ERASMUS SCHOOL OF ECONOMICS

MASTER THESIS

MSc BUSINESS ECONOMICS

Consumption and happiness

An analysis of the Netherlands

Author:
YuanYuan Lin (Ivy)

Supervisor:
Efstratia Arampatzi

Abstract

What types of consumption expenditure are most conductive to happiness? It is the question the study tends to explore. The analysis uses 2017 consumption data obtained from the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) in which the dataset of consumption expenditure consists of five categories, which are transportation, food, housing, holiday and other expenditures. The results of our analysis contribute new insight on the research of happiness and consumption, at the same time provides evidence to suggest that happiness is affected not only by total expenditure but also by specific kinds of consumption expenditures. The results show that expenditure on holiday is positively associated with happiness, but that the expenditure on housing is negatively associated with happiness. Furthermore, the study finds that expenditures on transport and grocery do not influence happiness significantly. Additionally, individuals with financial stress or debts report to be less happy compared with those with no financial stress or little financial stress.

Contents

List of tables

1 Introduction

We go to gym, go shopping, go out with friends, go to movies, and more and more… In this modern society, we cannot live without consumption of services and goods, at the same time, we also face multiple choices of consumption -- such as invest in a house, or a car? Pay for a holiday, or a luxury product? Save, or spend as much as you earn? -- with some of them are of greater significance than the other. In all these issues, decisions are made with variations differ across situations and persons. This leads to a fundamental question: What makes people happy?

Happiness is perceived as the fundamental human aspiration and most important ultimate goal of human being (Chiu et al., 2010; Bracho, 2005; Abdel-khalek, 2005). The research on the topic of happiness has been argued across different realms by economists, psychologists and social scientists (Dunn, Gilbert, and Wilson, 2011; Dunn and Norton, 2013; Easterlin, 2003; Hsee et al., 2009; Labroo and Mukhopadhyay, 2009; Labroo and Patrick, 2009; Liu and Aaker, 2008; Lyubomirsky, Sheldon, and Schkade , 2005; Mogilner, 2010; Raghunathan and Corfman, 2006). Studies find that positive purchasing experience is positively associated with enduring happiness (Howell and Hill, 2009; Nicolao, Irwin, and Goodman, 2009; Van Boven and Gilovich, 2003; Tkach and Lyubomirsky, 2006).

Despite money and happiness have been interested from researchers across disciplines, there is still much to learn about the topic. For instance, a large number of empirical studies explore the relation between consumption and happiness interchangeably uses income as a proxy of consumption (Ahuvia, 2002). Many studies equate income with consumption automatically, assuming that income fully reflects individuals purchasing behaviours and that it fully funds consumption activities (Clark et al., 2008; Dolan, Peasgood, and White, 2008; MacDonald and Douthitt, 1992). Evidently, consumption and income are two different concepts (Atkinson, 1998; Cutler and Katz, 1991; Headey et al., 2008). Specifically, income only reflects the overall absolute amount a person earns, while it does not make distinctions between different types of consumption or how much people spent on different kinds of goods and services. By contract, consumption expenditure data obviously make distinctions between different types of consumption. In this respect, consumption variable is more informative, though it

provides little guidance as to which kinds of consumption are most conductive to happiness.

The dynamics of consuming and happiness has its nature of complexity, but above stated literatures provide consistent evidence that positive purchasing experiences contribute greater enduring happiness (Howell and Hill, 2009). The main objective of this study is to observe the impact of different categorical consumption on happiness. Building on the previous literature, the current study focuses on the relation between consumption and happiness using a representative Dutch sample in 2017. Therefore, the research question on this study is:

What types of consumption expenditure are most conductive to happiness in the Netherlands, by using the LISS cross-sectional data in 2017? To what extent the consumption is optimal for happiness?'

In this research, happiness is regarded as one of the components of subjective well-being (Diener et al.,1999) that captures how much positive emotion people experience(Layard, 2005), whereas consumption reflects the amount an individual spend on various goods and services. The study first investigates that to what extent consumption is optimal for happiness, the consumption in this context measured as difference between the income and the consumption (if total expenditure is higher or lower than household income). Secondly, we explore the relation between consumption categories and happiness by analysing which compositions of consumption are conductive most to happiness. To analyze compositions of consumption expenditures, this study makes use of five categories consumption collected by LISS which are: housing and utilities, transportation and cars, holiday and leisure, food at home, and the other.

To analyse the relationship between consumption and happiness, this study makes use of the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) data for the year 2017. In the LISS data, individuals report on several aspects of their life, including their happiness, total income, consumption expenditures, personal characteristics and demographic information. The data provides detailed measures of expenditure on a wide variety of goods.

As mentioned, previous study has been conducted into the relation between money and happiness. The majority of this research however on income or a different time frame. We expect the general result of our study to coincide with the findings of these papers. This indicates that this study expects to find a significant increase in happiness in case of the total consumption expenditures increase, and a significant decrease in happiness in case of a total consumption expenditures decreases.

This analysis contributes new insight on the research of happiness and consumption. To our knowledge this is the first paper that investigates the effects of the income-consumption gap and consumption compositions on happiness, without ignoring the impact of income and personal characteristics. By adding such control variables to rule out some potential unobserved heterogeneity. There has been previous research into the relationship between consumption and happiness. The vast majority of this study however performed prior to the year 2010, when financial crisis ended.

Moreover, this study emphasizes the importance of both total consumption and specific components of consumption on defining happiness. The finding of this study will demonstrate how different consumption categories enhance happiness. It brings new information to the public weather seeking happiness in a specific good or service is the proper resource allocation, particularly when limited funds available.

This study also has policy implications. Happiness is the fundamental goal of life. Governments and policy makers are consistently seeking ways to improve happiness and life quality for their citizens. Policy has its meaning on creating opportunities for these purposes. With this definition, a better understanding of happiness would make contribution in improvements. There are indeed a diversity ways to affect happiness, consumption pattern is obviously one of them. The findings from this analysis would lead to improvements into policy making, specifically in relation to housing, by reducing issues caused by increasing housing prices and rental fees. Besides, this study also provides additional information for policy makers to both consider economic results and happiness while making policies that would affect household daily expenses.

The structure of this study is the following. Section 2 provides an elaborate discussion of the existing literature on happiness, and explains how consumption affects happiness. Section 3 discusses the empirical strategy and the utilized dataset. Section 4 presents

results obtained after an empirical analysis. Section 5 consists of discussion and limitations. Lastly, section 5 provides conclusion and possible future studies.

2 Literature review

2.1 Happiness

Happiness is known as positive feelings, good emotions, unforgettable experiences, healthy, enjoyments of life without negative feelings such as anxiety and depression (Bekhet et al., 2008; Levett, 2010; Shaw and Taplin, 2007; Robbins, Francis and Edwards, 2008; Sumngern, Azeredo, Subgranon, Sungvorawongohana and Matos, 2010). Therefore, for centuries, philosophers, psychologists, economists and social scientists are constantly finding ways to explore and measure happiness.

People perceive happiness as the fundamental human aspiration (Bracho, 2005) and most important ultimate goal of human being. (Chiu et al., 2010; Abdel-khalek, 2005). Even though happiness is not always achievable (Levett, 2010; Shaw & Taplin, 2007), it is still meaningful to life (Rosenberg, 2010; Abdelkhalek, 2005), however happiness cannot be transferred (Tashi, 2005). Happiness extensively refers as the enjoyment, satisfaction, meaningfulness, quality of life, achievement of desire in the life of human being (Gray, Rukumnuaykit, kittisuksathit, and Thongthai, 2008; Robbins et al., 2008; Sumngern et al., 2010; Veenhoven, 2008).

Within economics, utility is a primary concept to interpreting happiness. Economists believe that people can make choices and decisions to achieve highest happiness, therefore, utility reveals people's preference over a range of choice set (Frank, 2002; Varian, 2006). However, it has been found that people are not always ration to make utility maximising decisions, as in the reality, people are not always informed with all information and options they would need to make the best possible decision (Simon, 1959).

In order to have a better understanding of utility, Kahneman and Thaler (2006) redefine utility as expected utility and experience utility. In this context, expected utility is the future expected benefit associated with consumption experience, and experienced utility is people's actual experience of their consumptions. Kahneman and Thaler (2006) find that experienced utility is the ultimate effect on happiness. Mis-predicting utility between expected and experienced utility causes the loss of happiness (Frey and Stutzer, 2014).

Subsequently, a new measurement of utility and happiness is introduced. Economists start to investigate subjective wellbeing by examining happiness instead of by revealing preferences (Dolan and White, 2007). The new development provides broader research possibilities, as it reflects not only a general happiness, but also expected and experienced happiness (Rabin 1998, Di Tella et al., 2003).

Subjective well-being (SWB)

Subjective well-being is firstly introduced by psychologist Dierner (1984). Early research on subjective well-being is mainly devoted to what and how they experience lives in positive or negative ways (Ahuvia 2008; Biswas-Diener et al. 2004; Diener,1984; Diener, 2000).Correspondingly, by now, an established body of literature employs subjective measures of well-being to investigate the content behind subjective well-being and to determine what makes people happy (Diener, 2000). Thereafter, an increasing concern to the reliability and validity of subjective well-being measures is proposed by researchers.

In general, the reliability of an indicator is defined as its overall quality, such as its consistency and ability to obtain consistent results in repeated tests. The most outstanding feature of reliability is the test-retest correlation of the specific measure under scrutiny. The most well-known challenge to value happiness and measure subjective well being concerns various situations, circumstances and environment change, such as income, unemployment and weather change. For instance, Di Tella et al. (2003) state that self-reported happiness is scaled and adjusted with the increase of income. Lucas et al. (2005) show that unemployed individuals never report the same levels of life satisfactions even when they are employed. Most importantly, weathers – whether it is rainy or sunny – have a significant impact on the level of subjective well-being people report (Schwarz and Strack, 1999). Such effects are obviously an important weakness of SWB measures and, in fact, survey data in general (Bertrand and Mullainathan, 2001).

It is important to realise that test-retest correlation is not only substantially influenced by collected statistics such as education, income and the lag between times of asking (e.g. one hour, two weeks), but also, and more importantly, by the specific measurement scale used. It is well-known that minor differences in circumstances and technical

features of the specific questionnaire used, affect the reported level of SWB. Not surprisingly, the more advanced measures such as multi-item questionnaires produce more reliable SWB scores (Schwarz and Strack, 1999).

Unlike reliability, validity refers to the actual meaning of a term or construct, is the extent to which an indicator actually captures the underlying concept that it purports to measure, in this case SWB (Larsen and Fredrickson, 1999). That is, a measure has construct validity if it indeed is able to capture the construct, which is the subjective well-being in this case. While a range of issues could place limits on the validity of subjective measures of well-being. For example, Bertrand and Mullainathan (2001) state that individuals tend to overstate the level of their perceived happiness, as they are not fully aware of their actual situations; these exaggerated scores lead to unobserved bias in the research analysis. Additionally, Diener et al.(1999) argue that cultural factors and cross-country comparisons of average levels of subjective well-being substantively bias multivariate analysis, because happiness meant differently across countries and cultures (Diener et al., 1999). Therefore, Di Tella and MacCulloch (2006) claim that these stated validity-concerned issues are sources of potential biased subjective well-being results, which cannot truly reflect happiness (Di Tella and MacCulloch, 2006).

Indeed, validity is an important issue measuring subjective well-being, nevertheless large populations and samples are a way to address possible problems influencing the level of subjective well-being (Di Tella and MacCulloch, 2006). The conclusion in the majority of the studies is that subjective measures of well-being perform well on the various dimensions of validity (Di Tella and MacCulloch, 2006, Diener, 1994; Diener et al., 1999; Frey and Stutzer, 2002; Kahneman and Krueger, 2006; Nettle and Layard, 2005). Meanwhile, most people are actually able to perceive their own happiness (Veenhoven, 2008), and self-reported subjective well-being can reflect their true happiness and quality of life (Veenhoven,2008; OECD, 2011; 2013).

In many happiness studies, subjective well-being and life satisfaction are used interchangeably (Veenhoven, 2005; Levett, 2010; Bekhet et al.,2008). However, it is incorrect and there is much more about subjective wellbeing (OECD, 2013). It is

therefore essential to have a clear concept for subjective wellbeing, happiness and life satisfaction.

According to OECD (2013), subjective well-being takes a definition as "*good mental states, including all evaluation that people make of their life, positive and negative and the affective reactions of people to their experiences*" (p. 29). Within this definition, subjective wellbeing has a broader concept integrating both life quality and happiness. Supportively, Stiglitz et al. (2009) state that the measures of subjective well-being provide a key information about life quality, life evaluations, and hedonic experiences (Stiglitz et al., 2009). To be more specifically, Diener, Lucas, and Oishi (2002) state that subjective well-being should be defined into cognitive and affective aspects. The former aspect is life satisfaction, which defines as how much a person is satisfied about their life(Diener, 1994; Stanca and Veenhoven, 2015), the latter one is happiness, which is the net effect of positive emotions brings to people(Diener, 1994). Additionally, in the psychological research, there is a clear aspect of subjective wellbeing on psychological processes, or eudemonic part of subjective wellbeing or flourishing (Huppert et all., 2009; OECD, 2013). Eudemonic well-being reflects social engagement, sense of purpose, competence and goals (OECD,2013).

Unlike cognitive aspect of subjective wellbeing, happiness, as the affective subjective wellbeing, captures people's feelings experienced from various activities and events (Diener, 1994). Consumption activities are inevitable daily activities enable people to obtain different experience and feelings (Ramsoy, 2014). From this perspective, happiness or affective aspect of subjective wellbeing serves better for this study, because the purpose of the study is to examine the relation between consumption and happiness.

Measurement of happiness is essential after discussing the exact meaning of happiness and subjective well-being. Generally, happiness or subjective well-being is measured by self-reported surveys (Graham, 2015). In which, life satisfaction is measured by questions, such as: "Taking things all together, how satisfied you are these days – would you describe it as dissatisfied, satisfied or not too satisfied?" (Gurin, Veroff, & Feld, 1960). Individuals choose one from: "Not at all satisfied", "Not very satisfied", "Fairly satisfied" and "Very satisfied" (Gurin, Veroff, & Feld, 1960). While, happiness is

measured commonly, for instant, based on questions or questionnaires:"All things considered, how would you describe these days – would you feel you are very happy, pretty happy, or not too happy these days?" Answers are ranging normally from "Very happy" to "Not happy at all".

The paper focuses on the measurement of overall happiness or affective part of subjective wellbeing. An eleven-scale measure of happiness is utilized. The question that is asked to the participants is "Overall, how happy would you say you are?" Responses were measured on an 11-point scale of happiness ranging from 0 (totally unhappy) to 10 (totally happy).

Although, the survey based subjective measures of wellbeing is not perfect, it has its advantages in examining happiness compared to utility measures. For example the measurement of happiness or life satisfaction directly asks people questions, instead of observe people choices to assume their preference. Secondly, it measures a broader concept, including both levels of experienced and expected happiness, as the experienced happiness is more likely to be measured by surveys (Rabin 1998, Di Tella et al., 2003).

Moreover, as shown in a vast number of studies, many demographic factors, such as health conditions, income levels, education, unemployment levels and social behaviour are key determinates of subjective wellbeing (De Neve, Diener and Xuereb, 2013; Dolan, Peasgood and White, 2008). Therefore, in this study, the analysis will also control for demographic and personality factors, such as age, gender, education, civil status, income, health and unemployment, have being found to be related to happiness and subjective wellbeing (Dolan et al., 2007; Busseri et al. 2009).

2.2 Consumption and happiness

The question "Does money buy happiness?" has been argued decades across different realms by economists, psychologists, and social scientists (Dunn, Gilbert, and Wilson, 2011; Dunn and Norton, 2013; Easterlin, 2003; Hsee et al., 2009; Labroo and Mukhopadhyay, 2009; Labroo and Patrick, 2009; Liu and Aaker, 2008; Lyubomirsky, Sheldon, and Schkade , 2005; Mogilner, 2010; Raghunathan and Corfman, 2006).

One of the very first studies on happiness and income is conducted by Easterlin (1974), revealing the paradox in the relationship between income and happiness. Although money can bring happiness, this effect seems to be diminished at a certain level of income (Myers, 2000). This can be explained by the adjustments people made in adaptation, as people's wants and desires grow with their increasing income (Easterlin, 1974; Diener and Biswas-Diener, 2002). Supportively, an extensive literature of empirical and theoretical papers that have been written on the relationship on income and happiness find that there is indeed a significant but weak relationship between the two (Clark et al. 2008; Stevenson and Wolfers 2008; Stanca 2010). This also brings a fundamental question whether income is a good estimation of happiness.

Despite money and happiness have been interested from researchers across disciplines, there is still much to learn about the topic. For instance, studies find that positive purchasing experience is positively associated with enduring happiness (Howell and Hill, 2009; Nicolao, Irwin, and Goodman, 2009; Van Boven and Gilovich, 2003; Tkach and Lyubomirsky, 2006), however, little studies are conducted on the effect of different consumption expenditures on happiness.

The possible explanation is that a large number of empirical studies explore the relations between consumption and happiness interchangeably uses income as a proxy of consumption (Ahuvia, 2002). Many studies equate income with consumption automatically, assuming that income fully reflects individuals purchasing behaviours and that it fully funds all consumption activities (Clark et al., 2008; Dolan, Peasgood, and White, 2008; MacDonald and Douthitt, 1992). Evidently, consumption and income are two different concepts (Atkinson, 1998; Cutler and Katz, 1991; Headey et al., 2008). Obviously, when it comes to explaining happiness, not only how much people earn matters, but also how do people spend their incomes on matters. Therefore, it brings a fundamental question: whether income is a good estimation of happiness or is it income that has the real effect on happiness?

Headey et al. (2008) note that consumption expenditure compared to income has its superiority examining individuals' happiness and subjective well-being. First of all, consumption compared to disposable income directly reveals households purchasing behaviours, and thus, directly reflects the effect of different consumption choices on

leading to happiness (DeLeire and Kalil 2010). In this respect, income only reflects the overall absolute amount a person earns, while it does not capture any information of the amount a person spends on different kinds of goods and services. By contract, consumption expenditure data obviously make distinctions between different types of consumption.

Furthermore, income is indeed a primary resource to finance daily consumption activities, and it is needed to spend on different services and goods. However, instead of income, the additional incomes generated by borrowings, savings and investments are also inevitable financing sources, especially in low-income families, borrowing playing a great role in household's consumption (Noll and Weick, 2015).

Referring to the relevant economic theory and the empirical researches of consumption expenditures on subjective well-being, this study mainly focuses on two aspects of consumption, which are absolute level of consumption expenditures and categories of consumption expenditures. In the following section, we address how consumption expenditures actually affect the subjective well-being.

Empirically, few studies providing new empirical evidence on the relationship between the composition of consumption and happiness. Duesenberry (1949) conducts one of the first studies, he suggests that consumption of certain conspicuous goods and services could increase happiness through increasing social status.

DeLeire and Kalil (2010) investigate the effect of different consumption categories on happiness among American population over the age of 50 in the year of 2006. They make use of cross-sectional data, which is acquired from the Health and Retirement Study (HRS).the paper investigates the role played by expenditures on leisure, durables, charity, personal care, cloth, health care, food, utilities and housing, and vehicles. The findings indicate that only expenditures on leisure are identified as significant and positive determinants of happiness, while expenditures on other categories are not significantly related to life satisfaction.

Noll and Weick (2015) focus on the effects of the level and composition of consumption on subjective well-being (happiness), using the survey from the German Socio-Economic Panel (SOEP) conducted in 2010 among German households. The study investigates different sets of consumption components from different domains. The

results indicate that total consumption expenditures positively associated with life satisfaction. In particular, expenditures on clothing and leisure have significant positive impact on subjective well-being, while expenditures on food and housing are not significantly associated with life satisfaction.

Wang, Cheng and Smyth (2017) examine the association between consumption and income in China. They use cross-sectional data from 2010, 2012 and 2014 waves of China Family Panel Studies (CFPS). The finding shows that total consumption expenditures have a positive and significant effect on happiness controlling for personal and demographical factors. The size of the effect is substantial and only marginally lower than that of household income. When it comes to the consumption categories, expenditures that increase the social interaction increase happiness, theses expenditures are expenditure on fitness, transportation, education and entertainment.

Referring to the relevant empirical research and economic theory on happiness, this study generates several hypotheses relating to consumption and happiness. First of all, this study has the emphasis on the effect of total consumption expenditure on happiness. According to the neoclassical economic theory, there is indeed a direct positive association between consumption and happiness (Ackerman, 1997; Noll and Weick, 2015). From this perspective, individual perceives higher happiness by making higher level of consumption (Guillen-Royo, 2007; Ackerman, 1997).

Therefore the first hypothesis is generated:

H1: Higher level of total consumption is positively associated with happiness.

Turning our attention from total consumption spending to composition of spending, it is not only the level of consumption that matters, but also its content (Diener, 2002). From this point of views, happiness affected not only by how much people consume, but also by how much people spend on different types of goods and services.

A large body of researches suggests that people with more social interactions are happier (Frey, 2008; Haller and Hadler, 2006; Diener and Biswas-Diener 2002; Putnam 2000). In other words, consumption can produce happiness if it strengthens social relationships. For instance, holiday and leisure increase perceived happiness, because spending time with families and friends are more likely to facilitate social

connectedness. Several studies have found that increased social interaction is associated with higher happiness (DeLeire and Kalil, 2010; Carter and Gilovich, 2014). From this perspective, economists suggest that people should spend more on experiential goods, such as entertainment and holiday, to increase happiness (Frank, 1985).The explanation for advocating this is that experiential goods enhance social bonds. Therefore, the second hypothesis:

H2: Higher expenditure on holiday brings higher happiness.

Commuting is a daily activity for most of us, easily influencing the quality of life. The influence of commuting on happiness has been discussed from both sides. Few studies have demonstrated that commuting, such as visit friends and family, increases social connections, and therefore leads to a higher level of happiness (DeLeire and Kalil, 2010). However, most researches on this topic have long argued the negative effect of commuting on happiness (Koslowsky et al. ,1995; Kahneman et al. ,2004; Dolan et al., 2006; Frey and Stutzer, 2014). In particularly, studies find that regular commuting to work leads to unhappiness (Frey and Stutzer, 2008). As most of time, regular commuting brings boredom, anxiety and isolation, these negative feelings lead to unhappiness (Gatersleben and Uzzell, 2007; Koslowsky et al., 1995).

Following is the third hypothesis of the study:

H3: Higher expenditure on transport is negatively related to happiness.

In addition, Diener (2002) argues that increase in expenditure on food and housing may increase happiness by reducing material hardship or making life easier. However, when it comes to developed countries, the negative impact of increased food expenditures are more likely caused by inflation, and increased housing expenditures signal deterioration in living standards. Therefore, the following two hypotheses are tested:

H4: higher expenditure on food is negatively related to happiness.

H5: Higher expenditure on housing is negatively related to happiness.

Lastly, the final hypothesis rests on the interconnection of income and consumption on happiness. The concept of income-spending difference refers to the difference between income and consumption, thus emphasizes the importance of net income-expenditure

effect on happiness. The concept is of interests as it captures individual's financial situation and spending pattern in general regardless of absolute level of income and total expenditure. The positive income-spending gap (income is higher than spending) reflects the good financial situation or savings, and negative income-spending gap (income is lower than spending) refers to the financial stress or debts.

Ahuvia and Friedman (1998) argue the negative impact of heavy consumer debt on happiness regardless of income level[1]. Noll and Weick (2015) suggest that current income does not capture household's consumption expenses, as households spend current incomes also on savings and investments, the positive gap between income and spending indicates a good financial situation and direction of a household.

Therefore, the last hypothesis generates as follows:

H6: if income is higher than expenditure, people report to be more happy; if income is lower than expenditure, people report to be less happy.

The gap between income and expenditures affects happiness, the positive gap between income and expenditure levels (or expenditure is lower than income) induces the higher level of happiness, compared to the negative gap (expenditure is higher than income).

In conclusion, previous empirical researches and theoretical studies from different perspectives have noted the complexity of consumption and the superiority of consumption data compared to income. Consumption data provides a better understanding of its effect on happiness, as it allows making distinction between different goods and services. It is expected that by adding different types of consumption, the relationship between consumption and happiness will be better explored. The study is to investigate the effect of each type of consumption on happiness, and eventually to answer our research question.

[1]Heavy debts put people into a so-called psychological 'debtor's prison', which brings guilt, unpleasant, restriction and low self-esteem (see: Bernthal, Crockett, and Rose, 2005).

3 Data and Methodology

3.1 Data and variables

To analyse the relationship between consumption and happiness, this study makes use of the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) data in the year of 2017. In the LISS data, individuals report on several aspects of their life, including their happiness, total income, and consumption. The LISS panel collects survey responses from roughly 9.000 respondents on a monthly basis; it is regarded as a representative sample of the Dutch population. This data is supplemented with extensive information about the individuals' health status and several demographic variables such as age, gender, civil status and education[2].

Happiness

In this research, happiness as dependent variable measured by the survey question: Overall, how happy would you say you are? Responses were measured on an 11-point scale of happiness ranging from 0 (totally unhappy) to 10 (totally happy).

Consumption

The key independent variable in this study is the measure of consumption expenditure. We use two measures to measure consumption: income-consumption gaps and consumption categories.

Income-expenditure gaps represent the differences between disposable income and consumption expenditure. The variable is of interests as it captures individual's financial situation and spending pattern in general regardless of absolute income and absolute total expenditure. To measure this variable, participants respond to the survey question: Consider the last 12 months. Was your household expenditure more than, equal to, or less than your household income? Responses differentiate respondents to three categories, consisting of 1 (expenditure was higher than the income), 2 (expenditure was approximately equal to the income) and 3 (expenditure was lower than the income).

[2] The specific LISS panels concern Panel 1 ('Background Variables'). Only the observations that contain information for all the relevant variables are kept.

Turning to the composition of consumption expenditures, the LISS collected information on five categories of consumption expenditure. Respondents asked to fill in the absolute amount of consumption, which measured in thousands of euro. The five categories of consumption included in this study are *Housing and utility*, *Grocery, Transport*, *Holliday and the other*[3].

Housing and utility: Mortgage, rent, electricity, water, heating fuel for the home, telephone, cable, internet, homeowner's or renter's insurance, home repairs and maintenance, household furnishing and equipment.

Grocery: Food and drinks, including alcohol, purchased in grocery or other stores.

Transport: public transportation, own car, gasoline/diesel and maintenance, but non insurance

Holliday and leisure: Trips and vacations, tickets to movies, sports events, and performing arts, sports (including gym membership and exercise equipment), hobbies, and leisure equipment.

Other: all other expenses not for yourself and your family member.

Overall, *total expenditure* is also included in this study by simply adding up all five expenditures we have previously mentioned. All expenditure categories are measured in thousands of euro, subsequently, logarithms are taken for all consumption expenditures in order to keep stationary for the later analysis.

[3] See Table 1 for the specific categories and their frequencies.

Control Variables

In our analysis, we included control variables that confound the relations between consumption and happiness regarded as important determinants of happiness (Layard 2005).The included demographic characteristics are a respondent's gender, age, civil status, occupation, household income and the level of education. Age and income are recorded as continuous variables, while the rests are all categorical variables.

Gender is a dummy variable which takes value 0 if the person is male and 1 otherwise.

Occupation is recoded into seven groups and individuals are categorized as: Employed, Self-employed, Job seeker follow job loss, Student, Retirement, Work Disability, and Unemployed.

Marital status is recoded into 5 different groups, they are: Married, Separated, Divorced, Widow, and Never Married

Education variable recoded into four subgroups based on Dutch Education System, they are: Vmbo, Havo, Mbo, Hbo, and Wo. Vmbo in general is secondary high school, Habo means senior high school, Mbo is skilled training school, Hbo means university of applied sciences, and Wo means research university.

Table 1 describes more information on the variables in this study.

Table 1: Description of the Variables in the Study

Variable name	Measure	Responds	Scales
Dependent variables			
Happiness	On the whole, how happy would you say you are?	0 is equal to "totally unhappy" and 10 to "totally happy".	0-10
Independent variables			
Consumption level[4] (Model I)	Consider the last 12 months. Was your household expenditure more than, equal to, or less than your household income?	1is expenditure was higher than the income, 2 is expenditure was approximately equal to the income and 3 is expenditure was lower than the income	1-3
Sub-consumption (Model II)	Consider the last 12 months. For each type of expenditure, how many euros you spend on this per month, on average.	Housing and utility, Grocery, Transport, Holliday and leisure, and Other.	Continuous
Control variables			
Gender	Gender	Female/Male	0-1
Age	Age	16-99 years old	Continuous
Civil status	Civil status	Married, Separated, Divorced, Widow, Never	1-5
Occupation	Occupation	Employed, Self-employed, Job seeker follow job loss, Student, Retirement, Work Disability, Unemployed	1-7
Education	Highest education	Vmbo, Havo, Mbo, Hbo, Wo	1-5
Income	Income	Net total gross income	Continuous

[4] The consumption level is also the concept of income-spending gaps used in the later analysis.

3.2 Description

This section discusses the descriptive statistics of the dataset and summary statistics for happiness. The summary statistics and the correlation matrix of the variables included in the analysis can be found in Tables 3 and 4, respectively.

The dataset contains 4474 observations from the LISS survey in year 2017[5] , however expenditures only have 1450 observations due to missing responses. Table 1 is the description of monthly expenditures and income in the Netherlands. As Table 1 shows, Dutch residents earned averagely 3494.691 euro, and spent 2298.291 euro in 2017. The amount spent on house and utilities accounts for 42.5% of total expenditure is the highest expenditure item among these five consumption expenditure categories. Expenditure on food at home or grocery accounts for 18% of total expenditure as the third high expenditure item. House and utilities, transport, and food at home were consumed usually driven by basic needs. Holiday (12.8%) and other expenditures (7.1%) are not usually bought motivated by basic needs.

Table 2: Monthly income and expenditures

	Obs.	Mean	% of total expenditure
Expenditure on			
House and utilities	1450	976.345	42.5%
Transport	1450	170.929	7.4%
Holiday	1450	278.136	12,1%
Grocery	1450	414.392	18.0%
Others	1450	458.488	19.9%
Total expenditure	1450	2298.291	
Income	4474	3494.691	

Database: LISS survey 2017

[5] The Dutch Longitudinal Internet Studies for the Social Sciences (LISS) data for the year 2017. In the LISS data, individuals report on several aspects of their life, including their happiness, total income, and consumption. The LISS panel consists of roughly 9.000 individuals who complete Internet surveys on a monthly basis. Besides completing these surveys, for which individuals are reimbursed, incentivized experiments are conducted regularly among the respondents. Considering observable demographic variables, the LISS panel is regarded as a representative sample of the Dutch population.

Table 3 provides the descriptive statistics of the dataset. On average, the happiness level reported by the observation population is 7.4 within a range of 0 to 10. Table 2 shows that the proportion of female in the population is 53%, which is 6%-points higher than male. The average age of the population is 54 years old with the youngest age is 16 while the oldest age is 99 years old. The majority of the population is married people, employed and have university or college degree. The mean of consumption level is 2.281, meaning that the income covers expenditures for majority of Dutch residents.

Table 3: Descriptive Statistics

	Obs.	Mean	S.D	Min	Max
Dependent variable					
Happiness	4474	7.353	1.463	0	10
Independent variables					
Consumption level[6]	4474	2.281	0.698	1	3
House (ln)	1450	6.592	0.694	2.398	12.040
Transport(ln)	1450	4.896	0.840	1.098	8.517
Holiday (ln)	1450	5.475	0.733	0	8.594
Grocery(ln)	1450	5.884	0.588	3.135	8.854
Other (ln)	1450	5.071	0.953	0.693	8.594
Total expenditure (ln)	1450	7.650	0.451	5.204	12.257
Control variables					
Gender	4474	0.529	0.500	0	1
Age	4474	54.103	16.776	16	99
Civil status	4474	2.532	1.758	1	5
Employment	4474	2.980	3.934	1	7
Education	4474	3.987	1.547	1	5
Income(ln)	4474	8.159	0.652	4.500	12.748

Note: Continuous variables, such as expenditures and income, logarithms are taken in order to keep stationary.

[6] The consumption level is also the concept of income-spending gaps used in the later analysis.1 represents "expenditure was higher than the income", 2 represents " expenditure was approximately equal to the income" and 3 represents " expenditure was lower than the income".

Table 4 displays the correlation between the variables in our model. In line with the discussion in the happiness statistics summary, it can be seen that consumption is positively related to happiness, while housing is negatively correlated to happiness. Income and total expenditure are both positively related to happiness. In overall, there is no high correlation among these variables,

Table 4: Correlation matrix of all variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Happiness							
(2) Expense level[7]	0.207						
(3) Total cost	0.038	-0.005					
(4) Income	0.180	0.193	0.437				
(5) Gender	-0.044	-0.012	-0.012	-0.078			
(6) Age	0.049	-0.022	-0.267	-0.189	-0.154		
(7) Civil status	-0.033	0.036	0.051	-0.005	0.074	-0.458	
(8) Occupation	-0.019	-0.090	-0.571	-0.346	-0.009	0.634	-0.296
(9) Education	0.100	0.041	0.230	0.297	-0.118	-0.232	0.168
(10) House	-0.077	-0.046	0.732	0.308	0.019	-0.395	0.168
(11) Transport	0074	0.040	0.446	0.273	-0.116	-0.103	-0.001
(12) Holiday	0.213	0.139	0.420	0.323	-0.058	-0.007	-0.028
(13) Grocery	0.018	0.013	0.483	0.223	0.034	0.035	-0.152
(14)Other	0.068	-0.017	0.434	0.239	-0.059	-0.037	-0.064

	(8)	(9)	(10)	(11)	(12)	(13)
(8) Occupation						
(9) Education	-0.179					
(10) House	-0.330	0.170				
(11) Transport	-0.116	0.181	0.162			
(12) Holiday	-0.057	0.125	0.063	0.294		
(13) Grocery	-0.018	0.076	0.183	0.186	0.271	
(14) Othe	-0.057	0.136	0.132	0.284	0.115	0.319

[7] The expense level is also the concept of income-spending gaps used in the later analysis.

3.3 Empirical strategy

This research is to explore various determinants of happiness. Happiness is a categorical variable measured by 11 scales in this study. In theoretical consideration, ordinary least square regression is not appropriate to analyse categorical outcomes since the BLUE assumptions are not met. One of the most important issues is that the distance between two categories of an ordinal variable might not be equal, and linear regression cannot recognize the minimum and maximum values in an ordinal variable (Winship and Mare, 1984). From this perspective, ordered logit model and probit model superior to linear model in analysing ordinal variable. While, there is an exception, it is possible to apply linear model when ordinal variables are treated as continuous variables and are commonly noted in numerical ascending order (Rhemtulla, Brosseau-Liard, and Savalei, 2012).

One methodological issue is whether to treat the happiness measure as cardinal or ordinal. In this study, happiness as dependent variable yields 11 categorical outcomes from 0 to 10. In this case, the ordinary least square regression (OLS) approach can appropriately perform due to the sufficient number of categories. Rhemtulla, Brosseau-Liard, and Savalei (2012) find that linear model performs proper, when categorical variable has over five categories.

Specifically in happiness research, Ferrer-i-Carbonell and Frijters (2004) confirm that the result of happiness regression is not affected substantially when linear model ordinary least squares (OLS), the performance is as good as ordered logit model and probit model. Ng (2008) also advocates treating happiness measures as cardinal. Therefore this study employees the ordinary least square regression OLS model to make empirical analysis.

To examine the relation between consumption and happiness, we specify the following OLS regression model (Di Tella, MacCulloch, and Oswald 2003; Arampatzi, Burger, and Veenhoven 2015):

Model 1:

$$\text{Happiness}_{it} = \alpha + \beta_1 \text{ Income\_consumption gap}_{it} + \sum \text{Control}_{it} + \mu_i + \varepsilon_{it} \qquad (1)$$

Where, $Happiness_{it}$ is the self report measure of life satisfaction of person i in year t. income _Consumption gap is a dummy variable, which captures whether individual's spending is beyond what he earns or his income(1: expenditure was higher than the income, 2: expenditure was approximately equal to the income, and 3: expenditure was lower than the income). $\sum Control_{it}$ is vector of personal characteristics of each individual and includes gender, age, marital status, occupational status, the level of education, number of children, income and health conditions in year t.

Model 2:

$$Happiness_{it} = \alpha + \beta_1 \text{ Consumption composition}_{it} + \sum Control_{it} + \mu_i + \varepsilon_{it} \qquad (2)$$

Where, $Happiness_{it}$ is the self report measure of life satisfaction of person i in year t. Consumption level captures the amount of different consumption types an individual spends, these consumptions types are house and utility, transportation, food at home, holiday and leisure, and other. $\sum Control_{it}$ is vector of personal characteristics of each individual and includes gender, age, marital status, occupational status, the level of education, number of children, income and health conditions in year t.

4. Results

This section introduces the main empirical results of analysis. This study employs the methodology strategy that introduced in previous section, with the purpose of finding the correct impact of consumption pattern or expenditures on individual's happiness. To analyse the relationship between consumption and happiness, this study makes use of the Dutch Longitudinal Internet Studies for the Social Sciences (LISS) panel for the year 2017. In doing so, we will make use of the Stata software package.

In order to explore the association between and life satisfaction and consumption more thoroughly, we make use of the OLS regressions to conduct the analysis. To this end, a range of different regression models employed to assess the explanatory power and examine the strength of effects; in this case, both income-expenditure gap and specific expenditure categories are examined and reported.

This section will therefore discuss the main empirical results of analysis. Section 4.1 starts with establishing the relations among total expenditure, income and happiness. Section 4.2 examines the relations between income-spending gap and happiness. The relation between specific expenditure categories and happiness is discussed in section 4.3, including a final presentation of analysis.

4.1 Total expenditure and Income

The study first examines the relationship between total consumption expenditure, income and happiness. Table 5 provides estimation results for the simplest models of total expenditure and income on reported happiness. All results show that total income has a significant and positive effect on happiness. This result is consistent with Noll and Weick's (2015) panel findings for Germany.

Column (1) represent the effect of total expenditure or income on individual's happiness, Column (2) establishes the effect of income on individual's happiness, and Column (3) estimates the effect of expenditure and income on subject's happiness by controlling for age, gender, civil status, employment status and education level. Column (1) and (2) concern the base specification, where our interest lies in the coefficient of *total expenditure* (0.092) and *income* (0.519). The variables are both statistically positive, indicating that people who consume more or earn more generally report

happier, although the latter effect is much stronger. Note that the coefficient of *total expenditure* is significant, being supportive of our first hypothesis, higher total expenditure brings higher happiness.

Column (4) shows that income-happiness relation remains after controlling for demographic characteristics[8]. However, the hypothesized total expenditure-happiness relation turns to be negative and statistically insignificant. The finding does not support the stated hypothesis. The inconsistent findings are more likely due to the nature of total expenditure data and restricted datasets. Total expenditure data used in this study is a simple sum of all five categorical expenditures, which obviously do not cover all expenditures incurred. In addition, total consumption is more likely faced with a trade-off situation where some consumption components positively associated with happiness and others are negatively associated with happiness, eliminating the strength between the relationship of total expenditure and income.

Worth mentioning, the coefficient of *Female* is positive and statistically significant, suggesting that females are happier than males and report averagely a 0.12-point higher happiness score (on a scale from 0 to 10). Civil status-happiness relation also draws attention, there appears to be a strong association between civil status and happiness, the respondents who are married rate generally higher happiness scores compared to the respondents who are separated or divorced do, and the respondents who are window do. We observe that separation mainly drives the variation in happiness.

While we do not observe that self-employment have a significant effect on happiness, we find a significant effect of being students, job seekers following job loss, retirement and work disability on happiness. We observe that work disability has the largest effect on pulling down happiness (-1.21).When education levels are considered, we find that university students are happier.

[8] The categorical experiment and demographic characteristics are simply included as dummies; age is included linearly.

Table 5: Total expenditure, income and happiness

	(1)	(2)	(3)	(4)
Total expenditure	0.092***		0.027	-0.009
	(0.030)		(0.029)	(0.032)
Income		0.519***	0.513***	0.444***
		(0.031)	(0.045)	(0.047)
Female				0.119**
				(0.050)
Age				0.008***
				(0.003)
Married				Reference
Separated				-1.449***
				(0.541)
Divorced				-0.440***
				(0.104)
Widow				-0.579***
				(0.143)
Never married				-0.029
				(0.076)
Self-employed				0.157
				(0.118)
Job seeker				-0.506***
				(0.149)
Student				0.295**
				(0.130)
Retirement				0.205**
				(0.086)
Work disability				-1.201***
				(0.135)
Unemployed				-0.311
				(0.652)
Vmbo				0.264**
				(0.134)
Havo				0.244*
				(0.141)
Mbo				0.341**
				(0.133)
Hbo				0.456***
				(0.135)
Wo				0.479***
				(0.146)
Constant	6.800***	3.090***	3.047***	3.072***
	(0.221)	(0.257)	(0.393)	(0.479)

Observations	3037	3037	3037	3037
R-squared	0.003	0.054	0.144	0.157
Adj R-squared	0.003	0.054	0.137	0.147

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively. In order to verify multicollinearity, a VIF test is conducted. The results of VIF shown that the variables used in this analysis are suffering from multicollinearity problem. More detailed results represented in Appendix A8 Table 4 Model (4).

4.2 Income-spending gaps

Table 6 provides results for the models of relation between income-spending gaps and subjective wellbeing. Income-spending gap is the independent variable asked by the question of 'Think about your total expenditure over the last 12 months', where three potential responses are provided: "expenditure was lower than income", "expenditure was equal to income", and "expenditure was higher than income". The expenditure level *Expenditure was higher than income* is the reference category in all of the depicted models. Column (1) concerns the base specification. Peculiarly, the coefficient of *Expenditure was equal to income* (0.515) is significantly at the 1% significance level and larger than *Expenditure was higher than income* (1.119), which is also statistically significant at the 1% significance levels. Both coefficients are found to be positive, indicating that spend less than income (expenditure was lower than income) and that spend equal to income (expenditure was equal to income) increase the reported happiness score by 1.119 and 0.515 points, respectively. Column (2) to (4) shows that the positive significant relation between expenditure level and happiness association remains after controlling for total expenditure, income, personal and demographic characteristics[9]. Examining column (3) and (4) we find that the same variables to be significant, and the estimated coefficients of these variables display only minor divergences between models.

As demonstrated in the study of Noll and Weick (2010), and DeLeire and Kalil (2010 , most of demographic and personal factors are related to happiness, as table 4 reveals that most estimates of civil status, education level, gender, health and employment situation turn out to be strong predictors of happiness.

[9] The categorical personal and demographic characteristics are simply included as dummy variables, except for age which is included as continuous variable.

The fact that subject's happiness may not only influenced by the level of consumption expenditures. We are also interested in the effect of the amount of money spent on different kinds of goods and services on happiness. This study also examine we also the effect of different consumption expenditure categories on happiness. The result is shown in the next stage of the regression analysis.

Table 6: Income-spending gaps and happiness

Dependent: happiness	(1)	(2)	(3)	(4)
Expenditure:				
was higher than income	Reference	Reference	Reference	Reference
was equal to income				
	0.515***	0.447***	0.437***	0.481***
was lower than income	(0.064)	(0.059)	(0.061)	(0.076)
	1.119***	0.920***	0.831***	0.862***
Total expenditure	(0.064)	(0.060)	(0.062)	(0.076)
				-0.016
Income				(0.370)
			0.344***	0.383***
Female			(0.038)	(0.052)
		0.154***	0.141***	0.090*
Age		(0.041)	(0.042)	(0.051)
		0.009***	0.008***	0.005*
Separated		(0.002)	(0.002)	(0.003)
		-0.801***	-0.683**	-1.102**
Divorced		(0.285)	(0.299)	(0.527)
		-0.553***	-0.399***	-0.418***
Widow		(0.064)	(0.067)	(0.527)
		-0.527***	-0.397***	-0.608***
Never married		(0.083)	(0.085)	(0.143)
		-0.245***	-0.092	-0.019
Self-employed		(0.054)	(0.568)	(0.077)
		0.201**	0.255**	0.203*
Job seeker follow job loss		(0.097)	(0.102)	(0.117)
Student		-0.511***	-0.455***	-0.404***
		(0.122)	(0.127)	(0.148)
Retirement		0.467***	0.743***	0.508***
		(0.110)	(0.122)	(0.173)
Work disability		0.064	0.203***	0.265***
		(0.069)	(0.071)	(0.085)
Unemployed		-1.468***	-1.270***	-1.090***
		(0.099)	(0.104)	(0.134)
Vmbo		-1.103***	-0.953***	-0.183
		(0.340)	(0.357)	(0.634)
Havo		0.311***	0.279**	0.264**

		(0.112)	(0.112)	(0.142)
Mbo		0.354***	0.316**	0.278**
		(0.121)	(0.122)	(0.153)
Hbo		0.369***	0.346***	0.357***
		(0.112)	(0.113)	(0.141)
Wo		0.634***	0.528***	0.443***
		(0.112)	(0.114)	(0.143)
Constant		0.709***	0.572***	0.447***
		(0.120)	(0.121)	(0.154)
	6.655***	5.962***	3.220***	3.197***
	(0.056)	(0.159)	(0.349)	(0.507)
Observations	4474	4474	4470	4470
R-squared	0.074	0.171	0.187	0.162
Adj R-squared	0.074	0.166	0.181	0.153

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively. In order to verify multicollinearity, a VIF test is conducted. The results of VIF shown that the variables used in this analysis are suffering from multicollinearity problem. More detailed results represented in Appendix A8 Table 5 Model (4).

4.3 Consumption categories

Table 7 provides results for the models that replace the total expenditures by the amount spent in five classes of goods and services: house and utility, transport, holiday, food eating at home and other. The expenditures on these categories of goods and services are taken logarithm in our analysis. We find mixed evidence concerning the sign of the relationship between consumption categories and happiness in all models. Column (1), is the base specification, shows that the only housing and holiday expenditures are significant, peculiarly, the coefficient of *holiday* (0.256) is significantly positive at the 1% significance level and larger than *House and Utility* (-0.142), which is also significant at the 1% significance levels but negative. The results suggest that people spend more on trip and holiday generally report 0.256 points higher in happiness score, but that more spending on house and utility decreases subject's happiness by 0.142 points on a eleven-scale. However, statistically in our results, happiness is not significantly influenced by expenditures on transport, food eating at home and other expenditures. Weak negative effects of insignificance are found for expenditures on food at home. While the amount of expenditures spent on transport, and other expenses are positively correlated with happiness according to our results.

Column (2) and (3) show a positive significant relation between holiday expenditures and happiness, this association remains after controlling for income, personal and demographic characteristics[10]. Examining column (2) and (3), we find that the same significant variables display only minor divergences between models after controlling for demographic characteristics.

Column (2) includes household income as an additional predictor variable into the regression model results in only minor changes to the magnitude of the regression coefficients. The basic pattern of associations also remains roughly unchanged when the whole set of potential relevant control variables are added. Column (3) controls for household income and a number of other predictor variables, but the effect of the amount spent in holiday expenditure category on happiness is diminished, but the amount spent in housing expenditure category on happiness is increased.

Table 7: Consumption components and happiness

	(1)	(2)	(3)
House and utility	-0.142***	-0.225***	-0.178***
	(0.048)	(0.047)	(0.051)
Transport	0.018	-0.011	-0.003
	(0.042)	(0.485)	(0.043)
Holiday	0.256***	0.212***	0.182***
	(0.036)	(0.037)	(0.036)
Grocery	-0.008	-0.033	-0.041
	(0.061)	(0.061)	(0.061)
Other expenditure	0.028	0.101	0.017
	(0.036)	(0.037)	(0.036)
Income		0.379***	0.326***
		(0.728)	(0.078)
Female			0.014
			(0.068)
Age			0.001
			(0.003)
Married			Reference
Separated			-1.313*
			(0.786)
Divorced			-0.176
			(0.135)
Widow			-0.227
			(0.229)
Never married			-0.025

[10] The categorical personal and demographic characteristics are simply included as dummy variables, except for age which is included as continuous variable.

			(0.100)
Employed			Reference
Self-employed			0.103
			(0.395)
Job seeker			-0.300
			(0.206)
Student			0.228
			(0.308)
Retirement			0.141
			(0.109)
Work disability			-1.211***
			(0.179)
Unemployed			-0.805
			(0.640)
Vmbo			0.475**
			(0.233)
Havo			0.206
			(0.241)
Mbo			0.426*
			(0.230)
Hbo			0.513**
			(0.230)
Wo			0.615**
			(0.242)
Constant	6.828***	4.562***	4.557***
	(0.459)	(0.631)	(0.745)
Observations	1260	1260	1260
R-squared	0.056	0.076	0.079
Adj R-squared	0.051	0.070	0.077

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively. In order to verify multicollinearity, a VIF test is conducted. The results of VIF shown that the variables used in this analysis are suffering from multicollinearity problem. More detailed results represented in Appendix A8 Table 6 Model (3).

The positive effect of expenditures spent on holiday on happiness confirm the results of previous research, though the insignificant association with transport, and other expenditures is not in accordance with our expectations. As previously mentioned, the results of our previous research on consumption and happiness suggest that only holiday consumption expenditures is positively related to happiness (DeLeire and Kalil, 2010). Noll and Weick (2005) find that transport and food are basic needs, the total expenditure that is spent on basic needs does not increase with increasing household income, therefore has no effect on happiness. Perez-Truglia (2013) suggests that the expenditure spent on food does not change happiness.

To sum up, the research provides evidence to suggest that happiness is affected not only by total expenditure but also by specific kinds of consumption expenditures. It appears that expenditures on leisure and holiday is associated with higher levels of happiness, that expenditure on housing is negatively associated with happiness, and by contrast that expenditures on transport, and food do not influence happiness significantly. Additionally, individuals with financial stress or debts report less happier compared with those with no financial stress or little financial stress.

5 Discussion and limitations

Although consumption is inevitable for our daily life, there is little research on happiness and consumption. The possible explanation is that a large number of empirical studies explore the relations between consumption and happiness interchangeably uses income as a proxy of consumption (Ahuvia, 2002). Many studies equate income with consumption automatically, assuming that income fully reflects individuals purchasing behaviours and that it fully funds all consumption activities (Clark et al., 2008; Dolan, Peasgood, and White, 2008; MacDonald and Douthitt, 1992).

Evidently, consumption and income are two different concepts (Atkinson, 1998; Cutler and Katz, 1991; Headey et al., 2008). Obviously, when it comes to explaining happiness, not only how much people earn matters, but also how people spend their incomes on matters. Headey et al. (2008) note that consumption expenditure compared to income has its superiority examining individuals' happiness and subjective well-being.

First of all, consumption compared to disposable income directly reveals households purchasing behaviours, and thus, directly reflects the effect of different consumption choices on leading to happiness (DeLeire and Kalil 2010). In this respect, income only reflects the overall absolute amount a person earns, while it does not capture any information of the amount a person spends on different kinds of goods and services. By contract, consumption expenditure data obviously make distinctions between different types of consumption.

Furthermore, income is indeed a primary resource to finance daily consumption activities, and it is needed to spend on different services and goods. However, instead of income, the additional incomes generated by borrowings, savings and investments are also inevitable financing sources, especially in low-income families, borrowing playing a great role in household's consumption (Noll and Weick, 2015). In this light of information, income data do not fully capture all household's consumptions, but expenditure data have its superiority capturing household's consumptions.

Overall, unlike most happiness studies that examine the effect of income, this study particularly looks into the effect of consumption on happiness. Using Dutch representative data, the analysis starts with examining the extent to which consumption

type brings higher happiness. Subsequently, this study examines the extent to which the income – spending gap affects subjective wellbeing. Here, positive income- spending gap (income is higher than spending) represents the good financial situation or savings, and negative income – spending gap (income is lower than spending) refers to the financial stress or debts. In general, Dutch people report to be happy, averagely 7.35 scores in an 11-point scale of happiness ranging from 0 to 10, the finding is consistent with Veenhoven (2015), most people are happy in developed countries.

The study shows that there is a weak positive relationship between total expenditure and happiness, and that the association turns to be insignificant and negative after controlling for income and demographic factors. The inconsistent findings are more likely due to the nature of total expenditure data and restricted datasets. Total expenditure data used in this study is a simple sum of all five categorical expenditures, which obviously do not cover all expenditures incurred. Additionally, as what have been shown, the analysis has revealed that different consumption activities affect happiness differently across Dutch population. From this perspective, total consumption data is more likely faced with a trade-off situation where some consumption components positively associated with happiness and others are negatively associated with happiness, eliminating the strength between the relationship of total expenditure and income.

More specifically, a significant positive effect is found between leisure and happiness, and a significant negative effect is found between housing and happiness. These findings support previous stated hypotheses. However, the expenditure spent on transportation has insignificant effect on happiness. This insignificant mixed finding is not in line with the hypothesis and can be ascribed to the quality of transport data. This study is only able to obtain the overall transportation expenditure data due to availability. The overall transportation expenditure consists of car ownership, public transportation, public transportation, gasoline and maintenance, and does not allow distinctions to be drawn for different means of transportation.

A wide range studies have indicated that car commuters are happier than public transportation commuters (Mokhtarian and Solomon, 2001; Ettema et al.,2011; Abou-Zeid et al., 2012; Morris and Guerra, 2015; Olsson et al., 2013). Additionally, travelling

purposes and commuting modes are also important factors for pursing happiness. For instance, travelling to visit friends is a pleasant experience, but travelling to work is not(Stutzer and Frey, 2008; Zuzanek and Zuzanek,2014). Travelling with accompany is more pleasant than travelling alone (Ettema et al. ,2012).

This research is subject to the availability of datasets in 2017, the limited wave of datasets prevents the use of panel data, which would explore fixed effects and causality. As more available data in more waves increase sample size and capture dynamics of variables. For example, cross-sectional data only rely on the role of present consumption and happiness, rather than the role of past consumption and happiness. Therefore, the study does not address causality, but associations. Due to the cross-sectional measurement, this study is vulnerable to reverse causality. Because it cannot determine whether a certain consumption category is associated with happiness, or whether happiness is associated with a certain consumption category through its association with leisure expenditure.

Overall, even though expenditure data used in this study set limitations, such as availability of datasets and missing responses, it is still notable that consumption expenditure data is superior to income data and that different consumption components do have different influence on happiness. The study does find a significant association between leisure expenditure and happiness, between housing expenditure and happiness, and between income-spending gaps and happiness.

6 Conclusion

The aim of this paper is to test the relationship between individuals' happiness and consumptions. The aspects of consumptions are total expenditure and consumption components, consumption components consist of the expenditure on housing, transport, food, holiday and other. The study makes use of data from the LISS (Longitudinal Internet Studies for the Social sciences) panel administered by CentERdata (Tilburg University, The Netherlands), and uses the OLS models to explore variations in happiness determinants and effects of consumption on happiness.

The analysis shows that happiness is indeed related to the absolute level of consumption, and that higher total consumption expenditure contributes to higher happiness, this finding is consistent to previous studies. However, the result does not hold after control for personal and demographic characteristics, the relation of total consumption expenditure and happiness turns to be negative, coefficients are statistically insignificant. Note that the evidence for the first hypothesis is insufficient. Additionally, we find that compared to families who spend more than what they earn, those who spend less than what they earn (expenditure is lower than income) increases the reported happiness score by 1.119 points, and those who spend as same as what they earn (expenditure is equal to income) increases the reported score by 0.515 points, The finding is supportive of our hypothesis,

Nevertheless, we find mixed evidence concerning the sign of the relationship between happiness and the specific composition of consumption basket, the study examines consumption basket with five classes of goods and services: house and utility, transport, holiday, food eating at home and other. More specifically, people spend more on trip and holiday generally report 0.256 points higher in happiness score, but more spending on house and utility decreases subject's happiness by 0.142 points on a eleven-scale. Happiness is not significantly influenced by expenditures on transport, food eating at home and other expenditures. The positive relation between holiday and happiness and negative relation between housing and happiness confirm the results of previous research, though the insignificant association with transport, and other expenditures is not in accordance with our expectations. As previously mentioned, the results of our previous research on consumption and happiness suggest that only holiday

consumption expenditures is positively related to happiness (DeLeire and Kalil, 2010). Noll and Weick (2005) find that transport and food are basic needs, the expenditure that is spent on basic needs does not increase with increasing household income, therefore has no effect on happiness.

The future study would explore consumption in more detailed categories that contain material purchase and experience purchase, unfortunately such dataset is not available in the LISS data. Besides, as mentioned previously, our data set the limitation due to the availability of datasets and missing responses. The present database only allows the study to make uses of five-categorical expenditure data in 2017 in The Netherlands, in other words, the study can only examine the effect of five categories of consumption on happiness due to this restricted dataset. The future study would also investigate the relationship between consumption and happiness for more different countries and different time frames is also particularly interesting. Lastly, more research is needed to investigate why specific categories of consumption offer the greater impact on happiness. Further research on these issues would allow obtaining the more nuanced findings on happiness.

Appendix

A1: Description of the Variables in the Study

Variable name	Measure	Responds	Scales
Dependent variables			
Happiness	On the whole, how happy would you say you are?	0 is equal to "totally unhappy" and 10 to "totally happy".	0-10
Independent variables			
Consumption level[11] (Model I)	Consider the last 12 months. Was your household expenditure more than, equal to, or less than your household income?	1is expenditure was higher than the income, 2 is expenditure was approximately equal to the income and 3 is expenditure was lower than the income	1-3
Sub-consumption (Model II)	Consider the last 12 months. For each type of expenditure, how many euros you spend on this per month, on average.	Housing and utility, Grocery, Transport, Holliday and leisure, and Other.	Continuous
Control variables			
Gender	Gender	Female/Male	0-1
Age	Age	16-99 years old	Continuous
Civil status	Civil status	Married, Separated, Divorced, Widow, Never	1-5
Occupation	Occupation	Employed, Self-employed, Job seeker follow job loss, Student, Retirement, Work Disability, Unemployed	1-7
Education	Highest education	Vmbo, Havo, Mbo, Hbo, Wo	1-5
Income	Income	Net total gross income	Continuous

[11] The consumption level is also the concept of income-spending gaps used in the later analysis.

A2: Monthly income and expenditures

	Obs.	Mean	% of total expenditure
Expenditure on			
House and utilities	1450	976.345	42.5%
Transport	1450	170.929	7.4%
Holiday	1450	278.136	12,1%
Grocery	1450	414.392	18.0%
Others	1450	458.488	19.9%
Total expenditure	1450	2298.291	
Income	4474	3494.691	

Database: LISS survey 2017

A3: Descriptive Statistics

	Obs.	Mean	S.D	Min	Max
Dependent variable					
Happiness	4474	7.353	1.463	0	10
Independent variables					
Consumption level[12]	4474	2.281	0.698	1	3
House (ln)	1450	6.592	0.694	2.398	12.040
Transport(ln)	1450	4.896	0.840	1.098	8.517
Holiday (ln)	1450	5.475	0.733	0	8.594
Grocery(ln)	1450	5.884	0.588	3.135	8.854
Other (ln)	1450	5.071	0.953	0.693	8.594
Total expenditure (ln)	1450	7.650	0.451	5.204	12.257
Control variables					
Gender	4474	0.529	0.500	0	1
Age	4474	54.103	16.776	16	99
Civil status	4474	2.532	1.758	1	5
Employment	4474	2.980	3.934	1	7
Education	4474	3.987	1.547	1	5
Income(ln)	4474	8.159	0.652	4.500	12.748

[12] The consumption level is also the concept of income-spending gaps used in the later analysis.1 represents "expenditure was higher than the income", 2 represents " expenditure was approximately equal to the income" and 3 represents " expenditure was lower than the income".

A4: Correlation matrix of all variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Happiness							
(2) Expense level[13]	0.207						
(3) Total cost	0.038	-0.005					
(4) Income	0.180	0.193	0.437				
(5) Gender	-0.044	-0.012	-0.012	-0.078			
(6) Age	0.049	-0.022	-0.267	-0.189	-0.154		
(7) Civil status	-0.033	0.036	0.051	-0.005	0.074	-0.458	
(8) Occupation	-0.019	-0.090	-0.571	-0.346	-0.009	0.634	-0.296
(9) Education	0.100	0.041	0.230	0.297	-0.118	-0.232	0.168
(10) House	-0.077	-0.046	0.732	0.308	0.019	-0.395	0.168
(11) Transport	0074	0.040	0.446	0.273	-0.116	-0.103	-0.001
(12) Holiday	0.213	0.139	0.420	0.323	-0.058	-0.007	-0.028
(13) Grocery	0.018	0.013	0.483	0.223	0.034	0.035	-0.152
(14)Other	0.068	-0.017	0.434	0.239	-0.059	-0.037	-0.064

	(8)	(9)	(10)	(11)	(12)	(13)
(8) Occupation						
(9) Education	-0.179					
(10) House	-0.330	0.170				
(11) Transport	-0.116	0.181	0.162			
(12) Holiday	-0.057	0.125	0.063	0.294		
(13) Grocery	-0.018	0.076	0.183	0.186	0.271	
(14) Othe	-0.057	0.136	0.132	0.284	0.115	0.319

[13] The expense level is also the concept of income-spending gaps used in the later analysis.

A5: Total expenditure, income and happiness

	(1)	(2)	(3)	(4)
Total expenditure	0.092***		0.027	-0.009
	(0.030)		(0.029)	(0.032)
Income		0.519***	0.513***	0.444***
		(0.031)	(0.045)	(0.047)
Female				0.119**
				(0.050)
Age				0.008***
				(0.003)
Married				Reference
Separated				-1.449***
				(0.541)
Divorced				-0.440***
				(0.104)
Widow				-0.579***
				(0.143)
Never married				-0.029
				(0.076)
Self-employed				0.157
				(0.118)
Job seeker				-0.506***
				(0.149)
Student				0.295**
				(0.130)
Retirement				0.205**
				(0.086)
Work disability				-1.201***
				(0.135)
Unemployed				-0.311
				(0.652)
Vmbo				0.264**
				(0.134)
Havo				0.244*
				(0.141)
Mbo				0.341**
				(0.133)
Hbo				0.456***
				(0.135)
Wo				0.479***
				(0.146)
Constant	6.800***	3.090***	3.047***	3.072***
	(0.221)	(0.257)	(0.393)	(0.479)
Observations	3037	3037	3037	3037
R-squared	0.003	0.054	0.444	0.349
Adj R-squared	0.003	0.054	0.437	0.328

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively.

A6: Income-spending gaps and happiness

Dependent: happiness	(1)	(2)	(3)	(4)
Expenditure:				
was higher than	Reference	Reference	Reference	Reference
income	0.515***	0.447***	0.437***	0.481***
was equal to income	(0.064)	(0.059)	(0.061)	(0.076)
	1.119***	0.920***	0.831***	0.862***
was lower than	(0.064)	(0.060)	(0.062)	(0.076)
income				-0.016
				(0.370)
Total expenditure			0.344***	0.383***
			(0.038)	(0.052)
Income		0.154***	0.141***	0.090*
		(0.041)	(0.042)	(0.051)
Female		0.009***	0.008***	0.005*
		(0.002)	(0.002)	(0.003)
Age		Reference	Reference	Reference
		-0.801***	-0.683**	-1.102**
Married		(0.285)	(0.299)	(0.527)
Separated		-0.553***	-0.399***	-0.418***
		(0.064)	(0.067)	(0.527)
Divorced		-0.527***	-0.397***	-0.608***
		(0.083)	(0.085)	(0.143)
Widow		-0.245***	-0.092	-0.019
		(0.054)	(0.568)	(0.077)
Never married		Reference	Reference	Reference
		0.201**	0.255**	0.203*
Employed		(0.097)	(0.102)	(0.117)
Self-employed		-0.511***	-0.455***	-0.404***
		(0.122)	(0.127)	(0.148)
Job seeker follow job		0.467***	0.743***	0.508***
loss		(0.110)	(0.122)	(0.173)
Student		0.064	0.203***	0.265***
		(0.069)	(0.071)	(0.085)
Retirement		-1.468***	-1.270***	-1.090***
		(0.099)	(0.104)	(0.134)
Work disability		-1.103***	-0.953***	-0.183
		(0.340)	(0.357)	(0.634)
Unemployed		0.311***	0.279**	0.264**
		(0.112)	(0.112)	(0.142)
Vmbo		0.354***	0.316**	0.278**
		(0.121)	(0.122)	(0.153)
Havo		0.369***	0.346***	0.357***
		(0.112)	(0.113)	(0.141)
Mbo		0.634***	0.528***	0.443***
		(0.112)	(0.114)	(0.143)
Hbo		0.709***	0.572***	0.447***
		(0.120)	(0.121)	(0.154)
Wo	6.655***	5.962***	3.220***	3.197***
	(0.056)	(0.159)	(0.349)	(0.507)
Constant				
Observations	4474	4474	4470	2808

R-squared	0.074	0.171	0.187	0.162
Adj R-squared	0.074	0.166	0.181	0.153

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively.

A7: Consumption components and happiness

	(1)	(2)	(3)
House and utility	-0.142***	-0.225***	-0.178***
	(0.048)	(0.047)	(0.051)
Transport	0.018	-0.011	-0.003
	(0.042)	(0.485)	(0.043)
Holiday	0.256***	0.212***	0.182***
	(0.036)	(0.037)	(0.036)
Grocery	-0.008	-0.033	-0.041
	(0.061)	(0.061)	(0.061)
Other expenditure	0.028	0.101	0.017
	(0.036)	(0.037)	(0.036)
Income		0.379***	0.326***
		(0.728)	(0.078)
Female			0.014
			(0.068)
Age			0.001
			(0.003)
Married			Reference
Separated			-1.313*
			(0.786)
Divorced			-0.176
			(0.135)
Widow			-0.227
			(0.229)
Never married			-0.025
			(0.100)
Employed			Reference
Self-employed			0.103
			(0.395)
Job seeker			-0.300
			(0.206)
Student			0.228
			(0.308)
Retirement			0.141
			(0.109)
Work disability			-1.211***
			(0.179)
Unemployed			-0.805
			(0.640)
Vmbo			0.475**
			(0.233)
Havo			0.206
			(0.241)
Mbo			0.426*
			(0.230)

Hbo			0.513**
			(0.230)
Wo			0.615**
			(0.242)
Constant	6.828***	4.562***	4.557***
	(0.459)	(0.631)	(0.745)
Observations	1260	1260	1260
R-squared	0.056	0.076	0.079
Adj R-squared	0.051	0.070	0.077

Note:"***","**", and"*" represent 1%, 5% and 10% significance level respectively.

A8: VIF Multicollinearity results

	VIF Table 4 Model (4)	VIF Table 5 Model (4)	VIF Table 6 Model (3)
Housing	-	-	1.35
Transport	-	-	1.34
Holiday	-	-	1.25
Foodin	-	-	1.28
Other	-	-	1.29
Expenditure:			
was equal to income	-	2.46	-
was lower than income	-	2.55	-
Total expenditure	1.25	1.17	-
Income	1.25	1.45	1.52
Gender	1.14	1.16	1.21
Age	3.46	2.99	3.03
Separated	1.04	1.04	1.02
Divorced	1.07	1.07	1.10
Widow	1.06	1.05	1.07
Never married	1.86	1.56	1.51
Employed	1.03	1.03	1.03
Self-employed	1.07	1.08	1.09
Job seeker	1.06	1.06	1.07
Student	1.02	1.01	1.01
Retirement	1.05	1.04	1.17
Work disability	1.69	1.29	1.38
Unemployed	1.40	1.40	1.13
Vmbo	3.54	3.57	5.58
Havo	4.02	6.67	6.96
Mbo	1.46	1.51	1.62
Hbo	1.27	1.14	1.12
Wo	1.09	1.10	1.10
Mean VIF	1.99	2.08	2.40

Reference

Abdel-Khalek, A.M.(2005). Happiness and Death Distress: Two Separate Factors. *Journal Death Studies*, 29, 10

Ackerman, F. (1997). Consumed in theory: Alternative perspectives on the economics of consumption. *Journal of Economic Issues*, 31, 651–664.

Ahuvia, A. (2002). Individualism/Collectivism and Cultures of Happiness: A Theoretical Conjecture on the Relationship between Consumption, Culture and Subjective Well-Being at the National Level. *Journal of Happiness Studies* 3(1): 23-36.

Ahuvia, A. & Friedman, D. (1998). Income, Consumption, and Subjective Well-Being: Toward a Composite Macromarketing Model. *Journal of Macromarketing* 18(2): 153-168.

Appleton, S., & Song, L. (2008). Life satisfaction in urban China: Components and determinants. *World Development*, 36, 2325–2340.

Atkinson AB (1998) Poverty in Europe. Blackwell, Oxford.

Ballas, D., & Dorling, D. (2007). Measuring the impact of major life events on happiness. *International Journal of Epidemiology*, 36, 1244–1252.

Ballas, D., & Dorling, D. (2013). The geography of happiness. In I. Boniwell, S. David, & A. Conley Ayers (Eds.), *Oxford handbook of happiness*, 465–481. Oxford: Oxford

Bekhet; Abir, K. Jaclene A Zauszniewski; Wagdy E Nakhla, (2008). Happiness: Theoretical and Empirical Considerations Nursing Forum: 43, 1; Health Module. pg. 12.

Bernthal, M., & Crockett, D., & Rose, L. (2005). Credit Cards as Lifestyle Facilitators. *Journal of Consumer Research, Oxford University Press*, vol. 32(1), pages 130-145, June.

Bertrand, M., & Mullainathan, S. (2001). Do people mean what they say? implications for subjective survey data. *The American Economic Review*, 91 (2), 67-72.

Blanchflower, D. G., & Oswald, A. (2000). The rising well-being of the young. University of Chicago Press,289-328.

Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88 (7), 1359-1386.

Blanchflower, D. G., & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine*, 66 (8), 1733-1749.

Carter, T. J., & Gilovich, T. (2014). Getting the most for the money: The hedonic return on experiential and material purchases. In M. Tatzel (Ed.), *Consumption and well-being in the material world* (pp. 49–62). Netherlands:Springer

Clark A., Frijters, P., & Shields, M. (2008). Relative income, happiness and utility: an explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 46(1):95–144.

Clark, A., & Oswald, A. (1994). Unhappiness and unemployment. *The Economic Journal*, 104 (424), 648-659.

Conlisk, J. (1996). Why bounded rationality? *Journal of Economic Literature*, 34 (2), 669-700.

Cutler DM, Katz LF (1991) Macroeconomic performance and the disadvantaged. *Brook Pap Econ Act* 1(2):1–74

Deaton, A., & Stone, A. A. (2013). Two happiness Puzzles. *American Economic Review*, 103, 591–597.

DeLeire, T.,& Kalil,A. (2010). Does consumption buy happiness? Evidence from the United States. *International Review Economics*, 57:163–176

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95, 542–575.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*,55(1), 34-43

Diener, E., & Biswas-Diener, R. (2008). Happiness: Unlocking the mysteries of psychological wealth. Malden, MA: Wiley/Blackwell.

Di Tella, R., MacCulloch, R. J., & Oswald, A. J. (2003). The macroeconomics of happiness.

Di Tella, R., & MacCulloch, R. (2006). Some uses of happiness data in economics. *The Journal of Economic Perspectives*, 20 (1), 25-46.

Dittmar, H., & Kapur, P. (2011). Consumerism and well-being in India and the UK: Identity projection and emotion regulation as underlying psychological processes. *Psychological Studies*, 56, 71–85.

Dolan, P. and White, M. P. (2007). How Can Measures of Subjective Well-Being be Used to Inform Public Policy? *Perspectives on Psychological Science*, 2, 71-85.

Duesenberry, J. S. (1949). Income, saving, and the theory of consumer behavior. *Cambridge, MA: Harvard University Press*.

Dumludag, D. (2015). Consumption and life satisfaction at different levels of economic development. *International Review of Economics*, 62(2), 163–182.

Dunn, E.W., Gilbert, D.T. and Wilson, T.D. (2011). If money doesn't make you happy, then you probably aren't spending it right. *Journal of Consumer Psychology*, 21, 115-125.

Dutt, A. (2006). Consumption and happiness: Alternative approaches. Retrived January 20, 2015.

Dynan, K. E., & Ravina, E. (2007). Increasing income inequality, external habits, and self-reported happiness. *American Economic Review*, 97, 226–231.

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and Households in Economic Growth*, 89, 89 – 125.

Easterlin, R. A. (2003). Explaining happiness. *Proceedings of the National Academy of Sciences*, 100 (19), 11176-11183.

Frank, R. H. (2004). How not to buy happiness.Daedalus, 133, 69–79.

Frey, B. S., & Stutzer, A. (2002). Happiness and economics: How the economy and institutions affect human well-being. *Princeton University Press*.

Frey, B. S., & Stutzer, A. (2014). Economic Consequences of Mispredicting Utility. *Journal of Happiness Studies*, 15, 937-956.

Gatersleben, B., & Uzzell, D. (2007). Affective appraisals of the daily commute: comparing perceptions of drivers, cyclists, walkers, and users of public transport. *Environment and Behavior*, 39 (3), 416–431.

Gerdtham, U., & Johannesson, M. (2001). The relationship between happiness, health, and socio-economic factors: Results based on swedish microdata. *Journal of Socio - Economics*, 30 (6), 553-557.

Graham, C. (2005). The economics of happiness. *World Economics*, 6 (3), 4155.

Gray, R.S., Rukumnuaykit,P., Kittisuksathit,S.,& Thongthai, V.(2008). Inner happiness among Thai elderly. *Journal Cross Cult Gerontol*, 23(3):211-24.

Guillen-Royo, M. (2007). Well-being and consumption: Towards a theoretical approach based on human needs satisfaction. In L. Bruni & P. L. Porta (Eds.), Handbook on the economics of happiness,151–169.

Gurin, G., Veroff, J., & Feld, S. (1960). Americans view their mental health. New York: Basic Books.

Haller, M., & Hadler, M. (2006). How social relations and structures can produce happiness and unhappiness: An international comparative analysis. *Social Indicators Research*, 75, 169–216.

Headey, B., Muffels, R., & Wooden, M. (2008). Money does not buy happiness: Or does it? A reassessment based on the combined effects of wealth, income and consumption.

Helliwell, J. F. (2003). How's life? combining individual and national variables to explain subjective well-being. *Economic Modelling*, 20 (2), 331-360.

Huppert, F. A. (2009). Psychological Well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well - Being*, 1 (2), 137-164.

Kahneman, D., Krueger, A.B., Schkade, D.A., Schwarz, N. and Stone, A.A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, 306(5702), 1776-1780.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22,280–287.

Knight, J., & Gunatilaka, R. (2010). Great expectations? The subjective well-being of rural–urban migrants in China. *World Development*, 38, 113–124.

Koslowsky, M., Kluger, A.M., & Reich, M. (1995). Commuting Stress: Causes, Effects, and Methods of Coping. *New York: Plenum Press*.

Larsen, R. J., & Fredrickson, B. L. (1999). Measurement issues in emotion research. In D. Kahneman, E. Diener & N. Schwarz (Eds.), Well-being: Foundations of hedonic psychology (pp. 40–60). New York: Russell Sage.

Layard, R. (2005). Happiness: Lessons form a new science. London: Allen Lane.

Lelkes, O. (2006). Knowing what is good for you: Empirical analysis of personal preferences and the "objective good". *The Journal of Social Economics*, 35 (2), 285-307.

Louis, V. V., & Zhao, S. (2002). Effects of family structure, family SES, and adulthood experiences on life satisfaction. *Journal of Family Issues*, 23 (8), 986-1005.

Lucas, R. E. (2005). Time Does Not Heal All Wounds A Longitudinal Study of Reaction and Adaptation to Divorce. *Psychological science*, 16 (12), 945-950.

Lucas, R.E., Clark, A.E., Georgellis, Y., & Diener, E.(2005). Unemployment alters the set point for life satisfaction. *Psychological Science*.15 (1):8–13.

MacDonald, M., & Douthitt, R. A. (1992). Consumption theories and consumers' assessments of subjective well-being. *Journal of Consumer Affairs*, 26, 243–261.

Meyer B, Sullivan J (2006) Three decades of consumption and income poverty. National poverty center working paper series, No. 06-35. University of Michigan.

Mishra, V., Nielsen, I., & Smyth, R. (2014). How does relative income and variations in short-run wellbeing affect wellbeing in the long run? Empirical evidence from China's Korean minority. Social *Indicators Research*, 115, 67–91.

Noll, H. H., & Weick, S. (2015). Consumption expenditures and subjective well-being: Empirical evidence from Germany. *International Review of Economics*, 62, 101–119.

OECD (2011). How's Life? 2011: Measuring Well-Being, OECD Publishing. http://dx.doi.org/10.1787/9789264121164-en

OECD (2013). How's Life? 2013: Measuring Well-Being, OECD Publishing. http://dx.doi.org/10.1787/9789264201392-en

Ravallion, M., & Lokshin, M. (2010). Who cares about relative deorivation? Journal of Economic Behavior and Organization, 73, 171–185.

Robin, V., & Dominguez, J. (2008). Your money or your life. New York, NY: Penguin Books.

Robbins, M., Francis, L. J., & Edwards, B. (2008). Prayer, personality and happiness: A study among undergraduate students in Wales. *Mental Health, Religion, and Culture*, 11, 93-99.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78.

Schwarz, N., & Strack, F. (1999). Reports of subjective well-being: Judgmental processes and their methodological implications. *Well-being: The foundations of hedonic psychology*, 61-84).

Shaw, I.,& Taplin, S. (2007).Happiness and Mental Health Policy: A sociological critique. *Journal of Mental Health June*. 16: 349-373

Simon, H. A. (1978). Rationality as process and as product of thought. *The American Economic Review*, 68 (2), 1-16.

Schor, J. B. (1998).The overspent American. (New York: Basic Books)

Scitovsky, T. (1986).Human Desire and Economic Satisfaction. London: Harvester Wheatsheaf.

Slesnick, D. (1998). Empirical Approaches to the Measurement of Welfare. *Journal of Economic Literature,* 36, 2108-2165.

Srivastava, A., Locke, E. A., & Bartol, K. M. (2001). Money and subjective wellbeing: it is not the money, it is the motives. *Journal of Personality and Social Psychology*, 80, 959–971.

Stanca, L. (2010). The geography of economics and happiness: spatial patterns in the effects of economic conditions on well-being. *Social Indic Res*, 99(1):115–133.

Stevenson, B,, & Wolfers, J. (2008). Economic growth and subjective well-being: reassessing the Easterlin paradox. In: Brookings papers on economic activity, Economic *Studies Program, The Brookings Institution*, vol 39(1), pp 1–102. NBER Working Paper No. 14282

Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009): Report by the Commission on the Measurement of Economic Performance and Social Progress. Paris.

Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42(2), 115-131.

Valente, R., & Berry, B. (2016). Working hours and life satisfaction: A cross-cultural comparison of Latin America and the United States. *Journal of Happiness Studies*, 17, 1173–1204.

Varian, H. R. (2006). Intermediate Microeconomics–A Modern Approach WW Northern & Company Inc. New York .

Veenhoven, R. (2015). Informed pursuit of happiness: What we should know, do know and can get to know. *Journal of Happiness Studies*, 16(4), 1035-1071.

Weinzierl, M. (2005). Estimating a relative utility function. Harvard University.