig istället för dåliga.	❍	❍	❍	❍	❍

Andra delen: ditt välmående

Följande 52 frågor utforskar ditt välmående över en skala 1-7 där 1 motsvarar "Starkt oenig", 2 "Något oenig", 3 "Lite oenig", 4 "Neutral", 5 "Lite enig", 6 "Något enig" och 7 "Starkt enig". Vänligen svara hur starkt du håller med eller inte håller med på varje påstående som följer.

	Starkt oenig	Något oenig	Lite oenig	Neutral	Lite enig	Något enig	Starkt enig
1. Jag är inte rädd för att säga mina åsikter, även när de är i motsats till de flesta folks åsikter.	❍	❍	❍	❍	❍	❍	❍
2. Generellt så känner jag att jag har ansvar över situationen jag lever i.	❍	❍	❍	❍	❍	❍	❍
3. Jag är inte intresserad av aktiviteter som vidgar mitt synfält.	❍	❍	❍	❍	❍	❍	❍
4. Många ser mig som kärleksfull och tillgiven.	❍	❍	❍	❍	❍	❍	❍
5. Jag lever en dag i taget och tänker inte direkt på framtiden.	❍	❍	❍	❍	❍	❍	❍
6. När jag ser berättelsen över mitt liv så är jag nöjd med hur saker utspelats.	❍	❍	❍	❍	❍	❍	❍
7. Mina beslut är vanligtvis inte påverkade av vad alla andra gör.	❍	❍	❍	❍	❍	❍	❍

8. Jag blir ofta nere av kraven från det vardagliga livet.	❍	❍	❍	❍	❍	❍	❍
9. Jag tycker det är viktigt med nya erfarenheter som utmanar hur man tänker på sig själv och världen.	❍	❍	❍	❍	❍	❍	❍
10. Att upprätthålla nära relationer har varit svårt och frustrerande för mig.	❍	❍	❍	❍	❍	❍	❍
11. Jag har en känsla av riktning och mening i livet.	❍	❍	❍	❍	❍	❍	❍
12. Generellt så känner jag mig självsäker och positiv om mig själv.	❍	❍	❍	❍	❍	❍	❍
13. Jag tenderar att bli influerad av folk med starka åsikter.	❍	❍	❍	❍	❍	❍	❍
14. Jag passar inte särskilt bra in med folket och samhället runt omkring mig.	❍	❍	❍	❍	❍	❍	❍
15. När jag tänker på det så har jag inte förbättrats mycket som person under årens gång.	❍	❍	❍	❍	❍	❍	❍

16. Jag känner mig ofta ensam därför att jag har få nära vänner som jag delar mina bekymmer med.	❍	❍	❍	❍	❍	❍	❍
17. Jag har ingen bra känsla över vad jag försöker åstadkomma i livet.	❍	❍	❍	❍	❍	❍	❍
18. Jag känner att många av dem jag känner har fått ut mer av livet en vad jag har.	❍	❍	❍	❍	❍	❍	❍
19. Jag känner mig säker i mina åsikter även när de är i motsats till den generella samsynen.	❍	❍	❍	❍	❍	❍	❍
20. Jag är ganska bra på att hantera alla förplikterser i mitt dagliga liv.	❍	❍	❍	❍	❍	❍	❍
21. Jag har en känsla av att jag utvecklats mycket som person över tid.	❍	❍	❍	❍	❍	❍	❍
22. Jag njuter av personliga och ömsesidiga konversationer med familjemedlemmar och vänner.	❍	❍	❍	❍	❍	❍	❍
23. Mina dagliga aktiviteter	❍	❍	❍	❍	❍	❍	❍

verkar ofta banala och oviktiga för mig.							
24. Jag tycker om de flesta aspekter av min personlighet.	❍	❍	❍	❍	❍	❍	❍
25. Det är svårt för mig att säga min åsikt under kontroversiella ämnen.	❍	❍	❍	❍	❍	❍	❍
26. Jag känner mig ofta överväldigad av mina förplikterser.	❍	❍	❍	❍	❍	❍	❍
27. För mig har livet varit en ständig process av lärande, förändring och växande.	❍	❍	❍	❍	❍	❍	❍
28. Folk skulle beskriva mig som en givmild person som är villig att dela min tid med andra.	❍	❍	❍	❍	❍	❍	❍
29. Jag njuter av att göra planer inför framtiden och arbetet med att göra dem till verklighet.	❍	❍	❍	❍	❍	❍	❍
30. På flera vis så känner jag mig besviken över mina åstadkommanden i livet.	❍	❍	❍	❍	❍	❍	❍

31. Jag tenderar att oroa mig över vad andra tänker om mig.	❍	❍	❍	❍	❍	❍	❍
32. Jag har svårt att arrangera livet på ett vis som är tillfredställande för mig.	❍	❍	❍	❍	❍	❍	❍
33. Jag gav upp att göra stora förbättringar eller förändringar i mitt liv för längesedan.	❍	❍	❍	❍	❍	❍	❍
34. Jag har inte upplevt många varma och förtroendefulla relationer med andra.	❍	❍	❍	❍	❍	❍	❍
35. Min attityd mot mig själv är troligtvis inte lika positiv som de flesta folk känner om sig själva.	❍	❍	❍	❍	❍	❍	❍
36. Jag bedömer mig själv utefter vad jag själv tänker är viktigt och inte över värderingar som andra tänker är viktiga.	❍	❍	❍	❍	❍	❍	❍
37. Jag har kunnat bygga en levande omgivning och livsstil till mig själv som jag	❍	❍	❍	❍	❍	❍	❍

tycker mycket om.							
38. Jag tycker inte om nya situationer som kräver att jag ändrar på mina gamla familjära sätt att göra saker på.	❍	❍	❍	❍	❍	❍	❍
39. Jag vet att jag kan lita på mina vänner och dem vet att dem kan lita på mig.	❍	❍	❍	❍	❍	❍	❍
40. Vissa folk vandrar planlöst genom livet men jag är inte en av dem.	❍	❍	❍	❍	❍	❍	❍
41. När jag jämför mig med vänner och bekanta så känner jag mig nöjd med vem jag är.	❍	❍	❍	❍	❍	❍	❍
42. Ibland så känner jag att jag har gjort allt som finns att göra i livet.	❍	❍	❍	❍	❍	❍	❍
43. Jag tar saker för vad de är.	❍	❍	❍	❍	❍	❍	❍
44. Jag är tacksam att jag föddes.	❍	❍	❍	❍	❍	❍	❍
45. Det känns bra att inte göra något och att koppla av.	❍	❍	❍	❍	❍	❍	❍

46. Jag uppskattar livet för att det är fullt av ögonblick som detta.	❍	❍	❍	❍	❍	❍	❍
47. Jag är tillfredställd med tiden som latas bort.	❍	❍	❍	❍	❍	❍	❍
48. Det känns tacksamt bara att vara vid liv.	❍	❍	❍	❍	❍	❍	❍
49. För mig har min existens här och nu mening i sig.	❍	❍	❍	❍	❍	❍	❍
50. Jag känner mig fri när jag spenderar all min tid bara med mig själv.	❍	❍	❍	❍	❍	❍	❍
51. Jag tycker om att vandra runt själv utan något specifikt syfte.	❍	❍	❍	❍	❍	❍	❍
52. Min lycka beror på andra.	❍	❍	❍	❍	❍	❍	❍