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**Title** **THE CONTRIBUTION OF WORK SATISFACTION TO  
THE LIFE SATISFACTION OF CHILEAN WORKERS**

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# **The Contribution of Work Satisfaction to the Life Satisfaction of Chilean Workers**

By

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Thesis submitted in fulfilment of the requirements for the PhD in Management Sciences  
at the

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**Universidad Ramon Llull**

Directed by

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To my wife, Mercè, without whom, not...

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## Preface

This thesis is submitted in fulfillment of the requirement for the PhD in Management Sciences at ESADE Business School. According to the PhD degree requirements for Ramón Llull University, the thesis takes the form of a ‘Monograph based on articles’. That is, the central chapters of the monograph are derived from articles which have not necessarily been published yet. An introduction and a general conclusion chapter justify the coherence and unity of the thesis around a common theme.

The thesis contains the following three papers: the first paper – presented in chapter 2 – is entitled ‘*Validation and Factorial Invariance Analysis of the Spanish Version of the Satisfaction With Life Scale in Chile*’. This paper has been submitted to the journal of *Personality and Individual Differences* (ISSN: 0191-8869/0191-8869). Chapter 3 presents the second paper, ‘*Life Domain Satisfaction as Predictors of Overall Life Satisfaction Among Workers: Evidence from Chile*’, which was published in 2014 in *Social Indicators Research* (ISSN 0303-8300), an international and interdisciplinary journal for quality-of-life measurement (DOI 10.1007/s11205-013-0408-6) that is currently in the 1st quartile in the categories of ‘*Social Sciences. Interdisciplinary*’ and in ‘*Sociology*’. The third paper, entitled ‘*Self-employment as a Moderator of the Relationship between Work and Life Satisfaction*’, was presented at the XLIX CLADEA Annual Conference held at ESADE Business School in September of 2014. The paper was awarded best paper in the *Leadership and Human Capital Management* track and published in the conference proceedings (ISBN: 978-612-46367-2-1). Later, this paper was submitted to the journal *Academia Revista Latinoamericana de Administración* (ISSN: 1012-8255) and was published in May 2015. The three papers are presented here keeping the structure of the original articles. Only minor format changes have been introduced to maintain the uniformity of the thesis. This also means that some concept definitions and theoretical arguments may seem repetitive in chapters 2, 3, and 4.

The defendant was the leading author of the second and third papers, and a coauthor of the first paper. All co-authors have been notified and have agreed to the inclusion of these papers in the defendant’s doctoral thesis. The coauthors who are PhD candidates have agreed not to use any of the papers included in this doctoral thesis in their respective dissertations.

## Publications

Loewe, N., Bagherzadeh, M., Araya-Castillo, L., Thieme, C., & Batista-Foguet, J. M. (2014). Life Domain Satisfaction as Predictors of Overall Life Satisfaction Among Workers: Evidence from Chile. *Social indicators research*, 118(1), 71-86.

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## Abbreviations

- AIC: Akaike Information Criterion
- AVE: Average Variance Extracted
- CAIC: Consistent Akaike Information Criterion
- CES: Constant Elasticity of Substitution
- CFI: Comparative Fit Index
- CFA: Confirmatory Factor Analysis
- EFA: Exploratory Factor Analysis
- GFI: Goodness of Fit Index
- GLS: Global Life Satisfaction
- GWS: Global Work Satisfaction
- HDI: Human Development Index
- I/O: Industrial/Organizational psychology
- IRT: Item Response Theory
- LS: Life Satisfaction
- MIMIC: Multiple Indicator Multiple Cause Modeling
- ML: Maximum Likelihood
- NA: Negative Affect
- NFI: Normed Fit Index
- NNFI: Non-Normed Fit Index
- OSI: Occupational Stress Indicator
- PA: Positive Affect
- QOL: Quality of Life
- RMSEA: Root Mean Square Error of Approximation

SD: Standard Deviation

SE: Self-employment

SEM: Structural Equation Modeling

SRMR: Standardized Root Mean Square Residual

SWB: Subjective Well-Being

SWLS: Satisfaction With Life Scale

TPB: Theory of Planned Behavior

TRA: Theory of Reasoned Action

VIF: Variance Inflation Factor

WS: Work Satisfaction

WS-LS: Work Satisfaction – Life satisfaction relationship

# 1 Introduction

For millennia, philosophers have pondered the nature of the good life and how it can be achieved (Guignon, 1999; Peterson et al., 2005). In the modern age, Quality of Life (QOL) has been the subject of academic debate in economics and sociology, which traditionally have approached QOL using objective<sup>1</sup> indicators, such as economic, social, and environmental statistics of a group of people, community, or nation. As an academic discipline in its own right, QOL emerged in the 1970s, when some studies showed that objective measures of life conditions accounted for only a small proportion of individuals' subjectively reported QOL (Cummins, 2000). In a seminal study '*The Human Meaning of Social Change*', Campbell and Converse (1972) claimed that QOL must be in the eye of the beholder, arguing that the measurement of subjective states – such as perceptions, attitudes, and preferences – is also necessary to understand life quality. Interest in subjective QOL spread so quickly that a peer reviewed specialized scientific journal called *Social Indicators Research* was established in 1974 to deal with it. The influential works of Andrews and Withey (1976) and Campbell et al. (1976) consolidated the QOL research field. The prevalent use of economic indicators as measures of national QOL began to be challenged and subjective social indicators began making regular appearances in national surveys. Today there is more or less a consensus around the need to combine objective and subjective aspects of QOL, based on an acknowledgment of the strengths and weaknesses of each approach (e.g., Heinz-Herbert, 2013). It is the subjective approach to defining the quality of life that has come to be called Subjective Well-Being (SWB) and in colloquial terms is sometimes labeled '*happiness*.'<sup>2</sup>

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<sup>1</sup> Objective refers to the type of measurement. Measurement is based on explicit criteria of success that can be applied by impartial outsiders.

<sup>2</sup> The terms 'happiness', 'subjective well-being', and 'hedonia' are commonly used as synonyms in Positive Psychology literature (Diener et al., 1999; Seligman and Csikszentmihalyi, 2000; Vázquez and Hervás, 2008). However, the author is aware of the controversies surrounding what constitutes happiness and the different approaches to happiness (e.g., Gamble and Gärling, 2012; Raibley, 2012).

SWB is an umbrella term that is used to describe how people think and feel about their lives (Diener, 1984, 2009; Kahneman and Krueger, 2006). People experience abundant SWB when they feel many pleasant emotions and positive moods, few unpleasant emotions and negative moods, when they are engaged in interesting activities, when they experience many pleasures and few pains and anxiety, and when they are satisfied with their lives (Diener, 2000). In an influential article, McKennell (1978) proposed that SWB includes both cognitive and affective components (see also Andrews and McKennell, 1980; Diener, 1984; Arhaud-Day et al., 2005; Luhmann et al., 2012). The cognitive component of SWB, referred to as life satisfaction (LS), *'is the degree to which an individual judges the overall quality of his life-as-a-whole favourably'* (Veenhoven, 1991, p.3). The affective component, or affect<sup>3</sup>, represents a person's on-line evaluations of the events that occur in her life (Diener et al., 1999). Although LS and affect are somewhat correlated to each other (Schimmack, 2008), both forms of SWB are considered independent because they exhibit unique patterns of associations with external variables and seem to be influenced by distinct factors and differently by the same factors (Diener et al., 2010; Zajonc, 1980). Nowadays, there is a fairly broad consensus on the need to assess LS and affect separately and the benefit of understanding each of these constructs in its own right (Luhmann et al., 2012). Researchers are especially interested in life satisfaction because it is more stable over time than affect, which is based on moods and emotions (Diener et al., 2013). This thesis focuses on the concept of life satisfaction.

The individual benefits of living a satisfying life are numerous and varied. People that consistently experience higher levels of life satisfaction, benefit in most major dimensions of life (Lyubomirsky et al., 2005; Seligman, 2002). For example, in comparison with their less satisfied peers, more satisfied individuals live longer and are healthier (Diener and Chan, 2011; Wiest et al., 2011; Chida and Steptoe, 2008), are more likely to get married and become parents, less likely to become separated, sleep better, make friends more easily, and live more fulfilling lives (Brand et al., 2010; Luhmann et al., 2012; Diener and Seligman, 2002). When it comes to

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<sup>3</sup> Moods and emotions together are labeled affect. Some authors refer to affect as happiness.

working adults<sup>4</sup>, the benefits of living a satisfying life transcend the individual to influence also the organizations in which they work. The so-called '*happy productive worker hypothesis*' contends that happy workers exhibit higher levels of job-related performance behaviors than do unhappy workers. Preliminary evidence supports this hypothesis. The predictive power of life satisfaction may be similar to that of work satisfaction<sup>5</sup> in predicting job performance (e.g., Jones, 2006; Duckworth et al., 2009; Shaw and Gupta, 2001; Erdogan et al., 2012) or even greater (Wright and Cropanzano, 2000). Life satisfaction of workers not only has an impact on their job performance but also in some intermediate important outcomes such as job commitment (Vanaki and Vagharseyyedin, 2009; Redman and Snape, 2006; Susskind et al., 2000), absenteeism (Murphy et al., 2006; Judge and Locke, 1993), turnover (Shaw and Gupta, 2001; De Cuyper et al., 2009), early retirement intentions (Von Bonsdorff et al., 2010), and employee burnout (Haar and Roche, 2010). Despite this and other preliminary evidence of the positive effects of life satisfaction on work-related outcomes, the fields of Business Management and Industrial/Organizational (I/O) psychology have both traditionally focused on the concept of work satisfaction and almost ignored the more holistic concept of life satisfaction (Ergodan et al., 2012).

Existing philosophical and ideological beliefs suggest that work satisfaction should be a strong determinant of workers' overall life satisfaction because work is a significant and central aspect of their lives in terms of both time and emotional involvement (Tait et al., 1989). Work is also central to identity, social role and social status, and meets important psychological needs in societies where employment is the norm (Waddell and Burton, 2006). Some people not only earn their sustenance from work but also obtain pleasure from it (Csikszentmihalyi, 1975, 2008; Dane, 2011). People are believed to have a difficult time separating their feelings about work and life in general. Consequently, most people allow positive or negative

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<sup>4</sup> In this thesis, the terms 'working adult' and 'worker' are used interchangeably, referring to adult individuals who are employed by an organization or self-employed.

<sup>5</sup> The terms work satisfaction and job satisfaction are used interchangeably in this thesis.

experiences from work to generalize or ‘spill over’<sup>6</sup> into other life domains and into overall attitudes toward life, explaining the positive correlation usually found between work satisfaction and life satisfaction (Wilensky, 1960; Judge and Watanabe, 1994). Yet, empirical research shows a relatively minor contribution of work satisfaction to workers’ overall life satisfaction, when the level of satisfaction with other life domains – such as family, health, and leisure –, personality dimensions, and living conditions are controlled (Rode, 2004; Rode and Near, 2005; Hart, 1999). This conclusion has been drawn mainly from samples from highly industrialized developed countries like the U.S and western European countries (e.g., Rode, 2004; Rode and Near, 2005; Hart, 1999; Andrews and Withey, 1976; Campbell et al., 1976; Argyle, 1987; Near et al., 1984).

Previous research has shown evidence that the structure of life satisfaction differs substantially across nations because cultural values influence peoples’ personal values and also the goals they pursue. In turn, personal values are a strong moderator of the importance individuals place on different facets of life when making life satisfaction judgments (Oishi et al., 1999b). Although the life domains that are relevant for living a satisfying life tend to be common across cultures, the weight given to different domains differs across cultures (e.g., Diener et al., 2011; Vittersø et al., 2002; Oishi et al., 2007), even when there is no cultural difference in explicit goal motivations (Oishi and Diener, 2001). For instance, in individualistic cultures, like the U.S and most of the western European countries, people tend to place more importance on attributes of the self when making life satisfaction judgments than in collectivistic cultures. In turn, cultural values are strongly related to the stage of economic development of societies (Inglehart, 1997; Norris and Inglehart, 2004; Inglehart and Welzel, 2005). For instance, in emerging economies people tend to place more importance on financial satisfaction, which become progressively less important as countries increase their income, while emancipative and self-expression values become more important (Diener et al., 2013; Saris, 2001; Inglehart and Welzel, 2005, 2010). Also, more weight is given to social support

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<sup>6</sup> Work satisfaction and life satisfaction interact with each other in three different ways: spillover, compensation, and segmentation. The spillover model is presumed here. See section 1.3.1 for an explanation of the different forms of interaction.

and social relationships by individuals living in emerging economies (Inglehart and Oyserman, 2004).

The general aim of this thesis is to contribute to a better understanding of the influence of work on life satisfaction. To that end the thesis investigates some important antecedents of life satisfaction, including work satisfaction, in the cultural and socio-economic context of Chile – a country with predominant collectivistic values (Hofstede, 2010) that has experienced a strong economic development in the last 35 years. The research is presented in three chapter-papers: the first chapter *‘Validation and Factorial Invariance Analysis of the Spanish Version of the Satisfaction With Life Scale in Chile’* evaluates one of the most well-established measures of overall life satisfaction on the Chilean population. The Satisfaction With Life Scale (SWLS; Diener et al., 1985) has been previously validated in multiple countries and with distinct demographic groups, but not in the context of Chile. This paper is presented in first instance because the SWLS will be used to measure the dependent variable in subsequent chapters. Once the measurement instrument for life satisfaction is validated, the second paper *‘Life Domain Satisfaction as Predictors of Overall Life Satisfaction Among Workers: Evidence from Chile’* examines the structure of worker’s life satisfaction in the cultural setting of Chile. This is the core chapter of the thesis and addresses the main research question: what is the relative contribution of work satisfaction to life satisfaction? Finally, the third paper, entitled *‘Self-employment as a Moderator of the Relationship between Work and Life Satisfaction’* goes deep into the relationship between work and life satisfaction to better understand the complexity of this association. This paper shows how the two satisfaction variables are differently associated to each other for distinct type of workers.

The thesis is organized as follows. Firstly, in this introductory chapter, I briefly review the multiple factors that have been theoretically and empirically identified as determinants of LS and SWB. These factors are presented by type and classified as: personal characteristics, life circumstances and activities, satisfaction with life circumstances, and goals. I also review the role culture has on the importance placed on factors that influence life satisfaction across nations. Secondly, based on satisfaction with life circumstances, one of the strongest predictors of life satisfaction, I present a model in which the level of satisfaction with multiple life domains, including work, mediate the effect of objective external conditions on life satisfaction judgments. Thirdly, this chapter also describes the different methods used in this thesis, the

measurement instruments, the data collection strategy and procedure, and the resulting sample characteristics. Finally, a brief description of the socio-economic context of Chile at the time when the survey was administered is presented at the end of chapter 1. Chapter 2 focuses on the validation of the Spanish version of the Satisfaction With Life Scale (SWLS; Diener et al., 1985). I propose an operationalization into Spanish that is then psychometrically tested on the following demographic groups: students, workers, housekeepers, and retired people. After testing for the factorial invariance of the SWLS across groups, the groups' mean levels of life satisfaction are compared. I also provide evidence of the concurrent validity of the scale by examining the correlation of the SWLS with a single-item measure of life satisfaction and with other related constructs. Based on a critical review of the literature on SWB, chapter 3 identifies seven life domains that have been consistently considered crucial for life satisfaction across cultures by previous research: health, family, financial situation, social relationships, self-worth, leisure time, and work. Using structural equation modeling, the different weights Chilean workers place on these life domains are compared. Chapter 4 examines in more depth the relationship between work satisfaction and life satisfaction. In particular, the moderating effect of self-employment – a working condition – on the strength of the relationship between work satisfaction and life satisfaction is investigated. Finally, chapter 5 summarizes the contributions of this research, identifies some of its limitations, suggests some avenues for future research, and presents some practical implications.

## **1.1 Causes of Life Satisfaction**

Research shows that a wide range of factors substantially influence levels of life satisfaction (Argyle, 1998; Seligman, 2002). Objective living conditions, and more importantly, satisfaction with living conditions affect people's life satisfaction. Some dispositional factors, such as personality traits, genetics, and early rearing also predispose people to be more or less satisfied with their lives. At the cultural level, norms also relate to the amount of average life satisfaction reported. Although promising attempts to unite the field have been made (e.g., Diener and Lucas, 2000; Easterlin, 2001; Michalos, 1980, 1985), there is currently no single conceptual scheme. Below I will review the main findings and conclusions from previous research on the individual level antecedents of life satisfaction. Unfortunately, researchers have often treated SWB as a monolithic entity, relying on global measures and making distinctions between the components of SWB impossible. It is also worth noting that many of the antecedent factors of SWB and LS

interact with one another. In the following sections distinction between SWB and LS are made when possible; and any important interaction effects among their antecedents are highlighted where the evidence is available. The causes of life satisfaction fall under four broad categories:

### **1.1.1 Personal Characteristics**

#### *Demographics*

Since Wilson's (1967) influential article '*Correlates of Avowed Happiness*' many authors have examined the influence of various demographic factors on LS, and its corollary SWB (see Dolan et al., 2008 for a review). For example, SWB has been positively related to the level of education (e.g. Blanchflower and Oswald, 2004a; Witter et al., 1984). This effect is stronger in low income countries (Fahey and Smyth, 2004; Ferrer-i-Carbonell, 2005). Stutzer (2004) found that middle level education was associated with the highest LS. On the relationship between age and LS, studies consistently suggest a U-shaped curve with higher levels of LS at the younger and older age points and the lowest LS occurring in middle age (e.g. Blanchflower and Oswald, 2004b; Ferrer-i-Carbonell and Gowdy, 2007). Regarding gender, research has yielded contradicting results, some studies having found differences between male and female LS while others have not (Alesina et al., 2004; Clark and Oswald, 1994, Louis and Zhao, 2002). Married individuals consistently report greater SWB than never-married individuals, who in turn report greater SWB than previously married individuals (i.e. divorced, separated, or widowed) (Diener et al., 2000). Some authors have also compared SWB between different ethnicities. Thoits and Hewitt (2001) reported that whites had higher SWB than African Americans in the US. In the Luttmer (2005) study, Hispanics showed higher SWB than whites. In general, researchers have often been disappointed by the relatively small effect size for demographic variables that were explored.

#### *Genetics*

Dynamic equilibrium theory (Heading and Wearing, 1989; Headey, 2008) posits that dispositional factors like genes and upbringing determine a person's 'set-point' – or baseline level – for SWB. Situational factors can move people up or down from this baseline, but they will in time return to their stable set point. Based on the results of studies of monozygotic and dizygotic twins reared apart (e.g., Tellegen et al., 1988; Lykken and Tellegen, 1996), genes

would predispose set-points for SWB. This genetic predisposition is presumably caused by inborn individual differences in the nervous system. For example, Lykken and Tellegen (1996) reported a strong correlation among life satisfaction in twins, although other studies have found lower correlations (e.g., Stubbe et al., 2005; Roysamb et al., 2002). In a recent review of studies, Oishi (2012) found that heritabilities for life satisfaction are in the .30 to .50 range, concluding that some degree of life satisfaction is systematically related to inherited differences. Particularly, variations in life satisfaction could be associated with different levels in the serotonin transporter gene (DeNeve, 2011).

### *Personality*

A considerable amount of psychological research has considered the influence of personality on SWB and LS (see DeNeve and Cooper, 1998; Diener et al., 2003; Steel et al. 2008 for reviews). In general, there is a fairly strong consensus that personality has a pervasive effect on both, SWB and LS, although some authors have only found a low to moderate relationship once other factors such as social trust and religious beliefs were controlled for (e.g., Helliwell, 2006). The influence of personality on life satisfaction is known as the ‘top-down’ effect because it emanates from the individual’s personality and outlook rather than from life circumstances. Defendants of this top-down approach tend to view life satisfaction as a function of stable traits. That is, some people have a propensity to feel more satisfied with their lives, depending on who they are. The important effect of external circumstances are not negated in this theoretical approach (Diener, 1996); naturally, people react to important events in their lives. However, it is claimed that the aggregated levels of emotions across a wide variety of situations tend to be stable.

Psychologists have long described the relationship between the environment and the person by noting that the environment is the source of stimuli impinging on the organism, which then produces a measurable response (Woodworth, 1938). Neither person nor environment alone constitutes a sufficient explanation for an individual's observable behavior. That is, behavior should be regarded as the consequence of person-situation interactions (Mischel, 1968). The current working model of researchers in the field of SWB is that personality predisposes people to certain affective reactions but that current events also influence one’s current levels of SWB. Internal factors within the person moderate and mediate the influence

of life circumstances and events on SWB. For example, Brief et al. (1993) showed that the effects of personality on SWB were mediated by interpretation of objective life events. Similarly, Heller et al. (2004) used meta-analytic techniques and showed that the effects of personality on life satisfaction were mediated by job and marital satisfaction. In other words, top-down influences may shape perceptions of life circumstances to affect life satisfaction. It is then not rare that some authors see the effect of personality as a bias (e.g., Diener et al., 2013).

The personality dispositions of extraversion and neuroticism have both shown moderate to strong correlations with SWB (Lucas and Fujita, 2000). Particularly, extraversion correlates with pleasant affect and neuroticism with negative affect. To a lesser degree, self-esteem can also markedly influence levels of SWB (Lucas et al., 1996). In the Steel et al. (2008) meta-analysis, the Big Five predicted 18% of the variance in life satisfaction, and neuroticism showed the strongest correlation. DeNeve and Cooper (1998) meta-analyzed the relationship between narrower traits – such as repressive defensiveness, trust, locus of control, desire for control, hardiness, and dispositional optimism – and SWB and life satisfaction. Traits dealing with expression of emotions, like emotional stability, and traits relating to how life events are interpreted, like defensiveness, were the strongest correlates. Based on all these findings, in their review of the literature Diener et al., (1999) claimed that SWB has both trait-like and state-like properties.

### **1.1.2 Life Circumstances and Activities**

Naturally, people react to good and bad circumstances in life with increases or decreases in their life satisfaction. Immediate situational factors, very long-term factors, and medium-range circumstances can all influence levels of life satisfaction. A variety of external life circumstances, living conditions, and events – such as divorce, severe disability, winning the lottery and unemployment – have been shown to be connected to reports of life satisfaction (see Dolan et al. 2008 for a review). Yet, after decades of research, psychologists came to the conclusion that external factors often have only a modest impact on life satisfaction reports. These external objective factors on average only account for about 10% or 20% of the variation in SWB amongst individuals whose basic needs are being met (Diener et al., 1999).

Some of the life circumstances that have inspired more research – and that have generated more consensus – are income, health, and unemployment. All have been shown to be

somewhat associated to LS, using different data sets, different countries, different time periods and different methods of analysis. The results generally suggest a relatively weak positive link between income and LS, with diminishing returns to income (see Clark et al., 2008 for a review). Specific health problems, like heart attacks and strokes, also seem to reduce SWB (Shields et al., 2005). Regarding unemployment, it has been estimated that unemployed people are 5–15% less satisfied with their life than employed people (Helliwell, 2003; Stutzer, 2004; Lelkes 2006 Ferrer-i-Carbonell and Gowdy, 2007). In the work realm, some objective working conditions such as hours worked (Meier and Stutzer, 2006; Luttmer, 2005), casual work (Bardasi and Francesconi, 2004), belonging to a union (Blanchflower and Oswald, 1998), self-employment (Blanchflower and Oswald, 1998; Alesina et al., 2004), and commuting time (Stutzer and Frey, 2005) have also been related to LS and SWB.

In terms of activities, regular exercise has not only been associated with higher LS (Baker et al., 2005; Biddle and Ekkekakis, 2005), but also acts as an antidote for mild depression and anxiety (Myers, 1993; Sarafino, 2002). Other activities such as frequent church attendance (e.g. Clark and Lelkes, 2005; Hayo, 2004), community involvement (Pichler, 2006; Helliwell, 2003; Helliwell and Putnam, 2004), and volunteering (Haller and Hadler, 2006; Thoits and Hewitt, 2001; Helliwell, 2003) have also been related to LS with mixed results.

Human adaptation – the diminished responsiveness to repeated or continued stimuli (Helson, 1947) – has usually been indicated as the main reason why circumstances often have relatively little enduring impact on the LS of individuals. According to the *hedonic treadmill* model (Brickman and Campbell, 1971; Diener et al., 2006) evolution prepared us to make adjustments to favorable and unfavorable external conditions, so that we do not remain in a state of either elation or despair. People briefly react to good and bad events, but in a short time they return to neutrality. However, considerable evidence exists that contradicts the theory that people completely and rapidly adapt to all circumstances. While for some conditions adaptation can be complete, for other conditions people do not fully adapt even after many years (e.g., Oswald and Powdthavee, 2006; Lucas et al. 2004; Louis and Zhao, 2002). Some authors have suggested that individuals may have a positivity offset, or positive baseline, meaning that we adapt back to a positive point rather than to complete neutrality (Diener and Diener, 1996).

### 1.1.3 Satisfaction with Life Circumstances

Decades of QOL research have shown that objective external life circumstances – such as divorce, unemployment, winning the lottery, and severe disability – have a small impact on SWB and life satisfaction (Diener et al., 1999). By contrast, research shows that people’s level of satisfaction with life circumstances, or living conditions, are strong predictors of overall life satisfaction. That is, subjectivity matters for life satisfaction judgments. People perceive and react differently to the same circumstances because people evaluate circumstances based on their unique goals, expectations, values, and previous experiences. Subjective appraisals often involve judgments in terms of ‘satisfaction’. A satisfaction judgment represents a basic attitude<sup>7</sup> a person holds about the favorability of a circumstance. Comparison theory (Campbell et al., 1976) posits that people tend to make their satisfaction judgments based not on the absolute levels of living conditions but on an assessment of their own situation relative to other important reference groups, as well as individual desires, expectations, goals, hopes, and other situations (see also, Layard, 2005). In short, satisfaction judgments represent attitudes that incorporate the essential subjective element.

The current model in the field of SWB is that satisfaction with life circumstances largely mediates the effects of external objective conditions on life satisfaction judgments. For example, satisfaction with one’s financial situation is usually more strongly associated with LS than actual financial situation (Graham and Pettinato, 2001; Hayo and Seifert, 2003; Louis and Zhao, 2002). The perceptions of change in financial circumstances, as opposed to current circumstances, is more important for life satisfaction (Brown et al., 2005; Wildman and Jones, 2002) and largely mediate the effects of objective financial circumstances on global life satisfaction judgments (Johnson and Krueger, 2006). Similarly, perceived health appears to have a strong relationship with subjective well-being, while objective health is only weakly associated (Brief et al., 1993). In the work domain, similar findings are reported when perceptions of job security and actual job security are examined (Dockery, 2003; Graham and

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<sup>7</sup> Refers to the cognitive component (i.e., opinion or belief segment) of an attitude (Crites et al., 1994; Petty et al., 1997).

Pettinato, 2001). The effects of work conditions on LS, like work-nonwork conflict and role stressors, are mediated by work satisfaction (Rice et al., 1992; Carlson and Kacmar, 2000).

#### **1.1.4 Goals**

SWB is strongly related to what people are trying to do in life and how well they are succeeding at it (Grant and Gelety, 2009). Simply having aspirations<sup>8</sup> and committing to a set of important goals provides a sense of personal agency, gives meaning to daily life, and helps individuals cope with problems in times of adversity (Cantor and Sanderson, 1999). The type of goals one chooses, the rate of progress toward those goals, and conflict among different chosen goals all have important implications for affect and LS (Emmons, 1986). Discrepancies between goals and the actual conditions and the process of moving toward one's goals both influence the amount of LS an individual experiences (Carver and Scheier, 1998). People react positively when making progress toward goals and negatively when failing to achieve goals because goals serve as an important reference standard (Hsee and Abelson, 1991). Progress toward motive-congruent goals – that are congruent with one's own needs, which are not necessarily consciously labelled – has more influence on LS than progress toward goals that are not congruent with one's needs (Brunstein et al., 1998).

The type of goals that individuals pursue also influences mean levels of SWB and LS (Grant and Gelety, 2009). The Self-determination Theory (Ryan and Deci, 2000, Deci et al., 2013), contends that intrinsic goals, those related to personal growth, emotional intimacy and community involvement, are inherently rewarding because they directly satisfy innate, basic psychological needs as regards autonomy, competence and relatedness. By contrast, extrinsic goals – such as financial success, social recognition, and physical attractiveness – involve obtaining rewards and positive evaluation from others, and do not directly satisfy basic human needs (Grouzet et al., 2005; Schmuck et al., 2000; Kasser, 2002). On average, attaching importance to intrinsic goals may be more conducive to a higher level of SWB than pursuing

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<sup>8</sup> Here aspirations and goals are used as synonyms.

extrinsic goals. Indeed, the pursuit of extrinsic goals can even have a negative effect on well-being, even though the goals are achieved (e.g., Williams et al., 2000).

The influence of people's goals on SWB may depend on the environmental context. Goal strivings within a context where attainment is likely to be rewarded are more beneficial for SWB, that is, goals must be appropriate in the context of an individual's life to have an impact on his or her well-being (Diener et al., 1999). An important component of context is the culture in which the individual is immersed. Culture influences the goals people select by influencing subjective norms – the social pressure that a subject perceives in favor of or against performing a certain behavior. In turn, subjective norms, together with behavioral attitudes and perceived behavioral control, influence people's intentions according to the Theory of Reasoned Action (TRA) (Fishbein and Ajzen 1975) and its later development, the Theory of Planned Behavior (TPB) (Ajzen 1985, 1991). For example, Cantor and Sanderson (1999) found that commitment to goals had a stronger impact on SWB when those goals were valued by the culture or subculture to which the individual belonged.

## **1.2 The Role of Culture**

Nations<sup>9</sup> differ in the value given to happiness and their mean levels of happiness (Diener, 2000; Diener and Lucas, 2000). International surveys of SWB such as the World Values Survey, the Gallup World Poll, and the OCDE Better Life Index also show LS mean level differences across nations. In general, people living in individualistic, rich, and democratic cultures have higher levels of SWB than do those living in collectivistic, poor, and totalitarian cultures (Diener & Suh, 1999). Differences have also been observed within nations, between different ethnic groups. For instance, Oishi (2001) found that European Americans were significantly more satisfied with their lives than Asian Americans. Diener et al. (2013) reported that nations' LS differ by over two standard deviations of total variability across the world, indicating that

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<sup>9</sup> Nations are often aligned with cultures because of their historical development, although obviously there is not a perfect match (Hermans and Kempen, 1998).

society-wide conditions can have an enormous impact on life satisfaction, even after controlling for objective conditions such as income.

The structure of life satisfaction also differs substantially across nations because culture shapes individual attitudes, values, and the types of goals individuals pursue (Hofstede, 2011). While there are some broad goals and needs that are universal (Tay and Diener, 2011), internalized cultural values moderate the factors that correlate with people's life satisfaction. That is, certain aspects of life are weighted differently in different cultures (Diener et al., 2011; Schimmack et al., 2002; Diener and Diener, 1995; Oishi et al., 1999a; Suh et al., 1998; Vittersø et al., 2002; Oishi et al., 2007; Asakawa and Csikszentmihalyi, 1998). For example, Oishi et al. (2007) found that Asians experienced fewer positive events, but weighted them more heavily in making daily satisfaction judgments, compared to European Americans. Rozin (1999) found that hedonic balance was a weaker predictor of life satisfaction in Hindus than in North Americans students. Cultural effects occur even when there is no cultural difference in explicit goal motivations (Oishi and Diener, 2001).

As mentioned, one dimension of culture that has been particularly useful in identifying systematic differences in the determinants of life satisfaction is individualism-collectivism (Triandis, 1989; and Kitayama, 1991). A defining feature of this dimension is whether people's self-image is defined in terms of 'I' or 'we'. In individualistic cultures people view the self as an autonomous, self-sufficient entity that typically attempts to distinguish itself from others. Autonomy and internal attributes like emotions and self-esteem are stressed in individualist cultures. Individualistic cultures also emphasize freedom of choice and individual needs. By contrast, in collectivist cultures, a central goal of the individual is to maintain harmony with others. One's personal desires are often subordinated to those of the group. Norms, duties, others' needs, and acceptance of one's fate are emphasized in collectivist nations (Triandis, 1989).

Cross-cultural and developmental studies of SWB have compared the size of correlations between the level of satisfaction in various life domains and overall life satisfaction in different cultures. In general, emotions, self-satisfaction and the freedom experienced by the individual are more strongly correlated with global life satisfaction in individualistic nations than in collectivistic nations, whereas social norms are more strongly related to life satisfaction

in collectivist nations (Suh et al., 1998; Kuppens et al., 2008; Oishi et al., 1999a). Diener and Diener (1995) found that self-esteem was a stronger predictor of life satisfaction in individualist nations than in collectivist nations (especially for women), whereas there was no cultural difference in the size of the correlation between satisfaction with friends, family, and overall life satisfaction. Personality consistency is more closely associated with life satisfaction in individualistic societies, where it is more highly valued (Suh, 2002). Oishi et al. (1999) found that freedom was a stronger predictor of life satisfaction in individualistic cultures than in collectivistic cultures. In sum, different criteria are used to judge life satisfaction in different cultures, and these criteria are based on the internalized values of the culture being studied (Oishi, 1999a). Heine et al. (2002) even suggested that what makes people satisfied with their life might be the fulfillment of cultural values which they do not necessarily endorse on an explicit level.

The theory of Evolutionary Modernization (Inglehart, 1997; Norris and Inglehart, 2004; Inglehart and Welzel, 2005) contends that societies' values change as societies develop economically. In turn, these changes in values shift the importance given to variables related to life satisfaction (Inglehart and Welzel, 2005, 2010). For example, Diener et al. (2013) found that among people living in low-income countries, financial satisfaction had a much more powerful impact on LS than did a sense of free choice. These authors claimed that as countries increase their income, financial satisfaction usually becomes progressively less important and aspects like having a sense of free choice over one's life and other self-expression values become more important. Economic development is usually accompanied by a shift toward individualism (Inglehart and Oyserman, 2004), which means that less importance is assigned by society to social support and social relationships.

### **1.3 Theoretical Framework**

Building on need-based theories of life satisfaction (Diener et al, 2002), QOL researchers contend that a person's overall life satisfaction depends on his or her satisfaction in many concrete areas of life – aspects of life or life facets – which can be classified into a few main domains of life (Andrews and Withey, 1976; Cummins, 1996, 1998, 2003; Van Praag and Ferrer-i-Carbonell, 2004; Headey and Wearing, 1992; Salvatore and Muñoz Sastre, 2001; Veenhoven, 1996).

In a seminal study, Andrews and Withey (1976) identified seven life domains (the authors called them ‘concerns’) ‘*that are commonly held, that are relatively broad in scope, and that have significant impacts on people's sense of well-being*’ (p. 27). These universal domains included: job, family, outdoor recreation, self-efficacy, government, and neighborhood. Subsequent research has deductively and inductively come up with similar sets of needs. For example, Cummins’ (1996) meta-analysis of the literature concluded that there are seven domain partitions: material well-being, health, productivity, intimacy, safety, community, and emotional well-being. Argyle (2001) mentioned domains such as money, health, work and employment, social relationships, leisure, housing, and education. The Van Praag et al. (2003) study suggested that health, financial situation, job, housing, leisure, and environment were predictors of satisfaction with life as a whole. Schimmack et al. (2002a) found that college students used information about their family, relationships with friends, romantic life, academic success, health, and finances to judge their LS. Heller, Watson, and Ilies (2006) showed evidence for significant intra-individual variation in life satisfaction, which could be systematically linked to changes in life domains such as marital and job satisfaction. The number of life domains likely to be relevant to someone’s LS can range from a small number to an almost infinite recount of spheres of being (Rojas, 2006; Cummins, 1996). However, when broad domains that relate to the way people think about their lives are considered, there are many commonalities among the different combinations proposed by previous research (see chapter 2 for a review). Depending on the selected set of life domains and its operationalization, early QOL research showed that satisfaction with life domains could account for about 50 percent of the variance in overall LS (e.g. Andrews and Withey, 1976; Campbell et al., 1976). The remaining 50 percent is presumably the result of measurement error and individual differences.

Borrowing ideas from the ancient Greeks and building on the works of Wilson (1967) and Campbell et al. (1976), Michalos (1985) advanced the Multiple Discrepancy Theory of satisfaction. According to this theory, LS is primarily a function of perceived discrepancy between perceptions of how-life-is with standards of how-it-should-be in multiple life domains. People would first evaluate their domains of life by comparing the reality of life with multiple standards in each domain, including: what one ‘*wants*’, what one ‘*had*’ earlier in life, what one ‘*expected*’ to have, what one thinks ‘*other people*’ have, and what one feels is ‘*deserved*’. A

discrepancy that involves an upward comparison (i.e., where the comparison standard is higher) will result in decreased satisfaction, whereas a downward comparison will result in increased satisfaction. On the basis of the sub-evaluations, people would calculate an overall balance by computing some weighted average of satisfactions.

Domain importance moderates the strength of the relationship between life domain satisfaction and the global life satisfaction of the individual (Oishi et al., 1999b). The higher value a person assigns to a particular life domain, the stronger the association between that domain satisfaction and overall life satisfaction for that person. For example, for individuals who value work more in their lives, work satisfaction will have a stronger influence on their overall life satisfaction appraisals (Rice et al., 1980; Steiner and Truxillo, 1989). Nomological relations between domain satisfactions and global life satisfaction may also shift across developmental phases because values change over life span (Cantor and Sanderson, 1999). In this model, personality and other dispositional factors would shape perceptions of life circumstances to affect life satisfaction (Diener et al., 2013). That is, life domain satisfactions would mediate the effects of personality on overall life satisfaction (Brief et al., 1993; Heller et al., 2004).

### **1.3.1 The Work Satisfaction – Life Satisfaction Relationship**

*'Job [work] satisfaction is a positive (or negative) evaluative judgement one makes about one's job or job situation'* (Weiss, 2002 p.175)

The relationship between work and life satisfaction is usually portrayed in terms of three rival models proposed by Wilensky (1960): spillover, compensation and segmentation. The spillover model suggests a positive relationship between work and life satisfaction in that satisfaction in one domain of a person's life spills over into other areas. For most adults, work is a central aspect of life in terms of time and emotional involvement. People are believed to have a difficult time separating their feelings about work and life in general. Therefore, people allow positive or negative experiences from one domain to generalize or spill over to the other. Accordingly, individuals who are (dis)satisfied with their work will also be (dis)satisfied with their lives, and vice versa. By contrast, the compensatory model suggests that individuals who experience discontentment in their work will compensate for this deficiency by finding satisfaction in other aspects of their life. Thus, for example, workers that have routine, boring

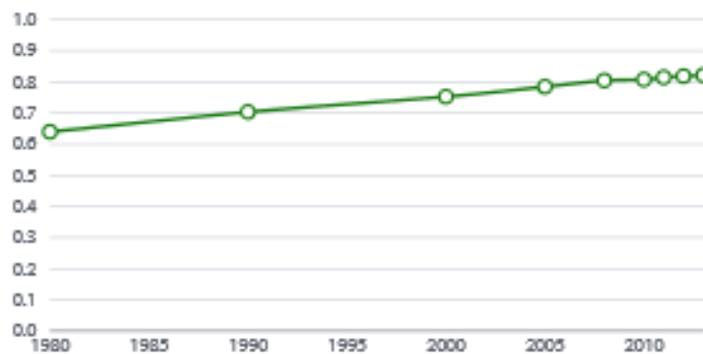
jobs will seek out rewards in their non-work life to compensate for disappointments at work; hence the relationship between work and life satisfaction should be negative (e.g., Wu, 2009; Rousseau, 1978). Finally, the segmentation model asserts that work and life satisfaction are unrelated to each other. There is an independence between the activities and feelings in the work and non-work spheres of people's lives. Work and non-work domains are psychologically separate (e.g., Rode, 2004; Gupta and Beehr, 1981). Of the three models, the spillover hypothesis has received the most support, although researchers recognize that different models may operate in different situations. In an influential study, Judge and Watanabe (1994) found that the spillover model operated in 68% percent of the population, compensation in 12%, and segmentation in the remaining 20%. Meta-analyses corroborate that work satisfaction is positively correlated with overall life satisfaction, supporting the spillover model (Bowling et al., 2010; Rice et al., 1980; Tait et al., 1989). For example, Bowling et al.'s (2010) meta-analysis estimated an average weighted correlation of .40 between LS and global work satisfaction, which was reduced to .36 when a composite of work satisfaction was considered. Similarly, Rice et al.'s (1980) results showed a correlation of .31, while Tail et al. (1989) estimated the average corrected correlation between the constructs to be .44 after correcting for attenuation.

Although causality can only be demonstrated by means of the experiment or be approached with experimental designs, implicit in path analysis models like the spillover model, a kind of causality is generally assumed. For example, if one contends that job satisfaction spills over into the non-work domains, then one is hypothesizing that work satisfaction influences general life satisfaction. However, that a positive relationship exists provides no information regarding whether work satisfaction influences life satisfaction, life satisfaction influences work satisfaction, or the two constructs have mutual influence on each other. In this thesis, we adopt a situational perspective which implies that the 'causal' direction is from work satisfaction to life satisfaction because of the importance of work to individuals (see chapter 4). Conversely, scholars adopting a dispositional perspective contend that general affective states spill over onto evaluations of the job (Judge and Locke, 1993; Staw & Ross, 1985). Some authors have suggested a reciprocal relationship between work and life satisfaction (Alghamdi, 2015; Rice et al., 1980; Judge and Watanabe, 1993; Dolan and Gosselin, 1998).

## 1.4 The Socio-Economic Context of Chile

Life satisfaction is shaped differently as societies develop and cultural values change (Inglehart and Welzel, 2005, 2010; Diener et al., 2013). Accordingly, it is important to understand the socio-economic situation of Chile at the time the survey was administered in 2012. By that time Chile was an emerging economy that had experienced remarkably rapid economic growth and significant societal changes since 1980. The average annual growth rate of the gross domestic product (GDP) reached 6% from 1980 to 2012, which was much higher than the world average. The Human Development Index (HDI), a composite statistic of life expectancy, education, and income indices that rank countries into four tiers of human development published by the United Nations Development Programme (UNDP), showed an increase for Chile from .630 in 1980 to .819 in 2011, according to the UNDP Human Development Report (2013) (see Figure 1.1). This remarkable increase ranked Chile in first place among Latin American countries and 40th place worldwide in terms of living conditions in 2012 (UNDP Human Development in Chile, 2012). This rapid development was accompanied of low unemployment rates of 7% on average. Nevertheless, these figures would co-exist with a climate of social discontent and unrest within society caused mainly by inequality (UNDP Human Development in Chile, 2012).

Chile is a society with remarkable collectivistic values. A score of 23 on Hofstede's individualism cultural dimension is in line with most other Latin American countries. This score contrasts with the levels of individualism in the U.S (91), the UK (89), the Netherlands (80), Germany (67) and France (71) (Hofstede et al., 2010).



**Figure 1.1** Human Development Index (HDI) in Chile

## **1.5 Structure of the thesis and issues common to the three chapter-articles**

As mentioned at the beginning of this chapter, this thesis discusses three papers. The first paper (chapter 2: *Validation and factorial invariance analysis of the Spanish version of the Satisfaction With Life Scale in Chile*) assesses the Anglo-Saxon measurement instrument used to warranty that the data accurately reflect Chilean life satisfaction perceptions. The second (Chapter 3: *Life domain satisfactions as predictors of overall life satisfaction among workers: evidence from Chile*) assesses the main effects of multiple life domains on overall life satisfaction. The third paper (Chapter 4: *Self-employment as a moderator of the relationship between work and life satisfaction*) focuses on the work domain and assesses how its effect on life satisfaction is moderated by employment status.

In addition to the substantive framework of the previous sections and because some methodological issues such as the life satisfaction domains of the Chilean environment, the measurement instruments or the sample data have communalities along the chapters, this introductory chapter finishes by providing a summary of these common methodological issues.

### **1.5.1 Data Analysis Methods**

Several qualitative and quantitative methods are used in this thesis. In chapter 2, Confirmatory Factor Analysis (CFA) – including multi-group comparisons – is used to validate the Spanish version of the SWLS in the context of Chile. In Chapter 3, I use qualitative methods to develop measures of life domain satisfactions. These satisfaction measures are then assessed using Exploratory and Confirmatory Factor Analysis. Structural Equations Modeling (SEM) is used to assess the contribution of multiple life domain satisfactions on overall life satisfaction. Finally, in chapter 4, multiple regression analysis is used to assess the moderation effect of self-employment on the relationship between work satisfaction and life satisfaction.

### 1.5.2 Measurement Instruments

Measures of global<sup>10</sup> life satisfaction, work satisfaction (multi-faceted and global), and satisfaction with different non-work life domains were required for the purpose of this research. Some demographic variables and working conditions also had to be measured.

Given the nature of the constructs under investigation and the sample size, a survey questionnaire was considered to be an appropriate research methodology. Given the high level of illiteracy among the Chilean population (Centro de Micro Datos, 2011), face-to-face administration of the questionnaire was chosen. The number of constructs (i.e., satisfaction measures) to be investigated posed an important challenge. The design of the survey questionnaire had to be short enough to avoid response fatigue while ensuring psychometrically sound measurement at the same time.

#### *Life satisfaction*

The dependent variable in this research is global life satisfaction. Global life satisfaction is commonly measured using scales that ask respondents to evaluate their lives as a whole on a scale, although other methods have been also proposed (e.g., Batista-Foguet et al. 1990). When scales are used, self-reporting is a direct and accurate way to measure life satisfaction (Diener et al. 2013) because the judgment of how satisfied people are with the present state of affairs is based on a comparison with a standard which each individual sets for herself, not externally imposed (Diener et al., 1985; Worell, 2002). A less frequently applied alternative for measuring SWB and life satisfaction is the use of informant-reports (i.e., other-views), in which trained raters assess subjects' life satisfaction after interviewing them (Dobewall et al., 2013). Schneider and Schimmack (2009) meta-analyzed forty-four studies and found a mean correlation of .42 between self-reports and informant reports of life satisfaction. Zou et al. (2013) found that informants-reports measures of life satisfaction converged more with self-reports of the target respondent when more informants were used. The level of self-other agreement in SWB is in the same range as what has been found earlier for the Big Five

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<sup>10</sup> The terms 'global' life satisfaction and 'overall' life satisfaction are used interchangeably in this thesis

personality (Connolly et al. 2007; Hall et al. 2008) and affective traits (Watson et al. 2000).

We used the Satisfaction With Life Scale to measure global life satisfaction (SWLS; Diener, Emmons, Larsen, and Griffin (1985). Considering the cognitive component of SWB separately from the affective component, Diener et al. developed the SWLS to measure global life satisfaction (for reviews, see Pavot and Diener, 1993, 2008; Vassar, 2008). The SWLS is currently one of the most widely used scales for the measurement of global life satisfaction because of its demonstrated reliability and validity as well as its brevity. Unlike many other scales of global life satisfaction, the SWLS is not specific to a particular population (Pavot et al., 1991). Research has established acceptable psychometric properties for SWLS, including high internal consistency, test–retest reliability, and convergent validity. SWLS has been applied with different socio-demographic groups of people (e.g., Gadermann et al., 2011; Oishi, 2006; Durak et al., 2010). The scale has been translated into multiple languages and validated in many different cultural settings but not in the context of Chile. Additionally, the existing operationalizations into the Spanish language were not satisfactory. Therefore, a more appropriate operationalization into Spanish is presented in Chapter 2 and its psychometric properties examined.

### *Life Domain Satisfaction*

New scales were developed regarding the main independent variables in this research – the satisfaction with multiple life domains. Based on a review of the literature, my coauthors and I identified seven life domains that have consistently been found to be relevant for life satisfaction of adults. Measures of satisfaction with health, financial situation, social relationships, self-worth, leisure-time, family, and work are presented in chapter 3.

### *Work Satisfaction*

In addition to the measure of work satisfaction developed in this thesis (see chapter 3), work satisfaction was also assessed using a 22-item subscale of the Occupational Stress Indicator (OSI) (Cooper et al. 1988). This scale evaluates satisfaction with work facets such as career development opportunities, job stability and the supervisor’s leadership style.

Single-item measures of both global life satisfaction and global work satisfaction are

also used to assess the concurrent validity of the SWLS.

### *Other measures*

Other measures used in this research are: age, gender, marital status, level of education, and work status. Demographic variables are used to describe the sample and/or as control variables. Work status is used in chapter 4 to assess the effect of being self-employed (as opposed to being organizationally employed) on life satisfaction.

### **1.5.3 Sample**

Using the 2002 Chilean census, a representative sample of the country population was selected for this research. A sample of N=1500 was calculated setting a sampling error of 5%. Participants were sampled from the country's 15 regions, where the Greater Santiago region was overrepresented. Some 30% of the population centres (i.e., cities and towns) and districts were selected proportionally. Blocks, housing, and individuals were randomly selected. Given the nature of the study and constructs, a survey questionnaire was developed. To ensure a representative sample, door-to-door administration was chosen. A team of professional canvassers went door-to-door for 3 weeks to personally administer the survey questionnaire to the sampled participants. Out of the 1500 participants in the study, 758 (50.5%) were men and 742 (49.5%) women. The age of participants ranged from 15 to 98 years, with a median age of 40 and an average age of 41.2 years (SD = 16.9); 1340 (89.3%) participants lived in urban areas whereas 160 (10.7%) lived in rural areas. 964 (64.3%) participants reporting having a partner, while 507 (33.8%) did not and 22 (1.5%) did not respond. 791 (52.8%) of the participants declared themselves to be employed when the questionnaire was administered, of which 517 (34.5%) were employees and 274 (18.3%) self-employed. 131 (8.7%) were retired and 62 (4.1%) were unemployed. 196 (13.1%) were students, 304 (21.3%) were housekeepers. Table 1.1 provides detailed sample characteristics on age groups, marital status, level of education, and work status.

**Table 1.1** Total sample characteristics (N=1500)

Age		Marital Status		Education		Work Status	
Less than 25	19.7%	Married	38.2%	No education	9%	Worker	52.8%
From 25 to 34	19.5%	Single	37.9%	Primary	23%	Retired	8.7%
From 35 to 44	19.4%	Living together	9.1%	Secondary	52.7%	Student	13.1%
From 45 to 54	19.7%	Separated	8.5%	University	15.1%	Housekeeper	21.3%
From 55 to 65	11.1%	Divorced	1.3%	PhD	.2%	Unemployed	4.1%
More than 65	10.7%	Widow/er	5.1%				

## 1.6 References for Chapter 1

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## **2 Validation and Factor Invariance Analysis of the Spanish Version of the Satisfaction With Life Scale in Chile**

### **2.1 Abstract**

The aim of this study is to validate and test the factorial invariance of the Spanish version of the Satisfaction with Life Scale (SWLS) across genders and some demographic groups, including students, workers, retired people, and housekeepers on a national sample of Chileans (N=1500). Results suggest the proposed Spanish operationalization of the SWLS is a valid and reliable instrument for measuring global life satisfaction in Chile. Confirmatory factor analysis shows support for a single-factor structure of the SWLS across all groups. Cronbach's alpha coefficient ranges between 0.66 and 0.84 for different groups, with an average value of 0.80 for the total sample. The SWLS scores converge with an alternative single-item measure of life satisfaction and with measures of conceptually related constructs. Results also show that the factorial structure of the scale is invariant with respect to gender and across some demographic groups (workers, retired people, and housekeepers). We only find partial factorial invariance across students-workers, students-retired, students-housekeepers, and workers-housekeepers. Mean levels of life satisfaction can be compared across genders and between workers, retired, and housekeepers; it can also be compared, albeit cautiously, between workers and housekeepers and also between students and the three other demographic groups studied.

### **2.2 Keywords**

Satisfaction With Life Scale, factorial invariance; confirmatory factor analysis; dimensionality, Spanish version; Chile

### **2.3 Introduction**

In a recent review article, Diener, Inglehart, and Tay (2013) pointed out the need for psychometrically sound measures of life satisfaction and described their characteristics. Self-report scales of life satisfaction must reflect thoughtful and reasonable assessments people make of their lives. Scales must be reliable, yielding identical scores when administered under the same conditions, and scores should remain the same over time if life conditions are unchanged.

Life satisfaction scales should also predict relevant future behaviours that have been consistently associated to level of life satisfaction/dissatisfaction, such as suicidal ideation, health, and longevity.

The Satisfaction With Life Scale (SWLS) (Diener, Emmons, Larsen, and Griffin, 1985) is one of the most widely used scales in the assessment of global life satisfaction (Pavot and Diener, 1993, 2008, for reviews). The SWLS assesses a person's conscious evaluative judgments of his or her life as a whole, based on a comparison of the person's life with a self-imposed standard or set of standards. Unlike other life satisfaction scales that ask about various important facets of life, the SWLS allows the respondent to integrate and weight different facets of life domains using the respondent's own criteria. There is considerable evidence showing that the SWLS reliably and validly reflects authentic differences in the ways people evaluate their own lives. The SWLS shows good convergent validity with other life satisfaction scales and with other types of assessments of Subjective Well-Being (SWB). The SWLS also moderately converges with other types of life satisfaction measurements that do not depend on respondent self-reports, like expert assessments and peer or family member ratings of the target person (Pavot, Diener, and Suh, 1998). The SWLS has good concurrent validity, being positively related to constructs like positive affect and self-esteem (Pavot and Diener, 2008). The scores are stable under unchanging conditions, but are sensitive to changes in circumstances in people's lives, although the SWLS shows moderate temporal stability, which is expected in a measure of life satisfaction. Test-retest reliabilities are usually above 0.8 over a period of several weeks and above 0.5 over a period of years (Diener et al., 1985; Magnus et al., 1993; Pavot and Diener, 1993; Pavot et al., 1998; Steger et al., 2006). Yet, the SWLS shows sufficient sensitivity to detect changes in life circumstances during the course of the life span, such as those due to major life events. The scores also correlate with life circumstances and changes in those circumstances that should influence life evaluations, such as widowhood and childbirth (e.g., Yap et al., 2011a, b). National mean levels of life satisfaction provide strong evidence for the validity of the SWLS in reflecting quality of life differences in societies. Another type of validity evidence for the SWLS is the difference between groups of individuals who appear to have fortunate versus unfortunate life circumstances.

Five reflective items compose the SWLS. The first three items focus on external living conditions or the present level of satisfaction, whereas items four and five assess satisfaction

with past accomplishments. Exploratory and confirmatory factor analyses have consistently indicated a single-factor structure of the SWLS, where item number five usually shows a lower loading, although two-factor structures have also been proposed (e.g., McDonald, 1999; Vautier, Mullet, and Jmel, 2004). The scale tends to show moderate internal reliability, with Cronbach's alpha coefficient of 0.8, or even higher, indicating convergence among life satisfaction items that are worded in different ways. In a meta-analysis study, Vassar (2008) reported an average Cronbach's alpha of 0.78. Originally written in English, its five reflective items are at the reading level of 6th to 10th grades; the instrument is thus usable with most adults. The original response format was a 7-point Likert-type response scale ranging from '*strongly disagree*' to '*strongly agree*'. The five items are all keyed in a positive direction, so the five responses can simply be added to arrive at a total score for the scale. Also, studies using a 5-point Likert format are not rare (e.g., Atienza, Pons, Balaguer, and Garcia-Merita, 2000; Reig et al., 2001; Swami and Chamorro-Premuzic, 2009).

The SWLS has potential as a cross-cultural index of global life satisfaction. Its items have been translated into multiple languages and its psychometric properties have been assessed in multiple countries. The languages into which the SWLS has been translated include (but are not limited to): Chinese (Sachs, 2003, 2004), French (Fouquereau and Rioux, 2002), Portuguese (Neto, 1993; Sancho et al., 2014), Brazilian-Portuguese (Gouveia et al., 2009), Dutch (Arrindell, Heesink, and Feij, 1999), Turkish (Durak, Senol-Durak, and Gencoz, 2010), Russian (Tucker et al., 2006), Norwegian (Vitterso, Biswas-Diener, and Diener, 2005), Swedish (Hultell and Gustavsson, 2008), Arabic (Abdallah, 1998), Hebrew (Anaby, Jalus, and Zumbo, 2010), Malay (Swami and Chamorro-Premuzic, 2009), Lebanese (Ayyash-Abdo and Alamuddin, 2007), Taiwanese (Wu and Yao, 2006), Czech (Lewis, et al., 1999), Korean (Suh, 1993). SWLS has also been translated into Spanish in two versions (Atienza et al., 2000; Nuñez, Martín-Albo, and Domínguez, 2010). Yet, we find the Spanish operationalization of some of the items not appropriate in the existing versions.

Approximately 470 million people speak Spanish as a native language, making it second only to Mandarin in terms of its number of native speakers worldwide. There are an estimated 548 million Spanish speakers as a first or second language, including speakers with limited competency. In light of the wide spread of the Spanish language, having a valid and reliable Spanish operationalization of the SWLS is important. Accordingly, in this article we propose a

Spanish operationalization of the SWLS that we validate using a Chilean sample. In particular, the objectives of the study are threefold: 1) to analyse the existing Spanish operationalizations of the scale and propose a more appropriate operationalization of some of the items, 2) to examine the psychometric properties (i.e., dimensionality, internal reliability, and concurrent validity) of the new proposed version on a representative sample of the Chilean population, and 3) to test the factorial invariance of the SWLS across genders and four demographic groups: students, workers, retired people (hereafter referred as retired) and housekeepers. After confirming factorial invariance across groups, we compare the mean levels of life satisfaction of the different groups of people.

## **2.4 Method**

### **2.4.1 Sample and Data Collection**

The current study draws upon a national sample of the Chilean population. Using the Chilean census, a sample size of  $N=1500$ , with a sampling error of 5%, was calculated. Participants were sampled from the country's 15 regions, where the Greater Santiago region was overrepresented. Some 30% of the centres of population (i.e., cities and towns) and districts were selected proportionally. Blocks, housings, and individuals were randomly selected. Given the high level of illiteracy among the Chilean population (Centro de Micro Datos, 2011) a face-to-face administration of the questionnaire was chosen. A team of professional canvassers went door to door for three weeks to personally administer the survey questionnaire to the sampled participants. After excluding 21 individuals who had missing values on their SWLS scores or demographic data, an effective sample of  $N=1479$  was used for the analysis. Of the 1475 participants, 729 are males and 750 are females. Regarding demographic groups, 53% of the participants are workers, 8.5% are retired, 4.2% are unemployed, 12.9% are students and 21.4% are housekeepers. Sample size by gender and demographic group is presented in Table 2.1. Unemployed individuals are excluded from analyses since we have a small sample size for CFA analysis ( $n = 62$ ).

**Table 2.1** Sample size and the descriptive statistics of the SWLS items

	Mean	SD	Skewness	Kurtosis	Mean	SD	Skewness	Kurtosis
<b>Males (n = 729, 49.3%)</b>				<b>Females (n = 750, 50.7%)</b>				
Item 1	3.35	0.92	-0.57	-0.62	3.26	0.91	-0.48	-0.64
Item 2	3.14	0.92	-0.26	-0.81	3.08	0.98	-0.04	-0.92
Item 3	3.66	0.84	-0.8	0.27	3.58	0.92	-0.76	0.06
Item 4	3.52	0.91	-0.57	-0.52	3.57	0.90	-0.66	-0.20
Item 5	3.11	1.09	-0.1	-1.16	3.08	1.10	-0.05	-1.23
<b>Students (n = 190, 12.8%)</b>				<b>Workers (n = 784, 52%)</b>				
Item 1	3.72	0.68	-0.87	0.87	3.34	0.91	-0.62	-0.49
Item 2	3.42	0.88	-0.28	-0.37	3.15	0.95	-0.29	-0.81
Item 3	3.85	0.76	-0.74	0.65	3.65	0.87	-0.83	0.41
Item 4	3.68	0.85	-0.72	0.40	3.56	0.90	-0.61	-0.40
Item 5	3.40	1.04	-0.45	-0.59	3.08	1.10	-0.11	-1.18
<b>Retired (n = 126, 8.5%)</b>				<b>Housekeepers (n = 317, 21.4%)</b>				
Item 1	3.18	0.87	-0.33	-0.93	3.10	0.96	-0.24	-0.97
Item 2	2.96	0.94	-0.01	-1.02	2.91	0.97	0.27	-0.92
Item 3	3.64	0.85	-0.87	0.32	3.46	0.93	-0.71	-0.36
Item 4	3.54	0.84	-0.50	-0.46	3.50	0.96	-0.67	-0.48
Item 5	3.08	1.10	0.03	-1.21	2.97	1.11	0.15	-1.34

#### 2.4.2 Spanish Operationalization of the SWLS

Participants were asked to evaluate their SWLS by indicating their agreement on a 5-point Likert scale labelled from 1 (*strongly disagree*) to 5 (*strongly agree*). Although Diener et al. (1985) used a 7-point Likert response format in their original English-language scale, data analysis through basic co-relational techniques has been shown to be inadequate for 5-point items (i.e., ordinal scale item) which leads to lower reliability for behavioural items (Batista-

Foguet et al., 2009). A recent paper has provided evidence that for Agree/Disagree (A/D) answer modalities, 5-point Likert scales with all categories labelled lead to a better data quality than 7-point response scales (Revilla, Saris, and Krosnick, 2014).

We used the standard back-translation technique (Brislin, 1970) to develop the Spanish operationalization of the SWLS. The third author initially translated the original English-language version of SWLS into Spanish, and this version was then translated back into English by an independent translator unaffiliated with the study. The two translators then resolved minor differences that emerged during the back-translation process. The resulting version was then compared to two existing Spanish versions of the scale. We found significant differences between our operationalization of the items and the items in previous Spanish versions. In some items, the differences changed the meaning of the item significantly. It is worth noting that the differences in wording had nothing to do with the distinct regional varieties of the Spanish language (e.g., those spoken in Latin America versus Spain). The different Spanish versions of the SWLS, including our proposed operationalization and the associated scoring instructions, are presented in Appendix 2.1 and 2.2, respectively.

As per the authors' knowledge, Atienza et al. (2000) are the first to propose a Spanish operationalization of the SWLS and examine its psychometric properties in a sample of Spanish adolescent students. They use a 5-point Likert scale response format ranging from '*strongly disagree*' to '*strongly agree*'. Pons et al. (2002) test the same Spanish-language version in a sample of elderly people, and Garrido et al. (2010) in a sample of Spanish university students. Later, other studies have used the Atienza et al. version (e.g., Reig et al., 2001; Cabañero et al., 2004). Nuñez et al. (2010) propose a different Spanish operationalization that is tested in a sample of physical activity practitioners. In this case, the authors keep the original 7-point Likert response format. Still a third different operationalization can be found in Diener's website. As there is no evidence of this version having been tested, it will not be discussed in this article.

Item 1 in the original English version is '*In most ways my life is close to my ideal*'. Atienza et al. (2000) translate the phrase '*close to my ideal*' as '*como quiero que sea*', which indeed would translate back as '*as I want it to be*'. In turn, Nuñez et al. (2010) translate '*In most ways*' as '*In general*' (En general). Although this does significantly change the meaning of the question, we believe that '*In most ways*' reflects Diener et al.'s (1985) idea of allowing

respondents to integrate and weight different facets of life domains in whatever way they choose. Given that 'ways' does not literally translate well to Spanish, we propose '*En la mayoría de aspectos*' (In most aspects). Regarding item 2, '*The conditions of my life are excellent*', Atienza et al. (2000) replace the adjective 'excellent' with 'good' (buenas) and Nuñez et al. with 'very good' (muy buenas). In both cases, the adjectives express a lower degree than excellent. Less important is the fact that Atienza et al. (2000) translate the original word 'conditions' as 'circumstances' (circunstancias), when there is no need to deviate from the original wording. There are no translation differences in item 3, '*I am satisfied with my life*'. In item 4, '*So far I have gotten the important things I want in life*', there are no relevant differences between our translation and the Atienza et al. version. However, Nuñez et al. (2010) refer to '*cosas importantes en la vida*' (important things in life). This translation not only omits for whom things are important but also misses the article 'the' (las), changing the meaning. We propose '*Hasta ahora, he conseguido las cosas que para mí son importantes en la vida*'. Finally, item 5, '*If I could live my life over, I would change almost nothing*', is again problematic. Atienza et al. (2000) use the phrase '*la repetiría tal y como ha sido*', which translates as '*I would repeat it as it has been*'. This wording implies no change or improvement. Similarly, Nuñez et al. (2010) use the direct complement '*la misma vida*' (the same life). Again, this translation does not leave any room for change, whereas the English version includes the adverb 'almost' to allow for improvement.

### **2.4.3 Other Measures**

In order to assess concurrent validity of the scale, we rely on an alternative single-item measure of life satisfaction and also measures of the conceptually related constructs of global job satisfaction, satisfaction with own health (also referred to as subjective health), satisfaction with social life, satisfaction with leisure time (hereafter referred as social life and leisure time, respectively), and self-esteem. To assess these life domains satisfaction variables and self-esteem, we used measures developed by Loewe et al. (2014) presented in Appendix 2.3. Participants used a 5-point Likert scale to give their responses. To assess respondents' global level of life satisfaction and job satisfaction, we asked them the following questions: '*In general, how satisfied are you with your life/job?*' respectively. In the case of life satisfaction, a 4-point Likert scale ranging from '*not satisfied at all*' to '*very satisfied*' was used, while a 5-

point Likert scale, ranging from ‘*very unsatisfied*’ to ‘*very satisfied*’, was utilized for scoring global job satisfaction.

## **2.5 Results**

### **2.5.1 Descriptive Statistics**

Descriptive statistics of each item of the SWLS, including mean, standard deviation, skewness, and kurtosis, are indicated by gender and demographic group in Table 2.1. The mean of each item is between 3 and 4 for all groups except for items 2 and 5 for housekeepers, and item 2 for retired; these are slightly below 3. Skewness is within -1 and +1 across all items and groups. Kurtosis of item 5 is less than -1 in all groups except students, with the lowest value of -1.34 in housekeepers. Absolute value of skewness and kurtosis is equal to or lower than 1, indicating that the univariate normality of all items, across all groups, is within the acceptable level for applying Maximum Likelihood (ML) estimation in CFA (Muthen and Kaplan, 1985). Similarly, West, Finch, and Curran (1995) recommend that items with skewness smaller than 2 and kurtosis smaller than 7 be considered as normally distributed variables. The data are also tested for multivariate normality. Mardia’s (1974) test rejects multivariate normality of the data for all groups as well as the entire sample. Given the violation of the multivariate normality assumption, we apply Satorra-Bentler  $\chi^2$  (Satorra and Bentler, 1994) to evaluate goodness of fit in CFA to have robust standard error and test statistics under violation of multivariate normality assumption. A combination of goodness of fit indices is also used to ensure that non-multivariate normality of data is not an issue in our analyses. In particular, we apply Goodness of Fit Index (GFI), Non-Normed Fit Index (NNFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

### **2.5.2 Scale Dimensionality**

CFA results for a single-factor structure and a two-factor structure are shown in Table 2.2. Based on the fit indices and according to the combinational rule suggested by Hu and Bentler (1999), both models (single-factor and two-factor structure) are acceptable and can represent the observed data for the overall sample. Relying on Hu and Bentler (1999), all of the fit indices support both models (GFI, NNFI, CFI, and NFI > 0.95; RMSEA < 0.08; SRMR < 0.05) with

the exception of  $\chi^2/\text{df}$  ratio ( $\chi^2/\text{df}$  for single-factor = 6.75 and  $\chi^2/\text{df}$  for two-factor = 5.48), which are both higher than the cut-off value of 3 suggested by Kline (2005). We attribute these results to the large sample size ( $N = 1479$ ), since studies have shown that  $\chi^2$  is problematic to assess goodness of fit in large samples and should be considered more as a goodness of fit test than a statistical one (e.g., Hooper, Coughlan, and Mullen, 2008; Raykov, 1998). In this particular case, we are in a high power situation due to large sample size and high item reliability. In general, the two-factor structure fit the data better than the single-factor structure (e.g., GFI = 0.992 vs. 0.988; CFI = 0.994 vs. 0.990; RMSEA = 0.055 vs. 0.062; SRMR = 0.018 vs. 0.024). But, the correlation between the two factors is 0.89, which is very high, showing that the two factors cannot be easily distinguished. In addition, the value of Akaike Information Criterion (AIC) and Consistent AIC (CAIC) index for both models are almost the same (AIC=53.75, CAIC=116.743 for the single-factor structure; AIC=43.911, CAIC=113.20 for the two-factor structure) (Wu and Yao, 2006). Moreover, the single-factor structure is more parsimonious than the two-factor structure (Parsimony Normed Fit Index (PNFI) = 0.494 vs. 0.397). Taking all this into account, we select the single-factor structure as the baseline model for the following factor validity analysis of the SWLS for each group by gender and work status.

**Table 2.2** Fit indices for single-factor and two-factor structure of the SWLS for the overall sample

$\chi^2(\text{df})$	$\chi^2/\text{df}$	GFI	NFI	CFI	NFI	RMSEA	SRMR	PNFI
<b>Single-factor structure</b>								
33.75(5)	6.75	0.988	0.981	0.990	0.981	0.062	0.024	0.494
<b>Two-factor structure</b>								
21.91(4)	5.48	0.992	0.985	0.994	0.993	0.055	0.018	0.397

CFAs are then applied to assess the goodness of fit of the single-factor structure of the SWLS for each group. The CFA results for each group are summarized in Table 2.3. Overall, the single-factor structure of the SWLS fits the data well for all six groups, although the  $\chi^2/\text{df}$  ratio is higher than the threshold ( $< 3$ ) suggested by Kline (2005) for the females ( $\chi^2/\text{df} = 5.84$ ,  $N = 750$ ), workers ( $\chi^2/\text{df} = 3.12$ ,  $N = 784$ ), and housekeepers ( $\chi^2/\text{df} = 3.38$ ,  $N = 317$ ). In general,

the fit indices – including GFI, NNFI, CFI, and NFI – show values within range from 0.971 to 1 across all groups that are higher than the recommended cut-off values ( $> 0.95$ ), providing strong evidence of single-factor structure fit for all six groups. Moreover, the RMSEA (range from 0.00 to 0.087) shows an acceptable fit for the single-factor structure of SWLS across all six groups. At the same time, we employ SRMR, which is more sensitive to simple model misspecification than other fit indices (Hu and Bentler, 1998); it shows that the fit of single-factor structure is adequate for all groups as SRMR values range between 0.020 and 0.039. In sum, all fit indices represent an adequate fit between the single-factor structure of the SWLS and the data across all groups. In other words, the unidimensionality of the 5-item SWLS is confirmed across gender and different demographic groups.

**Table 2.3** Fit indices for single-factor structure of the SWLS for each group

	$\chi^2(\text{df})^*$	$\chi^2/\text{df}$	GFI	NNFI	CFI	NFI	RMSEA	SRMR
<b>Overall sample</b>	33.75(5)	6.75	0.988	0.981	0.990	0.981	0.060	0.024
<b>Males</b>	12.46(5)	2.49	0.992	0.989	0.994	0.991	0.045	0.020
<b>Females</b>	29.22(5)	5.84	0.980	0.971	0.985	0.982	0.080	0.033
<b>Students</b>	7.59(5)	1.52	0.982	0.971	0.985	0.959	0.052	0.039
<b>Workers</b>	15.59(5)	3.12	0.990	0.986	0.993	0.990	0.052	0.023
<b>Retired</b>	3.88(5)	0.78	0.984	1.012	1.000	0.980	0.000	0.032
<b>Housekeepers</b>	16.90(5)	3.38	0.971	0.971	0.986	0.980	0.087	0.034

\*: Satorra-Bentler  $\chi^2$

A detailed analysis of factor loadings and  $R^2$  values is performed. Table 2.4 shows factor loadings and  $R^2$  for every item across groups. All items show high factor loading where their standardized factor loadings are generally higher than 0.50 (within a minimum of 0.51 for workers and a maximum of 0.77 for housekeepers), providing support for fitness of the single-factor structure for the overall sample and all groups (Fornell and Larcker, 1981). For the students, as an exception, standardized factor loading for item 5 is slightly lower than other groups (0.48). Moreover, the factor loadings represent the same pattern across different groups as well as the overall sample, where the third item shows the highest factor loading (with the

exception of the retired) and item 5 shows the lowest factor loading compared to other items. This result regarding item 5 is consistent with the results of previous studies (e.g., Anaby et al., 2010; Gouveia et al., 2009; Pavot and Diener, 1993).

In all groups and also in the overall sample, the  $R^2$  values range from 0.23 to 0.59, exceeding the cut-off value of 0.2 indicated by Hair et al. (1995). This indicates that the strength of the linearity in association between SWLS construct and its items is relatively strong. In addition, the pattern of  $R^2$  value is generally the same across six groups and the overall sample, where the last item shows the lowest  $R^2$  value and the item 3 shows the most contribution for the SWLS variance (the highest  $R^2$  value). This pattern is consistent with recent studies (e.g., Anaby et al., 2010; Gouveia et al., 2009). For the retired, however, the  $R^2$  value for item 3 (0.37) is relatively lower than the  $R^2$  value for other groups, which range from 0.44 to 0.59.

**Table 2.4** Standardized factor loadings and  $R^2$  for each item of the single-factor structure of the SWLS by gender and demographic group

	Overall sample	Males	Females	Students	Workers	Retired	Housekeepers
<b>Standardized factor loading / <math>R^2</math></b>							
Item 1	0.71 / 0.50	0.71 / 0.51	0.71 / 0.50	0.60 / 0.36	0.71 / 0.50	0.70 / 0.50	0.71 / 0.51
Item 2	0.72 / 0.52	0.68 / 0.47	0.76 / 0.57	0.52 / 0.27	0.73 / 0.54	0.65 / 0.42	0.75 / 0.56
Item 3	0.74 / 0.55	0.73 / 0.53	0.76 / 0.57	0.66 / 0.44	0.75 / 0.56	0.61 / 0.37	0.77 / 0.59
Item 4	0.62 / 0.38	0.62 / 0.38	0.62 / 0.39	0.51 / 0.26	0.62 / 0.39	0.62 / 0.38	0.68 / 0.47
Item 5	0.55 / 0.30	0.54 / 0.29	0.56 / 0.32	0.48 / 0.23	0.51 / 0.26	0.56 / 0.31	0.67 / 0.45

### 2.5.3 Reliability Analysis

Reliability analysis for the SWLS and each item is conducted by computing corrected item-total correlation, Cronbach's alpha and Heise and Bohrnstedt's omega coefficients for the total sample and for every group. The corrected item-total correlation is higher than 0.39 (related to item 4 for students) for all items in all groups. Correlations are higher than the cut-off value of 0.25 usually accepted (Nunnally and Bernstein, 1994). The corrected item-total correlation is relatively lower for item 4 and 5 across all groups, consistent with previous studies (e.g., Anaby

et al., 2010; Bai, Wu, Zheng, and Ren, 2011; Gouveia et al., 2009). Cronbach's alpha coefficient across groups ranges from 0.66 (related to students) to 0.84 (for housekeepers) and for the whole sample is 0.80. Overall, these results indicate an adequate reliability for the entire sample as well as all of the groups (Clark and Watson, 1995; Hair et al., 1995; Nunnally and Bernstein, 1994). The assumption of equality of all factor loadings of the SWLS (i.e., every item contributes equally to the SWLS) should be fulfilled for adopting Cronbach's alpha (tau-equivalence), otherwise reliability is underestimated (Heise and Bohrnstedt, 1970; Raykov, 1997). This assumption is not satisfied in the current study since the factor loadings of items are not the same in the total sample and all groups. As a result, we also apply Heise and Bohrnstedt's omega coefficient, as another measure of reliability that does not require tau-equivalence, to check robustness of reliability of the SWLS resulting from Cronbach's alpha coefficient (Heise and Bohrnstedt, 1970). A similar result is observed in reliability of the entire sample ( $\Omega = 0.80$ ). Also, the Omega coefficient indicates similar reliability estimates for all of groups, ranging from 0.68 to 0.84. Moreover, Cronbach's alpha coefficient does not improve if any item is deleted.

**Table 2.5** SWLS reliability analysis for each group

	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's <math>\alpha</math> if item deleted</b>	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's <math>\alpha</math> if item deleted</b>
<b>Male (<math>\alpha = 0.78</math>; <math>\Omega = 0.78</math>)</b>			<b>Female (<math>\alpha = 0.81</math>; <math>\Omega = 0.81</math>)</b>	
Item 1	0.60	0.73	0.62	0.77
Item 2	0.58	0.73	0.64	0.76
Item 3	0.62	0.73	0.65	0.76
Item 4	0.53	0.75	0.57	0.78
Item 5	0.48	0.78	0.52	0.80
<b>Student (<math>\alpha = 0.66</math>; <math>\Omega = 0.68</math>)</b>			<b>Employee (<math>\alpha = 0.79</math>; <math>\Omega = 0.80</math>)</b>	
Item 1	0.48	0.61	0.60	0.74
Item 2	0.42	0.63	0.62	0.73
Item 3	0.51	0.60	0.63	0.73

	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's <math>\alpha</math> if item deleted</b>	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's <math>\alpha</math> if item deleted</b>
Item 4	0.39	0.64	0.55	0.76
Item 5	0.41	0.65	0.46	0.79
<b>Retired (<math>\alpha = 0.76</math>; <math>\Omega = 0.76</math>)</b>			<b>Housewife (<math>\alpha = 0.84</math>; <math>\Omega = 0.84</math>)</b>	
Item 1	0.59	0.69	0.64	0.81
Item 2	0.53	0.71	0.66	0.80
Item 3	0.52	0.72	0.68	0.80
Item 4	0.54	0.71	0.63	0.81
Item 5	0.48	0.74	0.61	0.82

#### 2.5.4 Factorial Invariance Analysis

For factorial invariance analysis, we conduct the following procedure, which is widely applied in the literature (e.g., Atienza, Balaguer, and García-Merita, 2003; Bai et al., 2011; Batista-Foguet, Boyatzis, Guillen, and Serlavos, 2007; Clench-Aas, Nes, Dalgard, and Aarø, 2011; Milfont and Fischer, 2010; Wu and Yao, 2006). First, we use the single factor model as our baseline (also called configural model) to test whether the SWLS structure is invariant by gender and demographic group. This model is tested by applying individual CFAs for every group (see section 2.5.2: Scale dimensionality). If the configural model (baseline model) for each group is supported and is the same across groups, we then impose restrictive constraints (e.g., equality of factor loadings across groups) on the model. First, we constrain the factor loadings of items to be equal across genders and demographic groups to test for invariance of the factor loadings (metric or weak model). We apply individual CFAs in groups and conduct a Chi-square difference test to determine whether the factor loadings equality constraint is rejected. Cheung and Rensvold (2002) suggest considering the difference between CFI ( $\Delta CFI$ ) of models (i.e., between configural and metric) as the most appropriate index for testing factorial invariance for the two-group case and simple model (i.e., unidimensional) that we have in the current study (Batista-Foguet et al., 2007; Clench-Aas et al., 2011). A cut-off  $\leq 0.01$  is suggested to accept factorial invariance across groups. A non-significant  $\Delta\chi^2$  result or  $\Delta CFI \leq$

0.01 in this step indicates that factor loadings of items are invariant between groups. Then, the intercepts are forced to be equal (scalar or strong model) to test whether the intercepts equality constraint is rejected. A non-significant Chi-square test and  $\Delta CFI \leq 0.01$  at this level shows that the intercepts of items are invariant across groups. If the hypothesis of the factor loadings invariance (metric model) or the intercepts invariance (scalar model) is rejected, a partial invariance model is specified in which the invariance of each factor loading (metric model) and each intercept (scalar model) are constrained to be equal across groups one by one.

### *Gender*

The results of factorial invariance analysis across genders are shown in Table 2.6.  $\Delta\chi^2$  test is not significant ( $\Delta\chi^2 = 8.98$ ,  $(\Delta df) = 4$ , P-value = 0.07), indicating that the factor loading-constrained model (metric) is not different from the configural model (baseline). Also, the CFI for metric model is the same as baseline ( $\Delta CFI = 0$ ). These results suggest factor loading invariance across genders. Also, no significant difference is found in  $\Delta\chi^2$  test related to the scalar model ( $\Delta\chi^2 = 9.46$ ,  $(\Delta df) = 4$ , P-value = 0.051) and  $\Delta CFI = 0$  that indicate the equality of intercepts between males and females. Also, fit indices provide strong evidence that the metric and scalar models fit well ( $CFI > 0.95$ ;  $RMSEA < 0.08$ ;  $SRMR < 0.05$ ) (Hu and Bentler, 1999). In conclusion, the factor loadings, and intercepts are invariant across gender.

### *Demographic groups*

#### *Workers, Retired and Housekeepers:*

Results of the factorial invariance test across demographic groups are presented in Table 2.6.  $\Delta\chi^2$  test between the configural model and the loading-constrained model (metric model) is not significant and also  $\Delta CFI = 0$  between workers, retired, and housekeepers, supporting that the factor loadings of items are invariant across these three groups (e.g., for workers and retired,  $\Delta\chi^2 = 2.82$ ,  $(\Delta df) = 4$ , P-value = 0.59). In addition to the factor loadings invariance, the intercepts of items are also invariant between retired and workers and also between retired and housekeepers, since  $\Delta\chi^2$  test between the metric and the scalar models is not significant and  $\Delta CFI \leq 0.01$ . The results of fit indices show that two constrained models (metric and scalar) are acceptable and can fit the data well between workers and retired, and retired and housekeepers (e.g., for retired and housekeepers,  $CFI > 0.95$ ;  $RMSEA < 0.08$ ;  $SRMR < 0.05$ ). But, for

workers and housekeepers,  $\Delta\chi^2$  test between the metric and scalar is significant ( $\Delta\chi^2 = 10.37$ , ( $\Delta df$ ) = 4, P-value = 0.035), indicating that the intercepts of items are variant between workers and housekeepers. Then, the invariance of each intercept is tested independently. The results show that the intercept of item 4 is not the same between workers and housekeepers. To sum up, we find that factor loadings and intercepts of all items are invariant between workers and retired, retired and housekeepers; but the intercept of item 4 is not the same between workers and housekeepers (partial intercepts invariance).

*Students and Workers:*

According to the result of  $\Delta\chi^2$  test ( $\Delta\chi^2 = 2.83$ , ( $\Delta df$ ) = 4, P-value = 0.59) and  $\Delta CFI = 0$  between baseline and metric models, the factor loadings of items are invariant between students and workers. The CFI does not change between the metric model and the intercept-constrained model (scalar model), but  $\Delta\chi^2$  test between the two models is significant ( $\Delta\chi^2 = 12.02$ , ( $\Delta df$ ) = 4, P-value = 0.02), indicating that the intercepts of items are variant between these two groups. Then, the invariance of each intercept is tested independently. The results show that intercept invariance between student and worker groups can be achieved by getting rid of equality constraints on intercepts of item 3 and 4. As a result, we have partial intercepts invariance (only equality of intercepts of items 1, 2, and 5) between student and worker groups. In sum, we find equality of factor loadings and equity of intercepts of items 1, 2, and 5 (partial scalar invariance) between student and worker groups.

*Students and Retired:*

Regarding students and retired, the factor loadings of items are invariant across these two groups ( $\Delta\chi^2 = 2.20$ , ( $\Delta df$ ) = 4, P-value = 0.7;  $\Delta CFI = 0$ ). The equality of intercepts is not supported across the student and retired groups ( $\Delta CFI = 0.03$  and  $\Delta\chi^2 = 15.34$ , ( $\Delta df$ ) = 4, P-value = 0.004). Based on a partial scalar model, we find equality of intercepts of items 1, 2, and 5 (partial scalar invariance) across these groups.

*Students and Housekeepers:*

The factor loadings invariance holds between students and housekeepers ( $\Delta\chi^2 = 1.54$ , ( $\Delta df$ ) = 4, P-value = 0.82 and  $\Delta CFI = 0.01$ ), indicating equality of factor loadings of items across these groups. A partial scalar invariance test supports equality of intercepts of items 1, 2, and 5 after dropping constraints on intercepts for item 3 and 4 ( $\Delta\chi^2 = 5.74$ , ( $\Delta df$ ) = 2, P-value = 0.07). It

shows partial intercepts invariance between students and housekeepers. Also, fit indices show a sufficient fit for the partial scalar model (CFI= 0.98, RMSEA= 0.064, and SRMR= 0.038).

**Table 2.6** Fit indices for different factorial invariance models for each group

	$\chi^2(\text{df})$	$\Delta\chi^2(\Delta\text{df})$	CFI	RMSEA	SRMR
<b>Males-Females</b>					
Configural (baseline)	42.49(10)		0.990	0.066	0.034
Metric (weak)	51.17(14)	8.68(4)	0.990	0.060	0.038
Scalar (strong)	60.63(18)	9.46(4)	0.990	0.057	0.038
Equality of factor variance	64.08(19)	3.45(1)	0.980	0.057	0.053
Equality of latent mean	66.38(20)	2.30(1)	0.980	0.056	0.053
<b>Students-Workers</b>					
Configural (baseline)	23.51(10)		0.990	0.053	0.023
Metric (weak)	26.34(14)	2.83(4)	0.990	0.043	0.024
Scalar (strong)	38.36(18)	12.02*(4)	0.990	0.048	0.025
Partial scalar (strong) <sup>1</sup>	29.39(16)	3.05(2)	0.990	0.042	0.024
Equality of factor variance	44.12(17)	14.73***(1)	0.980	0.057	0.050
Equality of latent mean <sup>2</sup>	62.24(17)	32.85***(1)	0.970	0.074	0.024
<b>Students-Retired</b>					
Configural (baseline)	11.24(10)		1.000	0.028	0.033
Metric (weak)	13.44(14)	2.20(4)	1.000	0.000	0.045
Scalar (strong)	28.78(18)	15.34**(4)	0.970	0.062	0.040
Partial scalar (strong) <sup>1</sup>	16.91(16)	3.47(2)	1.000	0.019	0.044
Equality of factor variance	20.88(17)	3.97*(1)	0.990	0.038	0.011
Equality of latent mean <sup>2</sup>	45.77(17)	28.86***(1)	0.920	0.100	0.148
<b>Students-Housekeepers</b>					
Configural (baseline)	25.24(10)		0.980	0.078	0.034
Metric (weak)	26.78(14)	1.54(4)	0.990	0.060	0.035

	$\chi^2(\text{df})$	$\Delta\chi^2(\Delta\text{df})$	CFI	RMSEA	SRMR
Scalar (strong)	48.91(18)	22.13*** (4)	0.970	0.082	0.046
Partial scalar (strong) <sup>1</sup>	32.52(16)	5.74*** (2)	0.980	0.064	0.038
Equality of factor variance	53.55(17)	21.30*** (1)	0.960	0.092	0.130
Equality of latent mean <sup>2</sup>	88.05(17)	55.53*** (1)	0.930	0.130	0.033
<b>Workers-Retired</b>					
Configural (baseline)	19.24(10)		0.990	0.045	0.033
Metric (weak)	22.06(14)	2.82(4)	0.100	0.036	0.055
Scalar (strong)	29.38(18)	7.32(4)	0.990	0.037	0.056
Equality of factor variance	31.48(19)	2.10(1)	0.990	0.038	0.083
Equality of latent mean	33.17(20)	1.69*(1)	0.990	0.038	0.080
<b>Workers-Housekeepers</b>					
Configural (baseline)	32.54(10)		0.990	0.064	0.034
Metric (weak)	39.92(14)	7.38(4)	0.990	0.058	0.049
Scalar (strong)	50.29(18)	10.37*(4)	0.990	0.057	0.053
Partial scalar (strong) <sup>1</sup>	44.00(17)	4.08(3)	0.990	0.054	0.052
Equality of factor variance	47.06(18)	3.06(1)	0.990	0.054	0.095
Equality of latent mean	63.06(19)	16.00*** (1)	0.980	0.065	0.100
<b>Retired-Housekeepers</b>					
Configural (baseline)	21.04(10)		0.990	0.071	0.033
Metric (weak)	23.62(14)	2.58(4)	0.990	0.056	0.043
Scalar (strong)	26.59(18)	2.97(4)	0.990	0.047	0.044
Equality of factor variance	31.24(19)	4.65*(1)	0.990	0.054	0.130
Equality of latent mean <sup>4</sup>	28.12(19)	1.53(1)	0.990	0.047	0.042

Note: \* = p<0.05; \*\* = p<0.01; \*\*\* = p<0.001

1= Partial scalar (strong) measurement invariance model is specified by the equality of intercept of item 1, 2, and 5

2= Equality of latent mean is tested based on partial scalar model (partial strong invariance model)

3= Partial strong measurement invariance model is specified by the equality of intercept of item 1, 2, 3, and 5

4= Equality of latent mean is tested based on scalar model (strong invariance model)

### 2.5.5 SWLS Mean: Comparison between Groups

Our findings of invariance at the metric and scalar level across gender and between workers, retired, and housekeepers let us compare factor variance and SWLS mean between these groups. Regarding gender, no significant difference is found in  $\Delta\chi^2$  test related to equality of factor variance based on the scalar model ( $\Delta\chi^2 = 3.45$ ,  $(\Delta df) = 1$ , P-value = 0.06 and  $\Delta CFI=0.01$ ), indicating the equality of variance between males and females. We also find that  $\Delta\chi^2$  test for the equality of mean across gender is not significant ( $\Delta\chi^2 = 2.30$ ,  $(\Delta df) = 1$ , P-value = 0.13 and  $\Delta CFI=0$ ), indicating that the SWLS means are equal between males and females in our sample. The results of the two-sample t-test support these finding as well (Table 2.7). There is not a significant difference across gender regarding variance (F-value = 2.077, p-value = 0.15) and mean (t-value = 1.086, p-value = 0.28). Our results also show that variances and means of SWLS between workers and retired are equal. Regarding retired and housekeepers, variances are not equal between them, but life satisfaction is the same among retired and housekeepers.

Full factorial invariance is unlikely to hold in practice. Byrne et al. (1989) introduced the concept of partial factorial invariance, in which the assumptions of equivalence are relaxed. Partial factorial invariance requires configural invariance to be obtained and the number of relaxed parameters (loading factor and intercept) varying across groups should be a minority of indicators (Vandenberg and Lance, 2000). If partial factorial invariance is obtained, cross-group means comparison can still be done, but means comparison must be done with caution. As a result, mean comparison is applied between students-workers, students-retired, students-housekeepers, and workers-housekeepers since we find partial scalar invariance. The results show that life satisfaction is greater among students compared to workers ( $\Delta\chi^2 = 32.85$ ,  $(\Delta df) = 1$ , P-value < 0.001; t-value = 5.368, p value < 0.001). We also find greater life satisfaction among students than retired and housekeepers. We also find that life satisfaction is greater among workers than housekeepers.

**Table 2.7** Two-sample t-test

	Levens's F -value	t-value	Mean of SWLS
<b>Males/Females</b>	2.077	1.086	Males > Females
<b>Students/Workers<sup>1</sup></b>	13.086 <sup>***</sup>	5.368 <sup>***</sup>	Students > Workers
<b>Students/Retired<sup>1</sup></b>	6.098 <sup>*</sup>	4.706 <sup>***</sup>	Students > Retired
<b>Students/Housekeepers<sup>1</sup></b>	25.339 <sup>***</sup>	7.114 <sup>***</sup>	Students > Housekeepers
<b>Workers/Retired</b>	0.212	1.194	Workers > Retired
<b>Workers/Housekeepers</b>	5.931 <sup>*</sup>	3.316 <sup>**</sup>	Workers > Housekeepers
<b>Retired/Housekeepers</b>	3.862	1.102	Retired > Housekeepers

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\* $p < 0.001$ ; 1 = we have to be careful for mean comparison between these groups since we only find partial scalar invariance across them.

### 2.5.6 Concurrent Validity Analysis

To assess concurrent validity, we study the relationship between SWLS and an alternative single-item measure of global life satisfaction. We also assess the association between SWLS and the related constructs of subjective health, satisfaction with social life, self-esteem, satisfaction with leisure time, and global job satisfaction. The correlations between SWLS and variables are summarized in Table 2.8. As expected, SWLS is positively correlated with a global life satisfaction ranging from  $r = 0.44$  (retired) to  $r = 0.65$  (housekeepers) with an average value of 0.63 for the overall sample. In the total sample and groups, SWLS is positively associated with subjective health (ranging from 0.30 to 0.38), satisfaction with social life (ranging from 0.18 to 0.36), satisfaction with leisure time (ranging from 0.21 to 0.36), and self-esteem (ranging from 0.53 to 0.60). SWLS is also positively but weakly related to global job satisfaction ( $r = 0.11$ ,  $P$ -value = 0.004).

**Table 2.8** Mean, standard deviation, and correlation for variables used for concurrent validity analysis

	Mean	SD	SWLS	GLS	Health	Social life	Leisure time
<b>Total Sample (N = 1479)</b>							
SWLS	3.33	0.71					
GLS	2.88	0.75	0.63				
Health	3.60	0.71	0.37	0.25			
Social life	3.92	0.79	0.34	0.31	0.21		
Leisure time	3.54	0.94	0.28	0.22	0.23	0.25	
Self-esteem	3.95	0.61	0.57	0.49	0.37	0.43	0.33
<b>Males (n = 729)</b>							
SWLS	3.35	0.69					
GLS	2.90	0.73	0.61				
Health	3.74	0.66	0.35	0.24			
Social life	3.92	0.77	0.33	0.30	0.21		
Leisure time	3.59	0.90	0.27	0.13	0.22	0.22	
Self-esteem	3.93	0.61	0.56	0.45	0.40	0.40	0.26
<b>Females (n = 750)</b>							
SWLS	3.31	0.73					
GLS	2.85	0.77	0.64				
Health	3.44	0.73	0.38	0.26			
Social life	3.92	0.81	0.36	0.32	0.23		
Leisure time	3.50	0.97	0.30	0.29	0.22	0.28	
Self-esteem	3.94	0.62	0.57	0.53	0.37	0.45	0.39
<b>Students (n = 190)</b>							
SWLS	3.61	0.56					
GLS	3.06	0.68	0.50				
Health	3.79	0.66	0.30	0.10 <sup>+</sup>			
Social life	4.20	0.64	0.18 <sup>*</sup>	0.15 <sup>*</sup>	0.20 <sup>**</sup>		
Leisure time	3.67	0.90	0.21 <sup>**</sup>	0.17 <sup>*</sup>	0.32	0.30	
Self-esteem	3.96	0.59	0.53	0.33	0.40	0.46	0.29

	Mean	SD	SWLS	GLS	Health	Social life	Leisure time
<b>Workers (n = 784)</b>							
SWLS	3.36	0.70					
GLS	2.92	0.74	0.64				
Health	3.70	0.65	0.35	0.24			
Social life	3.93	0.80	0.36	0.33	0.21		
Leisure time	3.41	0.98	0.31	0.24	0.27	0.30	
Self-esteem	4.00	0.60	0.57	0.49	0.37	0.43	0.35
<b>Retired (n = 126)</b>							
SWLS	3.28	0.66					
GLS	2.81	0.67	0.44				
Health	3.26	0.74	0.33	0.27**			
Social life	3.76	0.81	0.23**	0.27**	0.10 <sup>+</sup>		
Leisure time	3.85	0.62	0.36	0.24**	0.30**	0.30**	
Self-esteem	3.94	0.52	0.58	0.33	0.40	0.27**	0.46
<b>Housekeepers (n = 317)</b>							
SWLS	3.19	0.77					
GLS	2.75	0.80	0.65				
Health	3.31	0.73	0.37	0.27			
Social life	3.84	0.78	0.36	0.31	0.19**		
Leisure time	3.63	0.90	0.33	0.28	0.22	0.33	
Self-esteem	3.86	0.64	0.60	0.58	0.37	0.46	0.40

*Note:* SD = Standard Deviation; GLS = Global Life Satisfaction; All correlations are significant at the 0.001 level except those highlighted with \* =  $p < 0.05$ , \*\* =  $p < 0.01$ , and <sup>+</sup> = Not significant

## 2.6 Discussion and Conclusion

The psychometric properties of our Spanish operationalization of the SWLS are satisfactory in a representative sample of the Chilean population. Confirmatory factor analysis reveals a single-factor structure. This result is consistent with most studies using exploratory and confirmatory factor analyses of the SWLS, which have suggested a single-factor structure (e.g.,

Diener et al., 1985; Gouveia et al., 2009; Hultell and Gustavsson, 2008; Lewis et al., 1999; Pavot et al., 1998; Pons et al., 2000; Shevlin, Brunsten, and Miles, 1998; Swami and Chamorro-Premuzic, 2008; Tucker et al., 2006; Wu and Yao, 2006). However, some authors have also claimed to find a two-factor structure (e.g., Mc Donald, 1999; Vautier et al., 2004). For example, Slocum-Gori et al. (2009) found that the first three items of SWLS were loading on a main factor, item four loading on secondary latent variable, and the fifth item weakly loading on both factors. Comparing both the single- and two-factor models, Sachs (2004) suggests that the two-factor model with 'present' and 'past' items is not a better framework with which to interpret the SWLS. In this study we also preferred the single-factor structure because the correlation between the two factors is very high, showing that the two factors cannot be easily distinguished, and because of its higher parsimony. Also in line with previous research (Pavot and Diener, 1993; Senecal et al., 2000), in this study item five showed the weakest item-total correlation and factor loading across all groups and on the overall sample. Internal reliability coefficients for the total sample and groups are moderate but in the range of previous studies (Vassar, 2008).

Our results also indicate factor invariance of the Spanish version of SWLS across genders. This is consistent with the results of other studies that examine the factorial invariance of the SWLS across genders in university students (e.g., Hultell and Gustavsson, 2008; Shevlin et al., 1998; Wu and Yao, 2006) and adults (Swami and Chamorro-Premuzic, 2009). Nuñez et al. (2010) also found their Spanish version of the SWLS to be invariant across genders in a sample of adults engaged in physical activity. In contrast, using Atienza et al.'s (2000) Spanish operationalization of the scale, Atienza et al. (2003) found that the SWLS was sensitive to gender in a sample of Spanish junior high school students. In particular, these authors found that the factor loadings of items two and five were not equal for males and females. Interestingly, items two and five are those where we found greatest operationalization differences.

As for factorial invariance across demographic groups, our results indicate that factor loadings and intercepts of all items are invariant across workers-retired and retired-housekeepers, meaning that the factorial structure of the scale is invariant across these group pairs. In contrast, only partial factorial invariance of the SWLS is found between workers and housekeepers. In particular, we find loadings invariance and partial equality of intercepts

between workers and housekeepers. Also, we find only partial intercepts invariance (only equality of intercepts of items of 1, 2, and 5) across students-retired, students-workers, and students-housekeepers. To the authors' knowledge, only a few studies have examined factorial invariance of the SWLS across demographic groups. For example, Pons et al. (2000) reported that factor loading of item two was not equal for adolescents and elderly people, using Atienza et al.'s (2000) Spanish version of the SWLS. Establishing factorial invariance is a condition for meaningful comparisons across groups. Accordingly, we call for caution when comparing mean levels of life satisfaction between those group pairs where the SWLS was only partially invariant in this study.

SWLS is strongly correlated to a single-item measure of life satisfaction in the total sample ( $r = 0.63$ ) and also in all groups. Also, SWLS is positively associated to the related construct of subjective health ( $r = 0.37$ ) in the total sample. In an analysis of the literature, Okun et al. (1984) showed that subjective health was strongly correlated with SWB. More recent studies have replicated the same finding and specifically related subjective health to life satisfaction (e.g., Chen and Short, 2008; Bowling and Farquhar, 1996; Durak et al., 2010; Cabañero et al., 2004). Regarding the relationship between life satisfaction and job satisfaction of workers, we find a correlation of 0.11. This association is weak compared to meta-analyses that show a moderate correlation between both constructs (Bowling et al., 2010; Rice et al., 1980; Tait et al., 1989). For example, Bowling et al.'s (2010) meta-analysis estimated an average weighted correlation of .40 between life satisfaction and global job satisfaction. Similarly, Rice et al.'s (1980) results showed a correlation of .31, while Tait et al. (1989) found a correlation of .44 after correcting for attenuation. Finally, in our study SWLS is strongly associated with self-esteem ( $r = 0.57$ ) for the total sample. Many studies have reported a similar size of this association (Arrindell, van Nieuwenhuizen, and Luteijn, 2001; Durak et al., 2010; Steger et al., 2006). For example, Arrindell et al. (2001) reported a correlation of 0.58 and Steger et al. (2006) a correlation of 0.55.

The contribution of this study is threefold. First, we provide an appropriate operationalization of the SWLS that can be used in Spanish-speaking populations. Second, we validated and tested the factorial invariance of the proposed Spanish version of the instrument in the context of Chile. Third, our results provide normative data of the SWLS in the context of Chile to aid in the interpretation of scores on the scale. This is important because in order to

interpret the meaning of scores, it is helpful to know something about the distribution of scores in various populations; that is, the meaning of a score can only be determined in relation to a frame of reference.

The results of the current study should be considered in the light of several methodological limitations. We did not test the discriminant validity of the SWLS. In addition to showing that a measure behaves in a manner that is consistent with the nomological network (concurrent validity), it is also important to show that the measure is distinguishable from other constructs. Campbell and Fiske (1959, p. 84) noted that *'one cannot define without implying distinctions, and the verification of these distinctions is an important part of the validation process.'* Secondly, people tend to report greater life satisfaction when interacting directly with another person rather than in an anonymous interview (Schwarz et al., 1991). In our study canvassers administered the survey, which may have led to responses that are socially desirable. Finally, functional, and to some extent structural, factorial invariance cannot be directly tested using statistical methods. Expert judgments and qualitative methods are best to identify these forms of non-equivalence (Berry, Poortinga, Segall, and Dasen, 2002).

Several studies have investigated the mean differences in life satisfaction in multiple countries (e.g., Diener, Suh, Emith, and Shao, 1995). However, these differences are often difficult to interpret because of the lack of information concerning the factorial invariance. With few exceptions, the factorial invariance of the SWLS has not been established across cultures. For example, Swami and Chamorro-Premuzic (2009) found the SWLS to be invariant across ethnic groups from the same cultural context (i.e., of Chinese and Malay groups) in a sample of adults. Tucker et al. (2006) found some degree of incomparability between Russian and North American scores on the SWLS; their findings also point to the importance of testing for measurement invariance in the SWLS. Future research may want to examine factorial invariance between Latin cultures and mainstream U.S. culture.

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## 2.8 Appendixes

### Appendix 2.1 Different Spanish operationalizations of the SWLS

Item	Diener et al. (1985)	Spanish versions	Response format	Text
1	In most ways my life is close to my ideal	Loewe et al.	5	En la mayoría de aspectos, mi vida está cerca de mi ideal
		Atienza et al. (2000)	5	En la mayoría de los aspectos mi vida es como quiero que sea
		Núñez et al. (2010)	7	En general, mi vida se corresponde con mis ideales
		Diener's website		En la mayoría de las formas de mi vida se acerca a mi ideal.
2	The conditions of my life are excellent	Loewe et al.	5	Las condiciones de mi vida son excelentes
		Atienza et al. (2000)	5	Las circunstancias de mi vida son buenas
		Núñez et al. (2010)	7	Mis condiciones de vida son muy buenas
		Diener's website		Las condiciones de mi vida son excelentes.
3	I am satisfied with my life	Loewe et al.	5	Estoy satisfecho(a) con mi vida
		Atienza et al. (2000)	5	Estoy satisfecho con mi vida
		Núñez et al. (2010)	7	Estoy satisfecho con mi vida
		Diener's website		Estoy satisfecho con mi vida
4	So far I have gotten the important things I want in life	Loewe et al.	5	Hasta ahora, he conseguido las cosas que para mí son importantes en la vida
		Atienza et al. (2000)	5	Hasta ahora he conseguido de la vida las cosas que considero importantes
		Núñez et al. (2010)	7	Hasta ahora, he logrado cosas importantes en la vida
		Diener's website		Hasta ahora, he conseguido las cosas importantes que quiero en la vida
5	If I could live my life over, I would change almost nothing	Loewe et al.	5	Si volviera a nacer, no cambiaría casi nada de mi vida
		Atienza et al. (2000)	5	Si pudiera vivir mi vida otra vez, la repetiría tal y como ha sido
		Núñez et al. (2010)	7	Si volviese a nacer, desearía tener la misma vida
		Diener's website		Si pudiera vivir mi vida de nuevo, no cambiaría casi nada

**Appendix 2.2** Five point Likert type response format in English and Spanish

<b>Item</b>	<b>English</b>	<b>Spanish</b>
1	Strongly disagree	Muy en desacuerdo
2	Disagree	En desacuerdo
3	Neither agree nor disagree	Ni de acuerdo / Ni en desacuerdo
4	Agree	De acuerdo
5	Strongly agree	Muy de acuerdo

**Appendix 2.3** Satisfaction measures used for concurrent validity analysis

<b>Global Life Satisfaction</b>	In general, how satisfied are you with your life?
<b>Health</b>	My health is excellent I get sick more often than others <sup>1</sup> I am in good shape I feel I have vitality, energy
<b>Social</b>	I am satisfied with the friends I have I am satisfied with my social life
<b>Leisure</b>	I am satisfied with the amount of free-time I have I am satisfied with the activities I do in my free-time
<b>Self-esteem</b>	I am self-confident I consider myself a fulfilled person I feel proud of what I have achieved till now I feel valued, respected
<b>Global Job Satisfaction</b>	In general, how satisfied are you with your job?

1 = reverse coded



### **3 Life Domain Satisfactions as Predictors of Overall Life Satisfaction Among Workers: Evidence from Chile**

#### **3.1 Abstract**

This article examines the subjective antecedents of life satisfaction of workers. Adopting a ‘bottom-up’ perspective, we assessed the unique influence that satisfaction with multiple life domains have on evaluative judgments of overall life satisfaction. Based on a nationwide sample of 530 Chilean workers, we simultaneously tested the effects of seven life domain satisfactions that have been consistently included in extant models of life satisfaction and subjective well-being. These were satisfaction with health, financial situation, social relationships, one’s self-worth, leisure-time, family, and work. Having controlled for age and gender, results showed that satisfaction with one’s financial situation was the dominant predictor of overall life satisfaction of workers, with a weight of .36. Satisfaction with family, work, and health had effects of .25, .14, and .14, respectively. Interestingly, satisfaction with one’s self-worth, leisure-time, and social relationships did not have statistically significant effects on life satisfaction, although the first two showed t-values near the critical value.

#### **3.2 Keywords**

Life satisfaction, workers, life domains, subjective well-being, Chile

### 3.3 Introduction

Traditionally, there have been two theoretical approaches to the concept of life satisfaction, which differ in the causal assumptions: the ‘bottom-up’ and ‘top-down’ perspectives (Diener, 1984; Headey et al., 1991; Lance et al., 1989). The ‘bottom-up’ perspective assumes that a person’s overall life satisfaction depends on his or her satisfaction in many concrete areas of life, which can be classified into broad life domains such as family, friendship, work, leisure, and the like (Pavot and Diener, 2008; Heller et al., 2004; Veenhoven, 1996). Multiple Discrepancy Theory (Michalos, 1985), Need Hierarchy Theory (Maslow, 1970), and the Self-concordance Model (Sheldon and Elliot, 1999) are all good examples of ‘bottom-up’ theories that conceive domain satisfactions as needs. According to these theories the more needs are satisfied, the greater the satisfaction with life as a whole. From the ‘bottom-up’ perspective, domain satisfactions mediate the effects of situational factors on life satisfaction. The ‘top-down’ perspective is a dispositional explanation, which contends that differences in personality and other stable traits of the person predispose people to be differentially satisfied with their lives (Diener et al., 2003; Steel et al., 2008; DeNeve and Cooper, 1998). Defendants of the ‘top-down’ perspective rather than denying the influence of situational factors (Diener, 1996), claim that both dispositional and situational factors interact in relation to life satisfaction (Brief et al., 1993; Heller et al., 2004).

‘Top-down’ and ‘bottom-up’ perspectives have often been presented as competing theories; however, both approaches are not incongruent when dispositional factors are viewed as more distal predictors of life satisfaction than domain satisfactions (Erdogan et al., 2012). The dispositions of each person influence his or her perceptions of environmental conditions, resulting in more or less satisfaction with life domains. Thus, personality has a distal effect on global life satisfaction according to this integrating approach (Brief et al., 1993). For instance, a meta-analysis by Heller et al. (2004) showed that job and marital satisfactions mediate the effect of personality on life satisfaction. Erdogan et al. (2012) claimed that the *‘treating personality as a distal predictor in models of life satisfaction may be more consistent with theory as opposed to treating it as a control variable that needs to be partialled out.’* We focus on the closest predictors in the “causality chain” in this article.

Drawing from the ‘bottom-up’ perspective, subjective well-being (SWB) researchers

have put forth a myriad of life domain satisfactions, which are thought to be relevant to overall life satisfaction. Among the life domains that have generated more consensus are satisfaction with health, family, income, social relationships, leisure-time, work, sex life, housing, safety, self-worth, and education (e.g., Flanagan, 1978; Argyle, 2001; Headey and Wearing, 1992; Greenley et al., 1997; Praag et al., 2003; Costa, 2008). Although these essential life domains may be generalised among most people, there is evidence that people from different cultures (Diener, 2000; Diener and Suh, 2000; Diener and Lucas, 2000) and in distinct developmental life stages (Cantor and Blanton, 1996; Cantor and Sanderson, 1999) weigh life domains differently when asked to judge their global life satisfaction. Different cultures usually weigh life domains differently because culture shapes individual attitudes, values, and the types of goals individuals pursue (Hofstede, 1991; Kim, 1994), which in turn determine the specific life domains people consider relevant, and the weight they give to each domain (Oishi et al., 1999; Kasser and Ryan, 1993, 1996; Cantor and Sanderson, 1999). For example, East Asian cultures tend to be self-critical societies, where modesty and self-improvement is highly valued (Markus and Kitayama, 1991). In these cultures past personal accomplishments are not evaluated as positively as in the U.S. (Heine et al., 1999; Markus and Kitayama, 1991) because the concept of life satisfaction is based primarily on external conditions and current status rather than past accomplishments. Cross-cultural differences in life satisfaction have been primarily explained in terms of the broad cultural variable of a society's degree of individualism-collectivism (Triandis, 1989) or independent-interdependent concepts of the self (Markus and Kitayama, 1991). In individualistic societies such as the U.S. and Western Europe people are oriented toward their personal goals and desires and are more likely to attribute success and failure to themselves. In contrast, people in collectivist cultures view the group as of primary importance and individuals are willing to sacrifice their desires to the will of the group. When individualistic and collectivistic nations are compared in terms of different indicators of SWB, more individualistic nations generally report higher mean levels of life satisfaction (Diener and Diener, 1995).

However, the weights that people give to multiple life domains also change during life (Cantor and Blanton, 1996; Cantor and Sanderson, 1999). Domain satisfactions relevant to salient life tasks are more strongly related to global life satisfaction than less relevant domain satisfactions (Harlow and Cantor, 1996). For example, building an intimate relationship is a

salient life task during young adulthood; as a result, young adults tend to attribute relatively high importance to satisfaction with romantic relationships when assessing their global life satisfaction (Oishi et al., 1999). Given the cross-cultural differences in conceptualisations of life satisfaction and the different weights attributed to life domains in different life stages, SWB researchers have usually studied relatively homogeneous populations that share to some extent the same values, salient life tasks, and cultural context (e.g., Bretones and Gonzalez, 2011; Ku et al., 2008; Brown and Tierney, 2009).

SWB researchers have tended to focus on nonworking populations – such as children (Huebner, 1994), adolescents (Gilman and Huebner, 2000), students (Seligson et al., 2003), and those with health problems (e.g., Matthews et al., 2012) – leaving the satisfaction of workers to other research fields (Diener et al., 1999) such as management and industrial/organisational (I/O) psychology. In turn, these fields have usually defined a satisfied worker as someone satisfied with their job and scant attention has been paid to the more holistic concept of workers' life satisfaction (Erdogan et al., 2012). Recently, some research has shown preliminary evidence that life satisfaction may have a similar predictive power than that of work satisfaction in predicting some important organisational outcomes such as job performance (Jones, 2006; Greguras and Diefendorff, 2010; Duckworth et al., 2009); job commitment (Vanaki and Vagharseyyedin, 2009; Redman and Snape, 2006; Susskind et al., 2000); absenteeism (Murphy et al., 2006; Judge and Locke, 1993); turnover (Shaw and Gupta, 2001; De Cuyper et al., 2009); early retirement intentions (Von Bonsdorff et al., 2010); and employee burnout (Haar and Roche, 2010). While research accumulates showing the organisational consequences of workers being more satisfied with their life, less is known about the how different life domains contribute to the overall life satisfaction of workers. Gaining further understanding of how workers weigh multiple life domains in the formation of their life satisfaction evaluative judgments will provide organisations with a more holistic view of their workers – and the associated organisational outcomes – and is also important because two-thirds of the world population are workers (World Bank Indicators, 2012). Accordingly, we examine the subjective predictors of life satisfaction of workers in Chile.

Chile is an emerging economy that has experienced remarkably rapid economic growth and significant societal changes over the past 30 years. The average annual growth rate of the gross domestic product (GDP) reached 6 % from 1980 to 2012. The Human Development Index

(HDI) – a composite statistic of life expectancy, education, and income indices that rank countries into four tiers of human development and published by the United Nations Development Programme (UNDP) – showed an increase for Chile from .630 in 1980 to .819 in 2011 (UNDP Human Development Report, 2013). This remarkable increase ranks Chile in the first place of Latin American countries and 40th place worldwide in terms of living conditions (UNDP Human Development in Chile, 2012). This rapid development has been accompanied by low unemployment rates, of 7 % on average. In this context, organisations increasingly need to better understand worker perceptions, aspirations, and motivations, in order to increase their employee retention rates and performance indicators.

The article is organised as follows: firstly, we identify a number of life domains that previous research found to be relevant to the life satisfaction of most working adults. Secondly, we develop measures for the multiple domain satisfactions. Thirdly, we examine the relevance that a sample of Chilean workers attribute to different domain satisfactions in the formation of their global life satisfaction evaluative judgments. Finally, we discuss the pattern of weights obtained and interpret the results – while placing a special emphasis on the cultural context of Chile.

### **3.4 Model of Life Satisfaction**

The number of life domains likely to be relevant to someone's life satisfaction can range from a small number to an almost infinite recount of spheres of being (Rojas, 2006; Cummins, 1996). However, according to the compatibility principle, the relationship between two variables increases when both are assessed at the same level of specificity (Fishbein and Ajzen, 1974). Given that life satisfaction is a broad concept, then life domains will probably need to be relatively broad as well. Rojas (2006) suggested that partitions of a human life must value parsimony, should relate to the way people think about their lives, and be useful to the understanding of life satisfaction. For the purpose of this study we selected seven life domain satisfactions that SWB research has consistently identified as relevant to life satisfaction: health, financial situation, social relationships, self-worth, leisure-time, family, and work. Other domains such as sex life, education, and safety have also received considerable attention in the literature (e.g., Headey and Wearing, 1992; Cummins, 1996; Sirgy et al., 2010); however, we did not include them in our model for the sake of parsimony. Without pretending to be an

exhaustive list, Table 3.1 summarises how the seven selected life domains have been represented in extant models of life satisfaction and SWB. We only considered the direct effects of the multiple domains on life satisfaction, although the authors are aware of the possible modes of interaction among life domains (Wilensky, 1960; Judge and Watanabe, 1994; Wu, 2009). Also, we assumed that domains had additive effects on life satisfaction. Finally, given that the focus of our research are the subjective predictors of life satisfaction we did not draw hypotheses for age and gender – although both were incorporated as control variables.

**Table 3.1** Life domains in previous studies

	<b>Health</b>	<b>Finance</b>	<b>Social</b>	<b>Self</b>	<b>Leisure</b>	<b>Family</b>	<b>Work</b>
Flanagan (1978)	•	•	•			•	•
Andrews & Inglehart (1979)	•	•	•		•		•
Headly et al. (1985)	•				•		•
Zapf & Glatzer (1987)	•	•			•	•	•
Day (1987)	•	•	•	•	•	•	•
Headly & Wearing (1992)	•	•	•		•	•	•
Felce & Perry, 1995	•	•	•	•	•	•	•
Cummins (1996)	•	•					
Alfonso et al. (1996)			•	•		•	•
Greenley et al. (1997)	•	•	•		•		
Möller & Saris (2001)							
Gregg & Salisbury (2001)	•	•	•	•		•	•
Argyle (2001)	•	•	•		•		•
Praag et al. (2003)	•	•			•		•
Cummins et al. (2003)	•		•	•		•	
Costa (2008)	•	•	•				

### 3.5 Method

By combining deductive and inductive approaches (Hinkin, 1995), we developed measures of satisfaction for the seven life domains hypothesised to predict overall life satisfaction. Exploratory and confirmatory factor analyses were then used to refine the measures and assess their psychometric properties. Finally, using structural equation modelling, we estimated the effect sizes of the multiple life domain satisfactions on overall life satisfaction. We controlled the potential influence of age and gender. Common method variance was also evaluated.

#### 3.5.1 Measures

To assess overall life satisfaction we used satisfaction with life scale (SWLS; Diener et al., 1985), which has been one of the most widely used scales for the measurement of the construct. Research has established acceptable psychometric properties for SWLS, including high internal consistency, test–retest reliability, and convergent validity (for reviews, see Pavot and Diener, 1993, 2008; Vassar, 2008; Diener, 1994). SWLS has been applied and validated in many different cultural settings and with different socio-demographic groups of people (Gadermann et al., 2011; Oishi, 2006; Pons et al., 2002; Durak et al., 2010). Participants indicated their responses in a 5-point Likert scale labelled from 1 *‘completely disagree’* to 5 *‘completely agree’*.

Measures of satisfaction with health, financial situation (finance), social relationships (social), one’s self-worth (self), leisure-time (leisure), family, and work were created. To generate the specific items reflecting the different life domains we drew inspiration from previous research (e.g., Flanagan, 1978; Cummins, 1996; Huebner, 1994; Felce and Perry, 1995; Alfonso et al., 1996; Gregg and Salisbury, 2001). The number of indicators used to reflect the satisfaction with life domains varied between two and four items across life domains. In total, 24 items were generated in Spanish and general recommendations for item formulation, such as avoiding double-barrelled questions and requests including implicit assumptions (Saris and Galhofer, 2007) were followed. Once items were generated for representing the focal constructs, we evaluated their content validity. We adopted a qualitative approach to assess the content adequacy of life domain satisfaction measures. In so doing, we conducted in-depth interviews with a dozen Chilean workers, who were asked to associate questionnaire items to

life domains (Hinkin and Tracey, 1999; MacKenzie et al., 2011). Interestingly, these interviews revealed that some interviewees associated item Q13 (*I feel I have vitality, energy*) to self-worth, rather than to health, as was intended. Also as a result of the in-depth interviews, item Q19 (*I have a good relationship with everyone at work*) was incorporated to broaden our work satisfaction measure. The items were then discussed with two subject matter experts, and three items were dropped for not being applicable to all participants or lacking face validity. Unfortunately, these items could not be reworded or replaced because data collection had already started. In sum, the item generation process resulted in the 21 indicators presented in Table 3.2, which shows the English version of the items after having confirmed their accuracy using the standard backtranslation technique (Breslin, 1970). The items were arranged in a battery of questions headed by the request for an answer of ‘to what extent do you agree or disagree with the following statements.’ Research participants responded on the same 5-point Likert scale used for SWLS. For the actual administration of the battery, the items were sorted to alternate the latent life domains. We placed the SWLS items preceding the battery including the satisfaction with life domains to avoid what Kahneman et al. (2006) called focusing illusion. According to these authors, individuals tend to inflate their scores on important factors for their well-being, when questions on satisfaction with life domains precede reports on their own well-being.

### **3.5.2 Sample and Procedure**

The measures used in this study were incorporated in a longer questionnaire administered to investigate several characteristics of the Chilean population. A total of 1,500 people were sampled to represent the total population of Chile with a 5 % sampling error. Using the Chilean census, participants were sampled from different country regions, where the Greater Santiago region was overrepresented. Some 30 % of the centres of population (i.e., cities and towns) and districts were selected proportionally. Blocks, housings, and individuals were randomly selected. A team of professional canvassers went door-to-door for 3 weeks to personally administer the survey questionnaire to the sampled participants. Out of the 1,500 participants in the study 530 individuals declared themselves to be employed when the questionnaire was administered, and were suitable for this study. This sample size assured a respondents-to-items ratio of 19.6:1, almost twice the minimum ratio of 10:1 recommended by many authors (e.g., Hu et al., 1992; Hair et al., 2006). In the effective sample (N = 530), 35.7 % of the participants

were self-employed while 64.3 % were employees, either from the public or private sector. The age of participants ranged from 18 to 74 years, with a median of 39 years and an average age of 40.3 years (SD = 12.7); 68.3 % were men and 31.7 % women; 53.9 % were married; and 78.2 % had secondary education or higher. Table 3.3 provides detailed sample characteristics.

**Table 3.2** Mean and standard deviations for items

<b>Life domain</b>	<b>Item code</b>	<b>Item</b>	<b>Mean</b>	<b>SD</b>
<b>Health</b>	Q1	My health is excellent	3.63	1.00
	Q2	I get sick more often than others	2.27	.87
	Q3 <sup>(a)</sup>	I am in good shape	3.50	.89
	Q13 <sup>(a)</sup>	I feel I have vitality, energy	4.07	.73
<b>Finance</b>	Q5	I am satisfied with my economic situation	3.29	1.00
	Q6	I am satisfied with what I can buy	3.45	.97
	Q17 <sup>(a)</sup>	I am satisfied with my income	3.34	1.12
<b>Social</b>	Q8	I am satisfied with the friends I have	3.96	.87
	Q9	I am satisfied with my social life	3.95	.82
<b>Self</b>	Q4	I am self-confident	4.12	.70
	Q10 <sup>(a)</sup>	I consider myself a fulfilled person	3.75	.92
	Q11	I feel valued, respected	4.15	.70
	Q12 <sup>(b)</sup>	I feel proud of what I have achieved till now	4.12	.71
<b>Leisure</b>	Q14	I am satisfied with the amount of free-time I have	3.31	1.10
	Q15	I am satisfied with the activities I do in my free-time	3.56	1.00
<b>Family</b>	Q7	I am satisfied with my family life	4.11	.76
	Q21	I am satisfied with the relationship with my partner	4.13	.76
<b>Work</b>	Q16	I like the work I do	3.98	.84
	Q18	I am satisfied with the responsibility I have in my work	3.91	.76
	Q19 <sup>(b)</sup>	I have a good relationship with everyone at work	4.03	.71
	Q20 <sup>(b)</sup>	My salary is adequate to my experience and responsibility	3.36	1.14
<b>SWLS</b>	LS1	In most ways my life is close to my ideal	3.46	.84
	LS2	The conditions of my life are excellent	3.24	.89
	LS3	I am satisfied with my life	3.73	.77
	LS4	So far I have got the important things I want in my life	3.69	.82
	LS5	If I could live my life over, I would change almost nothing	3.18	1.06

(a) Item eliminated in exploratory factor analysis

(b) Item eliminated in confirmatory factor analysis

Q2 is reverse coded

**Table 3.3** Sample characteristics (N=530)

<b>Age</b>		<b>Marital Status</b>		<b>Education</b>		<b>Occupation</b>	
Less than 25	11.1%	Married	53.9%	No education	3.6%	Self-employed	35.7%
From 25 to 34	25.1%	Single	27.0%	Primary	18.2%	Employee	64.3%
From 35 to 44	25.7%	Living together	13.4%	Secondary	54.7%		
From 45 to 54	24.0%	Separated	4.0%	University	22.9%		
From 55 to 65	11.5%	Divorced	1.0%	PhD	.6%		
More than 65	2.6%	Widow/er	.8%				

## 3.6 Results

### 3.6.1 Analysis

We first conducted an exploratory data analysis. None of the variables had more than 3% of missing values, and these were randomly distributed across cases without any pattern (Olinsky et al., 2003). To avoid the listwise deletion method omitting cases with any missing values – with the associated reduction in sample size and power of tests – 30 missing values were imputed using expectation maximisation criterion in SPSS (Roth, 1994). Table 3.4 reports the mean and the standard deviation of the items. Skewness and kurtosis tests rejected the univariate normality of most of the variables and Mardia’s (1974) test rejected multivariate normality of the data. This calls for robust estimation methods to improve the correctness of standard errors and test statistics under violation of distributional assumptions. Satorra-Bentler scaled  $\chi^2$  (Satorra and Bentler, 1994) was used to assess global goodness of fit in CFA. As a further precaution, we relied on other global goodness of fit indices to evaluate the extent to which the relationships hypothesised in the standard CFA model were consistent with the sample data (Hu and Bentler, 1999). After taking these precautions, non-normality of data was not an issue. We then conducted an exploratory factor analysis (EFA) – using unweighted least squares and promax rotation criteria – to examine the dimensionality of the multiple measures. As a result of this analysis, items Q3, Q10, Q13, and Q17 were dropped because they showed low

reliability when loaded on an unintended dimension, or when cross-loaded on two factors (Fornell and Larcker, 1981). Interestingly, the EFA results confirmed what had been raised from previous in-depth interviews, namely, that some research participants associated Q13 (*'I feel I have vitality, energy'*) with health domain; while others associated the question with self-worth.

We then tested the relevance of domain satisfaction effects using structural equation modelling. We used LISREL 8.7 (Jöreskog and Sörbom, 2001) to estimate the model's parameters and goodness of fit indices. After an initial estimation of the measurement model – using maximum likelihood criterion – we followed a process of model refinement in which modifications were introduced in the model one at a time. As a result of this process, items Q12, Q19, and Q20 were pruned because they showed non-hypothesised cross-loadings that were strong and significant (Batista and Coenders, 2000; Bollen, 1989; Hair et al., 2006). We did not have to release any constraint of the standard confirmatory factor analysis model (CFA). The resulting measurement model showed adequate goodness of fit indices. In particular, a set of global fit indices assessing absolute fit,  $\chi^2 = 285$  ( $df = 146$ ;  $\nu^2/df = 1.95$ ), RMSEA = .032, and SRMR = .034, and relative fit, CFI = .989 and NFI = .969, provided evidence in favour of the validity of the measurement model (Hu and Bentler, 1999; MacKenzie et al., 2011). In addition to the assessment of the model global fit indices, a detailed examination of the standardized residual and modification indices also suggested that the measurement model appropriately reproduced the covariance matrix. The two largest positive standardised residuals had a value of between 2 and 3. None of the modification indices suggested showed a significant decrease in  $\chi^2$ .

Based on the results of the CFA, we assessed the psychometric properties of the different measures. Item reliabilities ranged from .25 to .91 ( $M = .6$ ;  $SD = .18$ ). Only two items, Q2 and Q4, showed reliabilities lower than the desirable threshold value of .50, which suggests that the indicator accounts for most of the variance (Fornell and Larcker, 1981). Table 3.4 reports construct reliabilities, all of which – except satisfaction with one's self-worth (.56) – exceeded, or were near to, the threshold value of .70 that is commonly accepted for newly developed measures (Nunnally and Bernstein, 1994). To assess convergent validity of the life domains we examined the average variances extracted (AVE), shown also in Table 3.4. Finally, we confirmed acceptable levels of discriminant validity by examining whether the AVE for each

life domain was greater than the square of the correlation between the domains (Fornell and Larcker, 1981).

**Table 3.4** Reliabilities, average variances extracted, correlations, squared correlations<sup>(a)</sup>, and variance inflation factors

	<b>Reliability</b>	<b>AVE</b>	<b>LS</b>	<b>Health</b>	<b>Finance</b>	<b>Social</b>	<b>Self</b>	<b>Leisure</b>	<b>Family</b>	<b>Job</b>	<b>VIF</b>
LS	.74	.38	1								
Health	.64	.58	.38	1	.02	.04	.05	.05	.06	.08	1.39
Finance	.84	.73	.67	.16	1	.12	.24	.14	.13	.25	1.81
Social	.78	.66	.51	.20	.36	1	.31	.15	.23	.16	1.78
Self	.56	.43	.64	.23	.49	.56	1	.15	.36	.23	1.75
Leisure	.78	.65	.46	.23	.37	.39	.39	1	.10	.11	1.43
Family	.75	.61	.61	.26	.37	.49	.60	.32	1	.08	1.47
Work	.66	.50	.55	.29	.50	.41	.48	.34	.30	1	2.10

(a) Values over the diagonal indicate squared Pearson correlations

To test our model of life satisfaction we estimated the structural model shown in Figure 3.1. The multiple predictors accounted for a 70.5 % of the variance of overall life satisfaction. Of the seven domain satisfactions, finance, family, health, and work had statistically significant effects on overall life satisfaction. In contrast, social, leisure, and self were shown to be non-significant predictors, with t values of .79, 1.70, and 1.79, respectively. While gender effect was not significant, age showed a negative effect on the degree of life satisfaction. To further investigate the non-significant coefficients, we examined multicollinearity. Multicollinearity causes estimation difficulties if life domains are highly correlated as a group, making it difficult to separate the distinct influence of individual predictors (Diamantopoulos and Winklhofer, 2001; Diamantopoulos et al., 2008). Table 3.4 reports the correlations among life domains and variance inflation factors. The correlation matrix showed low-to-moderate correlations among domains. The largest correlations occurred between self and social with other domains. In turn, variance inflation factors (VIF) shown in Table 3.4 were all low, or near, to two, suggesting that multicollinearity was not an important issue (Petter et al., 2007). These results made us safely conclude that we could interpret the estimated coefficients and significance tests.

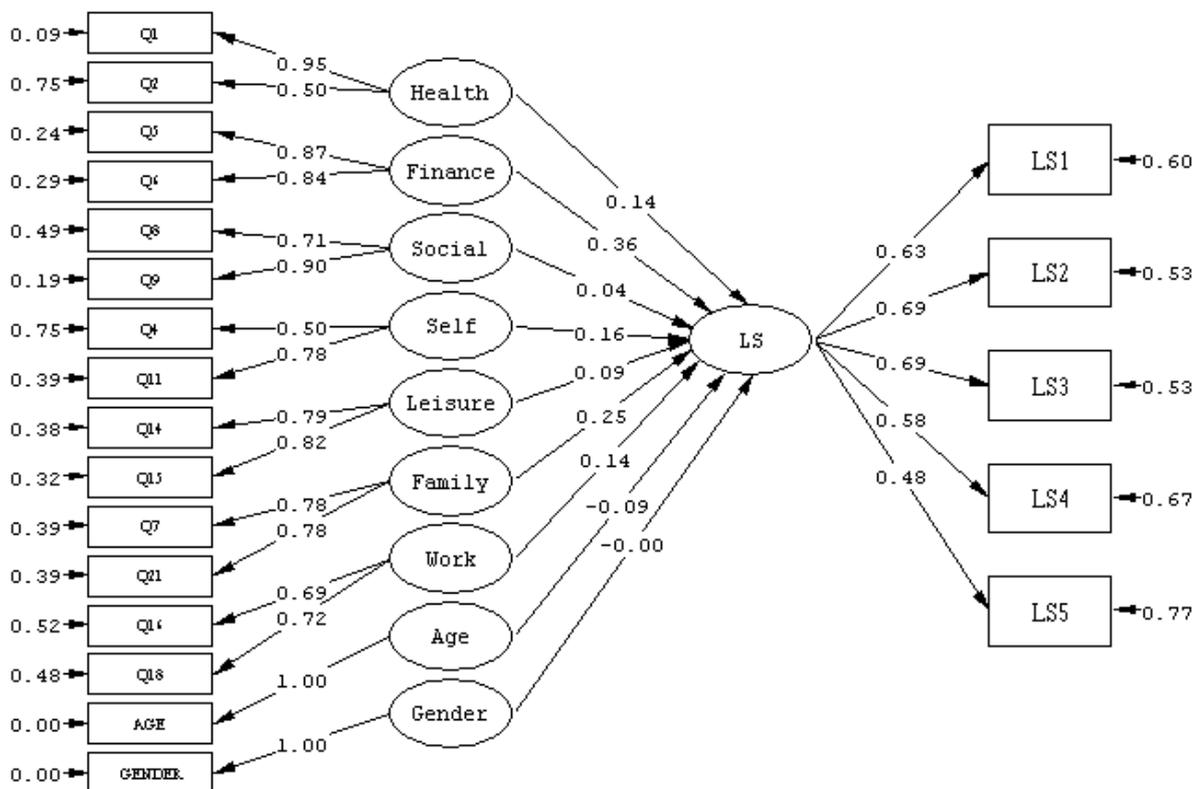


Figure 3.1 Standardised solution

Finally, common method variance was assessed. A Harman's single-factor test of common method variance (Podsakoff and Organ, 1986; Podsakoff et al., 2003) in SPSS revealed seven distinct factors with eigenvalues above 1.0, explaining 59.1 % total variance. The first factor explained 28 % of the variance, which was considered acceptable for a study such as this, where the spillover occurs between life domains. To further assess common method variance, confirmatory factor analysis was applied to Harman's single factor model (Sanchez and Brock, 1996). The model's fit indices ( $\chi^2 = 919$ ;  $df = 151$ ;  $\chi^2/df = 6$ ; RMSEA = .098; SRMR = .079; CFI = .889; NFI = .870) were unacceptable and significantly worse than those of the previous measurement model. This indicated that a single factor solution was not acceptable and so the common method variance effect was negligible.

### **3.7 Discussion and Conclusion**

Previous research examining the effects of satisfaction with multiple life domains on overall life satisfaction has usually reported what accounts for about 50 % of the variance in life satisfaction (Andrews and Withey, 1976; Campbell, 1976; Hart, 1999; Near et al., 1984). The nine predictors included in this study explained 70 % of life satisfaction variance. However, not all the domains had the expected effects on life satisfaction. Results indicated that Chilean workers attribute most importance to their financial situation, followed by family, work, and health. The effects of satisfaction with one's self-worth and leisure-time – although not significant at .05 – both had associated t-values near the critical value. Satisfaction with social relationships did not seem to be a relevant factor for Chilean workers.

These results are consistent with previous research that found that satisfaction with income, or financial situation, was a dominant predictor of life satisfaction in emerging economies, where gross national product (GNP) grows rapidly but its level is still far lower from most advanced economies like the U.S. or Western European economies. Saris et al. (1996), for instance, found that satisfaction with income was more strongly related to SWB in Eastern Europe than in Western Europe. Similarly, in the Russian context, Saris (2001) found a 'bottom-up' effect for satisfaction with financial situations – but not for housing and marriage satisfactions. Building on Maslow's (1970) needs hierarchy theory, Saris (2001) claimed that in the emerging economies finance satisfaction might be dominant, while in richer countries the effect of the domain satisfactions of social contacts or marriage on SWB might be

significant instead because income levels are sufficiently high that people are no longer unduly worried about finance situation.

Regarding the relatively strong relationship found between satisfaction with family and global life satisfaction – the second strongest predictor – we attribute this result to the collectivistic orientation of Chilean culture (Hofstede et al., 2010). This cultural orientation makes the group, and particularly the family, of primary importance. Although material intergenerational dependence may be weaker for workers than for other nonworking populations, the family model of emotional interdependence characterises collectivistic cultures (Kagitcibasi, 1996), where individuals emotionally rely on family and maintaining harmonious family relationships is a central goal. Individualistic and collectivistic cultures also differ in their conceptualisation of the self (Diener, 2000; Suh et al., 1998). In the former cultures the self is self-contained, isolated, independent, and clearly bounded (Markus and Kitayama, 1991; Sampson, 1989); while the self is enmeshed, interdependent, and contextualised in the later cultures (Tafarodi and Walters, 1999). The non-significance of satisfaction with self-worth in our study may reflect the collectivistic nature of Chilean culture since in a cross-national study, Diener and Diener (1995) found that self-esteem correlated more strongly with life satisfaction in individualistic than in collectivist societies.

When respondents are asked to judge the importance of various domains of their lives, ‘good health’ usually obtains one of the highest ratings (Campbell, 1976). In our study, satisfaction with health had a weaker effect on life satisfaction than found in previous research (e.g., Marmot, 2003; Gempp and Thieme, 2013). We attribute this weaker effect to the nature of participants in the study. We infer that the workers are relatively healthy and are not suffering severe illnesses or disabilities. When a disabling condition is not severe, people tend to adapt and health domain decreases in importance in priorities (Diener et al., 1999). This lower value given for health could, in turn, result in a lower weight of satisfaction with health in overall satisfaction (Oishi et al., 1999). However, this is speculation and needs to be further researched.

The effect of work satisfaction on overall life satisfaction was in the range found in previous research, when the effects of satisfaction in non-work domains were controlled (Rice et al., 1980; Tait et al., 1989; Bowling et al., 2010). Despite the fact that for most adults work is a central task to which they devote a large amount of time and energy, conclusions from

meta-analysis studies indicate that work satisfaction is only moderately related to global life satisfaction (Tait et al., 1989; Bowling et al., 2010). Rice et al. (1980) suggested a disaggregation hypothesis of work and life satisfaction, which proposes that the relationship is stronger for individuals who value work in their lives.

Surprisingly, both the effect of satisfaction with social life and leisure-time were nonsignificant – although in different degrees. While satisfaction with leisure-time was nearly significant, satisfaction with social life was clearly not relevant. According to Kitayama and Markus (2000), SWB comes from social participation, which can take different forms. In the case of workers, social participation may take place primarily at work. Harlow and Cantor (1996) found that social participation was a stronger predictor of life satisfaction for retirees than for elders who still hold a job, concluding that social participation was more important for life satisfaction during stages when the opportunity for social interaction was limited by the loss of a job.

Our results also showed that age had a negative effect on life satisfaction. This seemingly paradoxical effect may be explained by the quadratic pattern that previous research has found to characterise the relationship between age and life satisfaction, which reaches its lowest point at middle age but then increases into later adulthood (Blanchflower and Oswald, 2008; Kimberly et al., 2012; Löckenhoff and Carstensen, 2004). SWB generally does not decline again until after the age of seventy (Baird et al., 2010). Graham and Pettinato (2001) found that Latin America is not different from other economies in this matter. These authors found that happiness had a quadratic relationship with age, initially decreasing, and then increasing monotonically after 49 years of age. Given that our sample was made of workers, the negative effect we found is indicative of the initial decline of life satisfaction in early adulthood. Regarding gender, our results are similar to Graham and Pettinato (2001), who found no significant gender effect for Latin America countries, in contrast to more advanced industrial countries such as the U.S. where women usually tend to be slightly happier than men.

Three main limitations are worth noting in this study. First, we only considered the direct effects of life domain satisfactions on overall life satisfaction. However, life domains are rarely disconnected from each other. Domains tend to interact with each other in different ways (Wilensky, 1960). The spillover model posits that life domain satisfactions are positively

related and that satisfaction in one domain affects the others. The compensatory model states that a negative relation exists among domain satisfactions because people compensate for negative experiences in one domain by enriching the others (Wu, 2009). Judge and Watanabe (1994) found that spillover characterised most of the individuals; however, some authors do not agree with this conclusion (Hart, 1999). Secondly, we assumed an additive relationship between the life domain satisfactions and overall life satisfaction, although more flexible types of relationships have been proposed. For example, Rojas (2006) argued that there could be substantial gains in the understanding of the relationship by assuming alternative specifications such as an additive relationship, a semi-logarithm relationship, a logarithm-logarithm relationship, or a constant elasticity of substitution (CES) relationship. In particular, Rojas suggested that a CES specification is preferable if the objective is to understand rather than to predict life satisfaction. Finally, the measure development process reduced the number of indicators per life domain to two. As Kline (1998, p. 358) argued: *'having only two indicators per factor may lead to problems. Such models may be more likely to be empirically under identified than models with at least three indicators per factor...part of the model where some factors have only two indicators per factor are not self-sufficient in terms of the covariance matrix.'*

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## **4 Self-employment as a Moderator of the Relationship between Work and Life Satisfaction**

### **4.1 Abstract**

Bottom-up theories of life satisfaction suggest that work satisfaction and overall life satisfaction are positively related to each other because work is a central life domain for most adults. Empirical research has shown that the correlation between work and life satisfaction varies substantially across studies, suggesting that the strength of the relationship may depend on the studied population and its circumstances. In this article, we assess the strength of the relationship in the context of Chile and the moderator effect of self-employment – whether a worker is self-employed or salaried. Based on the idea that work is more central in the life of a self-employed than a salaried worker, we hypothesized that the strength of the relationship between work and life satisfaction will be stronger for the former. The results from a national sample of 658 Chilean workers supported our hypothesis. We also found a small negative direct effect from self-employment on life satisfaction, which suggests that the self-employed might be, on average, less satisfied with their lives than their salaried counterparts.

### **4.2 Keywords**

Life satisfaction, work satisfaction, job satisfaction, self-employment.

### 4.3 Introduction

Work takes a larger share of time than any other activity except sleeping. Many people not only earn their sustenance from work but also obtain pleasure from it (e.g., Csikszentmihalyi, 1975, 1997; Dane, 2011). Some people even enjoy work activities more than leisure or home life (e.g., Juster, 1985). Very often, work provides structure for the day, positive social relationships, a means of achieving respect, a source of challenge, and a sense of identity and meaning. Clearly, work is a central aspect of life in terms of the sheer amount of time and energy devoted to it by most adults. Accordingly, it is not rare for work satisfaction to be an essential dimension of life satisfaction. However, *how much* these two constructs are related still remains unclear, given the large variation in the strength of the relationship across studies. In this article, we suggest that this large variation in correlations across studies might not be a product of statistical artifacts and that the relationship could be moderated by a third variables (Hunter and Schmidt, 2004), for example, representing different groups of workers and distinct contexts. Particularly, we investigate the moderation effect of self-employment – whether a worker is self-employed or salaried.

This study was inspired by the work of Thompson, Kopelman et al. (1992), who investigated the moderation effects of self-employment. Based on Locke's (1976) claim that the more an individual has at stake in one domain, the more leveraged that person's feelings should be regarding that domain, Thompson et al. argued that self-employed workers are physically, emotionally, and financially more invested in their jobs than salaried workers. When testing their hypothesis, these authors found that the relationship between work satisfaction and life satisfaction (hereafter WS-LS) was significantly stronger for self-employed than for salaried workers. Yet, their sample consisted of only 115 organizationally employed and 62 self-employed individuals, all of whom were men. The present study re-examines the moderation effects of self-employment on the strength of the WS-LS relationship, using a sample of 658 Chilean workers, a quarter of whom were self-employed, with the rest salaried. The sample used in the current study was not only substantially larger in size but also more representative of the current workforce because it included both genders. Consequently, the results will be more robust and generalizable.

## 4.4 Conceptual Background

The WS-LS relationship has a substantial research tradition in industrial and occupational psychology (see Erdogan et al., 2012; Rain et al., 1991 for reviews). Bottom-up theories of life satisfaction understand life satisfaction as a function of satisfaction in multiple life domains such as health, family, and work (Hart, 1999; Rojas, 2006; Heidemeier and Göritz, 2013; Loewe et al., 2014). Within each life domain, a person's level of satisfaction results from discrepancies between current conditions and multiple standards, including other people, past conditions, aspirations, and goals (Michalos, 1985). A discrepancy that involves an upward comparison (i.e., where the comparison standard is higher) results in decreased satisfaction, whereas a downward comparison results in increased satisfaction. In the case of the work domain, there is evidence that work satisfaction mediates the effects of work experiences – like work-nonwork conflict (Rice et al., 1992) and role stressors (Carlson and Kacmar, 2000) – on life satisfaction.

Some authors have suggested that a person's dispositions may influence both, work and life satisfaction, establishing a spurious relationship between the two that inflates the correlation (Judge et al., 1997; Dormann and Zapf, 2001). For example, Judge et al. (1997) claimed that dispositions – such as self-esteem, locus of control, and neuroticism – affect the perception of objective conditions and the norms used to appraise them, which in turn influence work and life satisfaction judgments. Although some studies have provided empirical support for this dispositional perspective (e.g., Heller et al., 2002; Judge et al., 1998; Rode, 2004), Heller et al. (2004) meta-analytic study concluded that, rather than confounding the WS-LS relationship, the effects of personality on life satisfaction were mediated by work satisfaction. Erdogan et al. (2012, p.1041) stated in their recent review of the literature, '*treating personality as a distal predictor in models of life satisfaction may be more consistent with theory as opposed to treating it as a control variable that needs to be partialled out.*'

Meta-analyses corroborate that work satisfaction is positively, but modestly, correlated with overall life satisfaction (Bowling et al., 2010; Rice et al., 1980; Tait et al., 1989). For example, Bowling et al.'s (2010) meta-analysis estimated an average weighted correlation of .40 between life satisfaction and global work satisfaction, which was reduced to .36 when a composite of work satisfaction was considered. Similarly, Rice et al.'s (1980) results showed a correlation of .31, while Tait et al. (1989) found a correlation of .44 after correcting for

attenuation. Underlying these average correlations, the coefficients reported in specific articles contained in these meta-analyses show that the strength of the WS-LS relationship varies considerably across studies. Correlations range from a low value of .16 (e.g., Susskind et al., 2000) to values close to .7 (e.g., Cunningham and De La Rosa, 2008; Van de Vliert and Janssen, 2002).

Building on Schwartz's (1992) theory of values, Oishi et al.'s (1999) value-as-moderator model predicts that the strength of the relationship between life domain satisfactions – such as satisfaction with health, friendship, or work – and overall life satisfaction depends on the individual's value orientation. In particular, the higher value a person gives a particular life domain, the stronger will be the association between that domain satisfaction and overall life satisfaction. Similarly, the disaggregation hypothesis (Rice et al., 1980; Steiner and Truxillo, 1989) proposes that job involvement – the perceived value of work in one's life and self-concept – moderates the WS-LS relationship. According to this hypothesis, the relationship should be stronger for individuals who value work more in their lives. Other similar variables that have been proposed as moderators of the WS-LS relationship are, for instance, occupation type, occupational prestige, and job importance (Bamundo and Kopelman, 1980; Rice et al., 1985; Wiener et al., 1992).

#### **4.4.1 Self-employment**

Economists have long studied the self-employed and compared them to salaried workers. One of the reasons for the interest in the self-employed is that this sub-population of workers consistently shows higher work satisfaction scores than salaried workers, irrespective of income gained or hours worked (e.g., Benz and Frey, 2008; Blanchflower, 2004; Bradley and Roberts, 2004; Fuchs-Schündeln, 2009; Millán et al., 2013). It is usually argued that self-employment provides 'procedural utility' on top of the 'outcome utility' derived from income and leisure. That is, workers not only value the outcomes (i.e., income and leisure) but also the conditions and processes leading to them (Benz, 2007; Frey et al., 2004). Although the average income of the self-employed is often well below that of comparable employed individuals (Hamilton, 2000; Moskovitz and Vissing-Jørgensen, 2002) and the self-employed enjoy less free time (Hyytinen and Ruuskanen, 2007), self-employed workers derive procedural utility because self-employment gives them higher freedom in the form of autonomy and self-determination. Self-

employment not only provides more freedom but also other nonpecuniary benefits that make the self-employed, on average, more satisfied with their work than their salaried counterparts.

Self-employment jobs usually have more enriching requirements and provide more flexibility and opportunities to utilize one's own skills. The self-employed also have more control over the effort expended on their jobs (Hundley, 2001). However, the advantages of self-employment do not come without sacrifice. In comparison with salaried employment, any benefits that may accrue to the self-employed are gained at the cost of increased risk because their pay-offs are largely determined by their efforts and skill. The self-employed perceive their jobs as being more stressful and mentally draining because they work longer hours and have more responsibility for their jobs, incomes, and, in many cases, employees (Kaufmann, 1999). These characteristics of self-employment may make work more central in the life of the self-employed; in many instances, work and its demands even dominate the lives of the self-employed (Hamermesh, 1990). We hypothesize that this increased centrality of work may strengthen the WS-LS relationship. Based on these explanations and the above research findings, we hypothesized the following:

*H1: The relationship between work satisfaction and life satisfaction will be positive*

*H2: The relationship between work satisfaction and life satisfaction will be moderated by self-employment. In particular, the relationship will be stronger for self-employed than for salaried workers.*

## **4.5 Method**

### **4.5.1 Sample and Procedure**

The measures used in this study were part of a large questionnaire administered to investigate several characteristics of the Chilean population. Using the Chilean census, 1500 people were sampled to represent the total population of Chile with a 5% sampling error. Although all regions were represented in the sample, the Greater Santiago region was overweighted. Approximately 30% of the cities, towns, and districts were selected proportionally, while blocks, housing, and individuals were randomly selected. A team of professional canvassers

went door-to-door to personally administer the survey questionnaire to the sampled participants. This procedure yielded an interim sample of 791 workers, which was reduced to an effective size of 658 individuals after a listwise process deleted cases with missing values. Missing values were distributed at random across cases without following any pattern (Olinsky et al., 2003). The age of the participants ranged from 18 to 74 years, and the average age was 39 years (S.D=12.5); 64.1% were men and 35.9% were women; some 74.9% of the participants were salaried workers, while 25.1% were self-employed workers. Table 4.1 provides sample proportions on education level, marital status, and age groups.

**Table 4.1** Sample characteristics (N=658)

<b>Age</b>		<b>Marital Status</b>		<b>Education</b>	
Less than 25	12.8%	Married	38.8%	No education	2.4%
From 25 to 34	26.9%	Single	38.4%	Primary	18.9%
From 35 to 44	26.0%	Living together	10.9%	Secondary	54.0%
From 45 to 54	21.9%	Separated	8.9%	University	24.7%
From 55 to 65	10.9%	Divorced	2.2%		
More than 65	1.5%	Widow/er	.8%		

#### 4.5.2 Instruments

The Satisfaction With Life Scale was used to assess life satisfaction (SWLS; Diener et al., 1985). This scale has shown good psychometric properties (for reviews, see Pavot and Diener, 2008; Vassar, 2008) and has been extensively applied and validated in many cultures and with different socio-demographic groups (Durak et al., 2010; Gadermann et al., 2011; Oishi, 2006). The participants indicated their responses in a 5-point Likert scale labeled from 1 ‘*completely disagree*’ to 5 ‘*completely agree*’. We estimated internal consistency reliability using Cronbach’s alpha, which showed a value of .77, above the usually accepted cut-off value of .70 (Nunally, 1978). However, several authors have reported significantly lower loading for the last two items of SWLS (Pavot and Diener, 2008). These loading differences represent a violation of the assumptions required by the tau-equivalent measurement model (Raykov, 1997a) – on which coefficient alpha is based. This violation may lead to either an

underestimation or an overestimation of reliability (Raykov, 2001). In our study, exploratory factor analysis also revealed that the loadings of items 1, 2, and 3 were similar in magnitude, approximately .70 in value, but the loadings of items 4 and 5 were significantly lower, at .59 and .50 respectively. Confirmatory factor analysis (CFA) showed good fit indices ( $\chi^2=15.7$ ;  $df=5$ ;  $\chi^2/df=3.14$ ;  $RMSEA=.05$ ;  $SRMR=.02$ ;  $CFI=.98$ ;  $NFI=.98$ ). Exercising caution, we re-estimated reliability using Heise and Bohrnstedt's (1970) omega – an alternative estimate of reliability based on more relaxed assumptions (Raykov, 1997b). The new reliability value did not differ much from Cronbach's alpha, estimating a new value of .78.

Work satisfaction was assessed using a 22-item subscale of the Occupational Stress Indicator (OSI) (Cooper et al., 1988). This scale evaluates satisfaction with work facets such as career development opportunities, job stability, and the supervisor's leadership style. Responses were given in a 6-point Likert type scale labeled from 1 '*completely satisfied*' to 6 '*completely unsatisfied*'; the scores were subsequently recoded so that the higher scores indicated higher degree of work satisfaction. CFA showed acceptable fit indices ( $\chi^2=972$ ;  $df=209$ ;  $\chi^2/df=4.65$ ;  $RMSEA=.07$ ;  $SRMR=.05$ ;  $CFI=.96$ ;  $NFI=.95$ ). Cronbach's alpha was .95 for this measure.

To determine whether the participants were self-employed or salaried – the variable referred to here as self-employment – participants checked '*salaried*' or '*self-employed*' among multiple options such as retired, unemployed, student, etc. Self-employment was coded with 1 and salaried with 0.

## **4.6 Results**

The means, standard deviations, maximum and minimum values, and correlations of the variables are presented in Table 4.2. The correlation between work satisfaction and life satisfaction ( $r = .30$ ) was of the same magnitude found in previous research (Bowling et al., 2010). This result supported H1. An independent sample t-test analysis revealed that there were no significant differences in the life satisfaction of self-employed and salaried workers ( $t = .71$ ,  $df = 656$ ,  $p = .48$ ). For the sake of external validity, we also conducted a t-test comparing the work satisfaction of self-employed and salaried workers. In our sample, the former showed significantly higher scores ( $t = -4.5$ ,  $df = 656$ ,  $p < .001$ ), a result that was consistent with the

results of previous research (e.g., Benz and Frey, 2008; Blanchflower, 2004; Bradley and Roberts, 2004; Millán et al., 2013; Fuchs-Schündeln, 2009).

**Table 4.2** Means, standard deviations, and correlation among variables

Variable	Mean	Min.	Max.	S.D.	1	2	3	4
1 Life satisfaction	3.35	1,60	5.00	.67	1			
2 Work satisfaction	4.33	1.55	6.00	.73	.30	1		
3 Self-employment	.25	0	1	.43	-.02	.17	1	
4 WS x Self-employment	1.14	0	6.00	2.00	.01	.25	.98	1

We used multiple regression analysis to test the moderator effect of self-employment (SE) on the strength of the relationship between work satisfaction and life satisfaction. Life satisfaction was regressed on work satisfaction, self-employment (the moderator dummy variable), and an interaction term – the cross-product of work satisfaction and self-employment. When regressors are entered in a sequential order, a moderator effect is indicated by an increase in  $R^2$  – beyond the  $R^2$  of the main effects – from the addition of the interaction term. Therefore, we firstly tested the additive model, including the direct effects, and afterward the multiplicative model including also the interaction effect. The results of both model tests are shown in Table 4.3.

In the case of the additive model, a significant overall F (36.01;  $p < .05$ ) was obtained and  $R^2$  was 9.6%. A significant standardized coefficient for work satisfaction of .32 confirmed a positive main effect from work satisfaction on life satisfaction. The results of this regression analysis also showed a negative effect – of value near zero – of self-employment on life satisfaction (-.08), indicating that – on average – the self-employed were slightly more satisfied with their lives than salaried workers. Although this difference in average life satisfaction between self-employed and salaried workers may appear to be inconsistent with the results of the t-test conducted previously, we must take into account that the t-test is equivalent to a simple regression model. In our case, the t-test residual variance included all the variation that was not explained by the variation of SE, while in the additive regression model, the variability

accounting for WS was subtracted from that residual variance. In other words, the partial correlation coefficient of SE was greater when WS was included in the regression equation, and the standard error for significance testing was smaller. As a consequence, the power to detect a significant effect of SE is greater in the regression relative to the t-test.

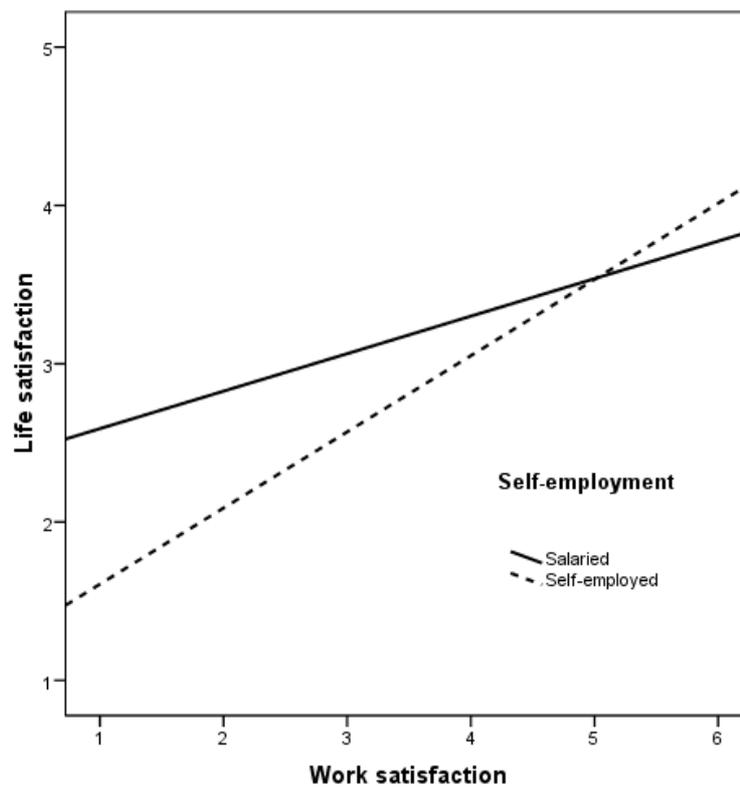
Subsequently, the multiplicative model was tested. With the inclusion of the interaction term (WS x SE) in the regression analysis, the standardized coefficients of work satisfaction (.26), self-employment (-.78) and the interaction term (.72) were all statistically significant. Multicollinearity inflated the standard errors of self-employment and the interaction term coefficients to a level that no longer allowed for the interpretation of the estimation of the coefficients. In particular, VIF reached 1.3 for work satisfaction, 42.4 for self-employment, and 43.8 for the interaction term.  $R^2$  – which is not affected by multicollinearity – increased from 9.6% in the additive model to 10.7% ( $t = 2.96$ ,  $df = 657$ ,  $p < .05$ ) in the multiplicative model. Despite this small increment in  $R^2$ , the statistical significance of the interaction term indicated that a moderator effect existed. To facilitate the interpretation of this moderation effect, Fig. 4.1 represents the linear equations derived for both studied groups, self-employed and salaried. The higher slope of the self-employed line indicates that the relationship between work satisfaction and life satisfaction was stronger for this group of workers. For low and medium levels of work satisfaction, the average life satisfaction of the self-employed was smaller than that of salaried workers. The stronger effect of work satisfaction on life satisfaction for the self-employed made the latter more satisfied with their lives at high levels of work satisfaction. These results supported H2 that self-employment moderates the relationship between work satisfaction and life satisfaction with the result that the relationship was stronger for self-employed than for salaried workers.

**Table 4.3** Results of regression analyses predicting life satisfaction<sup>a</sup> (N=658)

Variable	Additive				Multiplicative			
	Beta	SE	t	VIF	Beta	SE	t	VIF
Work satisfaction (WS)	.32*	.03	8.45	1.03	.26*	.04	6.10	1.32
Self-employment	-.08*	.06	-2.19	1.03	-.78*	.37	-3.27	42.42
WS x Self-employment					.72*	.08	2.96	43.89
Total R <sup>2</sup>	.096				.107			
ΔR <sup>2</sup>					.011			
F	36.01*				27.23*			
ΔF					-3.56			

<sup>a</sup> Standardized regression coefficients are shown.

\* Statistically significant at  $p < .05$



**Figure 4.1** Moderator effect of self-employment

In this study we assumed that the use of self-report measures were especially appropriate for assessing work satisfaction and life satisfaction, given the self-reflective nature of these two constructs. Although there is some evidence that common-method variance may generally not be as serious a problem as many researchers have assumed (Batista et al., forthcoming; Spector, 2006), and it is minimized in large multipurpose surveys like this survey (Chang et al., 2010), it is possible that our findings were influenced by common-method variance. Confirmatory factor analysis was conducted to test common method variance. The proposed Harman's single-factor model was estimated (Podsakoff and Organ, 1986; Podsakoff et al., 2003). The model produced the following fit statistics:  $\chi^2=1945$ ;  $df=$ ;  $\chi^2/df=6$ ; RMSEA=.09; SRMR=.08; CFI=.94; NFI=.93, that indicated a poor of the measurement model fit (MacKenzie et al., 2011). Therefore, any possible method effects in the data were likely to be minimal.

#### **4.7 Discussion and Conclusion**

As predicted, work satisfaction was positively related to life satisfaction in this study. The correlation between both constructs was within the range shown in previous meta-analytic studies. According to our hypothesis, we found that the association was stronger for self-employed than for salaried workers, a result that was consistent with the work of Thompson et al. (1992). We attributed the moderation effects of self-employment to the higher centrality of the work domain in self-employed people's lives.

Our method also revealed an unexpected direct effect from self-employment on life satisfaction. In particular, the self-employed were less satisfied with their lives than salaried workers, on average. Although this effect was statistically significant, its size was close to zero. This unexpected finding is especially interesting because it contrasts with the results of some recent research that investigated the relationship between self-employment and life satisfaction. Andersson (2008) found a strong positive correlation between self-employment and life satisfaction. Blanchflower (2004) found that only some subgroups of self-employed workers were more satisfied than salaried workers. For example, Alesina et al.'s (2004) findings suggested that the positive effect of self-employment was limited to wealthy countries. Binder and Coad (2013) found that individuals who moved from regular employment into self-employment – 'opportunity' entrepreneurs – experienced an increase in life satisfaction. However, individuals moving from unemployment to self-employment – 'necessity'

entrepreneurs – were not more satisfied than their counterparts moving from unemployment to regular employment. In sum, the small negative effect of self-employment on life satisfaction in this study could be explained by the national scope of our study. In our sample, the poorer rural areas of Chile were also represented. In these areas, self-employment might be driven by necessity, rather than opportunity.

Industrial and occupational psychology research has consistently shown that work satisfaction only explains a small part of life satisfaction variance. In fact, when satisfaction with other non-work facets of life, personality dimensions, and living conditions are controlled, the percent of variance in life satisfaction uniquely attributed to work satisfaction often falls to 5% or lower (Andrews and Withey, 1976; Hart, 1999; Near et al., 1984). Therefore, the moderation effect of self-employment on the WS-LS relationship shown in this study may be of higher relevance than is indicated by the small increase in  $R^2$ , when the interaction term was incorporated. Identifying the moderators of the WS-LS relationship is important because the regression coefficient in a main effects model estimates the effect of WS on LS across multiple levels of the moderator. This average main effect can misdirect our conclusions regarding the relationship between both constructs, as is the case when suppressor effects exist. In contrast, in a model including a multiplicative term, the regression effects reflect the conditional relationships of WS at each level of LS, and the interaction reveals slope differences as one moves from one value of LS to another. Accordingly, we call for the examination of other potential moderators of the WS-LS relationship, which may enhance our understanding of the different situations and populations to which the distinct theoretical models could apply. For example, further research may want to examine the level of education as a moderator of the WS-LS relationship. Empirical evidence suggests that higher educational attainments reduce work satisfaction (Clark, 1997; Ferrer-i-Carbonell, 2005), while the effect of education on life satisfaction is vague (Ferrante 2009). This pattern of relationships between education, WS, and LS is similar to that observed between self-employment, WS and LS. Indeed, it could be argued that work may be more central in life for people who are more invested in education. If that is the case, education could be a relevant moderator of the WS-LS relationship. This relationship is speculation that future research may want to investigate.

Two limitations of this study are worth noting. Firstly, some authors have suggested that the relationship between work satisfaction and life satisfaction could be spurious. For example, using structural equation modeling, Rode (2004) found that work satisfaction did not explain any of the variance of life satisfaction; instead, both constructs were related to a single measure of self-core evaluations – basic conclusions that people hold regarding themselves and their capabilities. Personality traits such as self-esteem, locus of control, generalized self-efficacy, and neuroticism are all dispositional indicators of core self-evaluations. Some of these traits might be also associated to self-employment career choice. For example, meta-analysis studies provided some evidence of a positive relationship between entrepreneurial behavior and personality traits such as need for achievement, generalized self-efficacy, need for autonomy, and proactive personality (Zhao and Seibert, 2006). Rauch and Frese (2007) meta-analysis found entrepreneurs scored higher on Conscientiousness and Openness to Experience and lower on Neuroticism and Agreeableness. No difference was found for Extraversion. However, being self-employed do not necessarily mean being an entrepreneur, indeed, self-employed are a quite heterogeneous population in many aspects (Santarelli and Vivarelli, 2007; Van den Heuvel and Wooden, 1997), for instance, in their motivations to pursue self-employment (Feldman and Bolino, 2000; Fuchs-Schündeln, 2009). Secondly, the cross-sectional nature did not allow to investigate the causal direction of the WS-LS relationship. Implicit in the bottom-up approach adopted in this study is the direction of the relationship from work satisfaction to life satisfaction. Although most of the studies assume the same direction of causality (Erdogan et al., 2012), some authors adopting a top-down, or dispositional, approach have suggested that the relationship could be the other way around. This approach suggests that the influence of life satisfaction on work satisfaction represents a dispositional effect (Judge and Hulin, 1993; Staw and Ross, 1985), that is, the positive affect associated with higher life satisfaction leads people who are more satisfied with their lives to interpret work conditions and events more positively, resulting in turn in higher work satisfaction. Some studies have even suggested that the WS-LS relationship might be reciprocal (e.g., Judge et al., 1994; Judge and Watanabe, 1993; Judge and Hulin, 1993).

## References for Chapter 4

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## 5 Conclusions

Inspired by the *'happy productive worker hypothesis'*, this thesis focuses on the concept of worker satisfaction with life in general to take a more holistic approach than usual in Business Management, which tends to emphasise work satisfaction. After reviewing a number of individual domains that influence people's overall satisfaction with life, we proposed a life satisfaction model based on the level of satisfaction with certain important life domains, including work. This enabled us to investigate the structure of the life satisfaction concept in the Chilean population and in particular to evaluate the relative importance of work satisfaction to overall life satisfaction for Chileans.

First, we examined the different operationalizations to Spanish proposed by other authors for the Satisfaction With Life Scale (Diener et al., 1985). After observing notable differences between these versions and the original English version, a new operationalization was presented. The validity of the construct of the new Spanish version of the instrument was then evaluated in a broad and representative sample of the Chilean population. The study showed sufficient evidence of the validity of the construct of the new instrument and its reliability for measuring general satisfaction with life among the Chilean population. It was also concluded that the SWLS score can be compared across gender and most demographic groups studied (*'Validation and Factorial Invariance Analysis of the Spanish Version of the Satisfaction With Life Scale'*).

Following a review of the SWB literature, seven life domains considered to be important to a satisfactory life were then identified. Using qualitative and quantitative methods, a questionnaire was developed to evaluate the satisfaction with each one of these life domains. By administering the questionnaire to a sample of workers, we evaluated how important each one of these life domains was to Chilean workers when it came to judging their overall life satisfaction (*'Life Domain Satisfaction as Predictors of Overall Life Satisfaction Among Workers: Evidence from Chile'*). The results indicated that satisfaction with one's financial situation is the domain that had the most influence on overall life satisfaction for Chilean workers. Satisfaction with financial situation was followed, in order of importance, by satisfaction with one's family life, work and health. It was concluded that these results are consistent with the Chile's stage of economic development and with the primarily collectivist

orientation that characterises the society. As with the studies conducted in the US and Europe, work satisfaction does not seem to have a predominant effect on workers' overall satisfaction with life. However, in this case work satisfaction proved to be just as important as the perception of one's health, unlike previous studies in which the perception of one's own health tended to be more important.

Finally, we looked at the effects of being self-employed on the relationship between work satisfaction and life satisfaction, concluding that work satisfaction is a better predictor of life satisfaction for workers who were self-employed than for those who weren't. We attributed this moderating effect on the fact that for the self-employed, work is a more central part of their lives (*'Self-employment as a moderator of the relationship between work and life satisfaction'*).

In light of the above, this thesis concludes that despite of appealing philosophical and ideological arguments claiming the centrality of work to life satisfaction, work satisfaction has only a relatively minor contribution to Chilean workers' level of life satisfaction. Other broad life domains have a predominant influence on life satisfaction judgments in the cultural and socio-economic context of Chile. Experiences from work 'spill over' into overall attitudes toward life, resulting in a positive correlation between work satisfaction and life satisfaction. However, the relationship between work and life satisfaction is complex. For some type of workers, like self-employed, who presumably value work more in their lives, work satisfaction have a stronger influence on their overall life satisfaction appraisals.

## **5.1 Contributions**

The results of this thesis contribute to the literature on Subjective Well-Being, Business Management, and I/O Psychology in different ways. On the one hand, it advances and improves the instruments available for measuring life satisfaction and its primary domains. It provides a new, more appropriate operationalization than previous Spanish versions of the SWLS, with enough evidence of the validity of the construction in a significant sample size to be used in future research with a certain degree of confidence. This contribution is relevant in and of itself, bearing in mind that Spanish is one of the most widely spoken languages in the world and the SWLS is one of the most commonly used scales for measuring overall life satisfaction. A brief questionnaire in Spanish is also provided (see Appendix) composed of items for measuring the

level of satisfaction with six life domains that are important to a majority of adults. This instrument was meticulously developed following the latest recommendations for questionnaire development (Saris and Gallhofer, 2007).

The results of this thesis also contributed to a better understanding of the significance assigned to the concept of life satisfaction by different cultures. In particular, the results corroborate the hypothesis that in societies with collectivistic values, individuals tended to place less importance on individual factors when evaluating their overall life satisfaction. It was also confirmed that work satisfaction does not play a predominant role in life satisfaction.

Finally, this thesis suggests the important effects that moderating variables can have on the relationship between life domains and LS. By analysing the moderating effects of self-employment on the relationship between JS-LS, the complexity of the interactions between the different factors that determine life satisfaction has once again been highlighted.

## **5.2 Limitations (threats to the validity of our inferences and conclusions)**

There are two major limitations to this thesis. First of all, because of the correlational nature of the study, it is not possible to evaluate the direction of ‘causality’ between life domain satisfaction and overall life satisfaction. Adopting a bottom-up or situational perspective means that satisfaction with the different life domains causes greater overall life satisfaction. However, there is also a possibility that the people who are generally more satisfied with life interpret their circumstances in the workplace more positively and this results in greater work satisfaction.

Secondly, because of the observational nature of the study (i.e., non-experimental) it cannot be ruled out that the observed associations between life domain satisfaction and overall life satisfaction could be due to spurious factors rather than indicating a true link between the independent and dependent variables used in this study. In particular, the effects of participants’ personality traits on their level of life satisfaction were not controlled. As described in section 1.1.1, personality has a strong influence on self-reported life satisfaction. In this thesis we assumed that the satisfaction with life domains mediates the effects of personality on overall life satisfaction. As in the studies conducted by Andrews and Withey (1976) and Campbell et al. (1976), the life satisfaction model presented in this thesis considered satisfaction with self-

worth as yet another life domain. However, this domain is closely related to the self-esteem personality trait. In any event, in future research the authors may want to use well-established measures for the broad personality traits of extraversion, neuroticism, and self-esteem, which have been shown to be the traits that have the greatest influence on LS. In this regard, some authors have suggested the core evaluation approach. Some scholars have examined the possibility of a spurious relationship between work and life satisfaction. This variation of the dispositional perspective contends that both work and life satisfaction result from common individual dispositions, measured by core evaluations (Judge et al., 1997; Judge et al., 1998; Heller et al., 2002, and Rode, 2004). Judge et al. (1998) claimed that core evaluations should be seen only as an addition to the dispositional perspective. The underlying dynamics of core evaluations are still not sufficiently understood and more research has to be conducted before valid inferences can be drawn from studies that incorporate these dispositions (Johnson et al., 2008).

### **5.3 Future Research**

An interesting extension of this thesis would be the investigation of the nature of the relationship between life domain satisfaction and global life satisfaction. Our model of life satisfaction assumed that an additive relationship between domain satisfaction and life satisfaction does exist. The additive model performed very well in predicting global life satisfaction, reaching an  $R^2$  of 70%, which is significantly higher than what previous research has found. However, the additive specification is not as helpful when the objective is to understand the relationship. The use of an additive specification implies a simplification of what is really a complex and rich phenomenon, losing some features of the relationship. The use of an additive relationship substantially restricts the comprehension of the relationships between life domain satisfaction, and between life domains and global life satisfaction. As suggested by Rojas (2006), there are some relevant issues in the relationship between domain satisfaction and overall life satisfaction that cannot be studied with an additive specification; hence, the use of an alternative specification. In the future researchers may want to use richer specifications, for instance the CES specification, to examine and capture situations like: is life satisfaction just a weighted average of domain satisfaction? How easy is it to substitute satisfaction in one domain with satisfaction in another? Is it reasonable to expect similar additional benefits when we continuously improve satisfaction in one domain? What happens

with our life satisfaction when we manage to continuously improve satisfaction in all domains? What happens with the importance of one domain when satisfaction in another domain declines?

Another suggestion for future research refers to the moderators of WS-LS relationship. In this thesis, it was assumed that individual domain importance moderates the strength of the relationship between that life domain satisfaction and the global life satisfaction of the individual. However, some studies that have measured domain importance directly found that domain importance did not moderate the relationship between individual domain satisfaction and global life satisfaction, which was measured by the SWLS (e.g., Wu and Yao, 2006b; Wu and Yao, 2006a). Extending Locke's range-of-affect hypothesis in the field of work satisfaction (Locke 1969, 1976), some authors argue that satisfaction with a particular life domain is a function of the have-want discrepancy between the life domain and the perceived importance of that life domain. Domain satisfaction is, therefore, influenced by the interaction of the domain have-want discrepancy and domain importance. In short, domain satisfaction had already incorporated the judgment of domain importance (Hiseh, 2004, 2012; Wu 2008a, b; Wu and Yao 2006a, b, 2007; Russell et al., 2006; Russell and Hubley, 2005).

## **5.4 Practical Implications**

Cross-cultural studies that compare life satisfaction in different nations are commonplace these days. When comparing nations' mean levels of LS, an assumption is made that the instrument being used measures the same construct in all countries, so comparisons can be meaningfully interpreted. However, this assumption does not always hold, especially when data is gathered from different cultural groups. In this thesis we have seen how different cultural values can result in a different conceptualisation of the life satisfaction construct. The establishment of measurement invariance is a prerequisite for meaningful comparisons across groups. Researchers are encouraged to assess the measurement invariance of the Spanish version of the SWLS proposed in this thesis in other Spanish speaking countries.

## 5.5 References for Chapter 5

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## 6 Appendix

<b>Life domain</b>	<b>English</b>	<b>Spanish</b>
<b>Health</b>	My health is excellent	Mi salud es excelente
	I get sick more often than others	Me pongo enfermo más fácilmente que otras personas
<b>Finance</b>	I am satisfied with my economic situation	Estoy satisfecho con mi situación económica
	I am satisfied with what I can buy	Estoy satisfecho con lo que puedo comprar
<b>Social</b>	I am satisfied with the friends I have	Estoy satisfecho con los amigos que tengo
	I am satisfied with my social life	Estoy satisfecho con mi vida social
<b>Self</b>	I am self-confident	Tengo confianza en mí mismo
	I feel valued, respected	Me siento una persona valorada, respetada
<b>Leisure</b>	I am satisfied with the amount of free-time I have	Estoy satisfecho con la disponibilidad de tiempo libre que tengo
	I am satisfied with the activities I do in my free-time	Estoy satisfecho con las actividades que realizo en mi tiempo libre
<b>Family</b>	I am satisfied with my family life	Estoy satisfecho con mi vida familiar
	I am satisfied with the relationship with my partner	Estoy satisfecho con mi relación de pareja
<b>Work</b>	I like the work I do	Me gusta el trabajo que hago
	I am satisfied with the responsibility I have in my work	Estoy satisfecho con las responsabilidades que tengo en mi trabajo



**Universidad Ramon Llull**

Esta Tesis Doctoral ha sido defendida el día \_\_\_\_ de \_\_\_\_\_ de 2015 en el  
Centro ESADE Business School de la Universidad Ramon Llull

Delante del Tribunal formado por los Doctores abajo firmantes, habiendo obtenido la  
calificación:

Presidente/a

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Vocal

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Secretario/a

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Doctorando/a

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