

The moderator effect of extraversion on the relationship between leisure activities and happiness

Master Thesis Behavioural Economics

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Abstract

This study aims to explain the relationship between leisure activities and happiness for extraverts and introverts. The results show that participating in active leisure could increase your happiness level, while spending time on passive activities might reduce happiness. Individuals could improve their subjective well-being by spending time on exercising and going out. Furthermore, the findings determine that excessive use of internet and television can better be avoided to be happy.

Being an extravert or introverts could have impact on which activities give the most benefit. Exercising and volunteering are especially good choices for introverts and going out is a good activity for extraverts, to increase their happiness. The negative effect of television and internet is less strong for the subjective well-being for introverts, compared to extraverts. Although some results are not convincing or contradictive with the previous literature, this study states that it is possible to determine your own happiness, through leisure activities.

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1. Introduction

‘Once you attain happiness, nothing else is desired’ – Aristotle

Happiness is often mentioned as the ultimate goal of life; virtually everyone wants to be happy (Frey & Stutzer, 2002). Being happy is rated as more important than other life purposes such as success, intelligence and material wealth (Diener & Oishi, 2004). Happy people are more helpful and have better social relationships and better health (Diener & Seligman, 2004). Furthermore, they generally have a higher income, are more productive and are more willing to participate in society. ‘Happiness does not just feel good, it is also good for people and for those around them’ (Diener et al., 2008).

On the other hand, unhappiness is associated with poor mental and physical health. Depression, loneliness and illness are not only problematic for individuals, but for society, as well, due to increasing demand for healthcare (Diener et al., 2008). Identifying the factors contributing to subjective well-being could help the government make policies that increase societal satisfaction and potentially reduce healthcare costs (Diener et al., 2008). On the individual level, explaining how these factors contribute to happiness would provide useful information and might encourage people to take action to improve their lives.

Subjective well-being and happiness are the most common terms used in previous studies to determine how happy people are. Subjective well-being refers to the self-reported evaluation of the overall quality of someone’s life as a whole (Diener, 1994). Happiness is determined by a cognitive component that refers to overall contentment and an affective component that deals with feelings and emotions (Veenhoven, 2004). This study uses the terms subjective well-being and happiness interchangeably to refer to self-reported overall happiness.

The level of subjective well-being is influenced by multiple determinants. Lyubomirsky et al. (2005) distinguished the determinants as based on the changeability: genetics, demographic factors and intentional activities. Activities are considered as a special source for happiness, because, in contrast to genetics and demographic factors, such as income and education, activities can be changed on a daily basis. According to Diener (2010), spending time on the right activities is a way to influence one’s own happiness, while Ozer (2006) held that the impact of leisure activities on happiness depends on the type of activity and type of person.

Leisure activities are defined as non-mandatory activities undertaken during free time (Sonnentag, 2001). Being able to take part in leisure activities can provide feelings of perceived freedom and intrinsic motivation, as well as the opportunity to meet life values and needs (Brajsa-Zganec et al., 2010). However, a certain amount of free time does not automatically lead to higher subjective well-being. Not all types of leisure activities will contribute to happiness (Kahneman et al., 2006). For example, watching television is an increasingly popular activity, but is negatively associated with subjective well-being (Benesch et al., 2007). To experience the benefits of leisure, a person would have to know which activities are good for him or her. Researching leisure could help people by giving them insights into which type of activities might contribute to their subjective well-being.

Besides the type of activity, many researchers conclude that a person’s personality affects the relationship between leisure activities and happiness (e.g. Ozer, 2006). The level of satisfaction that someone derives from a certain activity might be influenced by the personality of the individual (Ozer, 2006). The Five Factor Model is often used to distinguish the main personality types: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (McCrae &

John, 1992). According to multiple studies, extraversion is the personality trait with the highest impact on subjective well-being (e.g., Gutiérrez et al., 2005; Schimmack et al., 2004). This research elaborates on these studies and makes a distinction between extraverts and introverts. Extraverts and introverts might have other needs and preferences, which could lead to differences in derived leisure satisfaction. The difference in how these personality types experience leisure activities could lead to a different impact on subjective well-being. This leads to the following research question:

How does extraversion influence the relationship between leisure activities and happiness?

Answering this question will provide new insights into the relationship between leisure activities and happiness. People want to be happy, but often do not know what is good for them or what will contribute to their subjective well-being (Diener and Lucas, 2000). This study could help individuals by giving them insight in the positive aspects of spending their time on appropriate activities. Furthermore, the results of this study can serve as a guide for government policymakers seeking to improve the subjective well-being of their societies. The conceptual framework illustrated in Figure 1 shows the relationships examined in this study.

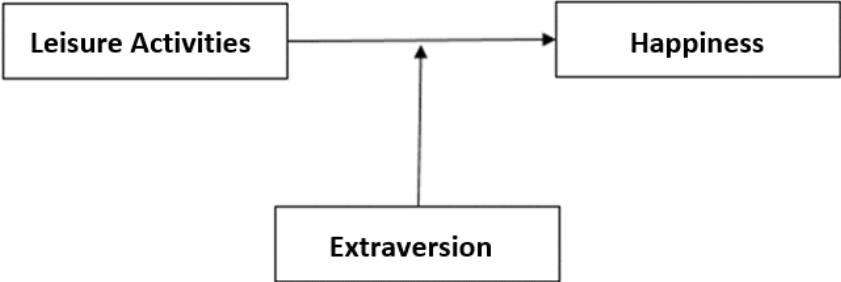


Figure 1: Conceptual framework.

This study investigates the relationship between leisure and happiness and how that relationship might be influenced by extraversion. In Chapter 2, the concepts of happiness, leisure activities and extraversion will be defined through an examination of extant research literature. Chapter 3 provides the methodology and the research design. Research results are reported in Chapter 4, while Chapter 5 presents conclusions drawn from this research, followed by a discussion and recommendations for further research in Chapter 6.

2. Literature review

This literature review seeks to explain the concepts of happiness, leisure activities and personality. Once the synonymous terms happiness and subjective well-being are defined, the domains that can contribute to happiness will be explained. In explaining the concept of leisure, how leisure activities could contribute to happiness will be explored including how the relationship between leisure and happiness can be affected by different types of activities and personalities. To determine their impact on happiness, leisure activities are divided into two categories: active leisure and passive leisure. This study focusses on the impact extravert and introvert personality types have on the relationship between leisure and happiness. A description of these personalities will provide context to the influence these personality types might have on happiness. The last section summarizes how personality might moderate the relationship between leisure and happiness.

2.1 Happiness

There are multiple ways to describe how well an individual is coping with life (Veenhoven, 2000). One way is to indicate the degree of happiness. Veenhoven (2004) defined happiness as 'the degree to which a person enjoys his or her life-as-a-whole'. He said happiness contains two components: an affective component and a cognitive component. The affective component of happiness captures feelings (emotions and mood) at a particular point in time. The cognitive component of happiness measures 'The degree to which an individual perceives that his aspirations are being met' (Veenhoven, 2000). The terms *happiness* and *subjective well-being* are often used interchangeably by researchers. Diener (1994) described subjective well-being as a self-reported measurement of well-being based on implicit criteria. However, there could be a dissonance between the objective qualifications (for example: health) and subjective qualifications (the feeling of being healthy) of your life. Although the meaning of the terms happiness and subjective well-being is not exactly the same, this thesis will use the terms interchangeably to determine how happy someone is with his or her life as a whole.

Researchers have identified multiple determinants of someone's happiness. Lyubomirsky et al. (2005) distinguished different types of determinants based on the level of changeability. A fixed factor that is stable over time is the setpoint that is determined by genetics. Lykken and Tellegen (1996) argued that genetics determine approximately 80% of a person's level of happiness. Other researchers acknowledge the importance of genetics, but propose a lower impact of 50% (Diener et al., 1999).

Other determinants of happiness include demographic factors, such as age, gender, marital status, education level and income (Diener et al., 1999). Research has shown that older people report a higher happiness level compared to younger people, married people are happier on average than non-married people and a higher education level has a positive impact on happiness (Diener et al., 1999). Furthermore, a higher income is often associated with a higher subjective well-being. Multiple studies show this positive correlation between income and happiness, but once the basic needs are met, this impact becomes negligible (Diener & Seligman, 2002). Although these demographic factors affect happiness, they only account for 8% to 15% of the variance in happiness levels (Argyle, 1990). This weak association could be caused by people's quick adaptation to new circumstances. Changes in circumstantial factors only have a temporal impact on subjective well-being as people quickly become accustomed to new situations and the effect of such circumstantial factors become relatively stable overtime (Lyubomirsky et al., 2005).

The third type of determinant, according to Lyubomirsky et al. (2005), is based on the intentional activities in someone's daily life. Since activities require a certain amount of effort and intention, researchers consider intentional activities, also called leisure activities, to be an important factor for achieving happiness. In contrast to genetics and demographic factors, leisure activities are changeable on a daily basis (Lyubomirsky et al., 2005).

Hills and Argyle (1998) agreed that self-chosen activities are a special source of subjective well-being, since it is a way to individually influence one's own happiness. Diener (2010) argued in a conversation with Professor Frisch of Baylor University that having activities one loves can be seen as a major source of happiness, while emphasising the changeable character of this determinant. According to research literature, multiple determinants can influence happiness. The particular determinant, leisure, has a changeable character, so that people can make use of leisure as a way to improve their happiness level.

In the next subsection, the determinant, leisure activities, is described. The most prominent of multiple theories that describe how leisure has impact on well-being are explained.

2.2 Leisure activities

Leisure can be defined as an 'uncoerced activity undertaken during free time where such activity is something people want to do and, at a personally satisfying level using their abilities and resources, they succeed in doing' (Stebbins, 2005). Stebbins (2005) argued that leisure is 'uncoerced' instead of free chosen, because it depends on the personal, structural, cultural, and historical background of the individual. Specifically, 'uncoerced' means that people do not feel obligated to participate in a leisure activity, but willingly want to participate in the activity. Leisure also can be seen as the amount of time people spend outside of work and other obligations (Sonntag, 2001). Further research has shown that participating in leisure activities contributes to subjective well-being in multiple ways (Newman et al., 2014; DeLeire & Kalil, 2010).

Participation in leisure activities can contribute to experiencing positive emotions, self-esteem, learning and development (Iwasaki, 2007). Leisure activities also provide opportunities to interact with others, to relief stress and to examine personal values (Wang & Sunny Wong, 2014). Many studies agree on the positive correlation between leisure consumption and happiness, but provide different theories on how this correlation exactly works (Newman et al., 2014).

The *need theory* is an affective theory based on increasing well-being by satisfying basic human needs. These basic needs, whether physiological or psychological, can be defined as an 'energising state that, if satisfied, conduces toward health and well-being but, if not satisfied, contributes to pathology and ill-being' (Ryan & Deci, 2000). Participating in certain activities can satisfy needs, which will enhance life satisfaction (Tinsley & Eldredge, 1995). By choosing the correct leisure activity, human needs can be satisfied and the perceived quality of life will improve (Diener & Lucas, 2000).

The *activity theory* establishes a positive correlation between the frequency of participation in an activity and life satisfaction. Besides the frequency, the intimacy of the activity also has an important role in improving life satisfaction (Rodríguez et al., 2008). Lloyd and Auld (2002) demonstrated that participating in social activities and being more satisfied with the psychological benefits from leisure has a positive effect on subjective well-being.

Newman et al. (2014) extensively examined the relationship between leisure and subjective well-being. His study proposed five core psychological mechanisms: detachment-recovery, autonomy, mastery, meaning and affiliation. These underlying psychological mechanisms help to explain in which way leisure can help produce a higher subjective well-being. In fact, how a person experiences an activity has a greater effect on happiness than the form or type of activity (Csikszentmihalyi & LeFevre, 1989). Csikszentmihalyi's (2014) *flow theory* supports this idea: if one feels completely focused during the activity, it will lead to optimal well-being. The psychological state of flow corresponds with mechanism mastery (Newman et al., 2014). The effect of an activity on subjective well-being depends on the individual.

The relationship between leisure activities and subjective well-being depends on the type of activity and type of person. Not all leisure activities will contribute to a higher happiness level for every individual. To examine the impact of leisure more extensively, it is helpful to make a distinction between different types of leisure activities. The categorisation of activities will be discussed in the next subsection.

2.3 The classification of leisure activities

The category *leisure* contains all kinds of activities that are often distinguished by researchers according to type. Lloyd and Auld (2002) differentiated between person-centred and place-centred leisure activities. Attributes that are person-centred are measured in a subjective manner, for example by participants' attitude and state of mind. Place-centred leisure activities are usually measured objectively by the frequency of engagement.

Another way to differentiate leisure activities is based on the physical level of activity. Different studies demonstrate that active leisure and passive leisure are experienced in different ways and have different impacts on subjective well-being (Lloyd & Little, 2010; Leung & Lee, 2005). Diener (2010) emphasised the opposite effect of passive and active leisure on happiness. According to Diener, people who watch television many hours a day will not be as happy as people who spend their time in active leisure activities. He argued that happy people are people who exercise, go out, hike or have other active hobbies. In spite of the stage of life a person is in, there is an impact from the activities undertaken in a person's free time; 'active leisure is one key to happiness' (Diener, 2010).

Several studies also indicate that active and passive leisure activities can affect happiness in different ways. To examine these differing effects, this study makes a distinction between passive and active leisure activities.

2.3.1 Passive leisure

Passive leisure activities are those that require a low level of physical activity, such as watching television, reading and using a computer (Holder et al., 2009). This section describes the most popular passive leisure activities and their relationship to happiness.

Watching television is considered as one of the most popular leisure activities (Benesch et al., 2007). The average number of hours people spend on watching television each day is increasing, which indicates that this activity plays an important role in people's lives (Bruni & Stanca, 2008). Multiple studies show that spending time watching television does not contribute to subjective well-being (e.g. Bruni & Stanca, 2008; Robinson & Martin, 2008; Frey et al., 2005). The study by Robinson et al. (2008) reported a negative correlation between watching television and happiness. Individuals

reported a low enjoyment rating, when they are asked to give their general opinion about watching television (Robinson & Martin, 2008). Frey et al. (2005) found a negative relationship between watching television and subjective well-being. Individuals who spend many hours a day watching television, reported a low level of self-control and also had difficulty identifying what activities would increase their subjective well-being (Frey et al., 2005). Watching television multiple hours a day could also decrease interaction and communication with friends and family, even if watching television together (Kubey & Csikszentmihalyi, 1990). Bruni and Stanca (2008) also mentioned that watching television increases material aspiration and undervalues other aspects important to life satisfaction. Literature indicates that watching television can lead to several negative consequences. Therefore, the expectation is that watching television is negatively correlated with happiness. Besides watching television, spending time online also is considered as a popular free time activity (Holder et al., 2009).

Today, almost all aspects of life are connected to the Internet, which naturally leads to an increase in time people spend online (Leung & Lee, 2005). Young adults in particular use the Internet for multiple reasons, such as social interaction, gaining knowledge or for entertainment (Leung & Lee, 2005). Henderson (2001) argued that Internet contributes to happiness when it is used to help offline life. For example, online dating sites could help people to meet each other. Online communication may be better than no communication, but can't truly replace face-to-face interaction. Internet usage provides new opportunities to improve subjective well-being, but also can lead to undesirable consequences (Cao et al., 2011).

According to Wang and Sunny Wong (2013), individuals who spend time daily on the Internet daily are less happy than individuals who limit their time on the Internet to several times a week. Using Internet can be advantageous for someone's well-being, but using it too much appears to have a negative effect. Çikrikci (2016) found that spending a large number of hours online is associated with depression, anxiety, stress and loneliness. Muusses et al. (2014) demonstrated in a longitudinal research study that excessive Internet use negatively affects subjective well-being. The negative consequences of Internet use could be caused by a reduction in face-to-face communication, which could then lead to feelings of isolation and disconnection (Çikrikci, 2016). Another reason for the negative impact of excessive Internet use may be caused by social media, which induces online social comparisons that lead to a poor-self-image or depressive feelings (Pantic, 2014). Research literature clearly indicates that the overall effect of Internet use on subjective well-being is largely dependent on the amount of time spent online and on the purpose of Internet usage (Muusses et al., 2014). Internet use could lead to positive consequences by enhancing your offline life. However, spending too much time online is associated with lowering subjective well-being. These findings support an expectation that Internet use can negatively affect subjective well-being.

Reading books is a passive leisure activity similar to watching TV and using the Internet. Multiple studies demonstrate that reading a book for pleasure has a negative impact on happiness. This result could be explained by the fact that people who read a lot are less often likely to participate in more social activities (Csikszentmihalyi & Hunter, 2003). According to Schnohr et al. (2005) sedentary activities, such as reading books, are associated with a higher level of stress and dissatisfaction when compared to physical activities.

Research literature clearly indicates that passive leisure activities have few positive aspects and strong negative consequences. Multiple studies show that an increase in time spent on passive

activities negatively correlates with subjective well-being. These findings support the following hypothesis:

Hypothesis 1: Passive leisure activities negatively correlate to happiness.

2.3.2 Active leisure

Leisure activities with a high level of physical activity can be classified as active leisure. Sports and exercise belong to this category, as well as such activities as voluntary work and activities outside the home. In contrast to passive leisure, active leisure is often positively correlated to subjective well-being (Leung & Lee, 2005). According to the *self-determination theory*, physical activity can contribute to subjective well-being, by helping individuals to satisfy their need for feelings of competence, relatedness and autonomy (Lloyd & Little, 2010). Schnohr et al. (2005) found that participating in a physical activity decreases mental stress and life dissatisfaction in contrast to effects from participation in passive activities.

In several studies concerning effects of physical activity, the main focus has been on sports and exercise (e.g. Dolan et al., 2014; Schnohr et al., 2005). Wendel-Vos et al. (2004) found that an increase in exercise is associated with better vitality and mental health. Their longitudinal approach shows that participating in sports has a positive impact on social functioning among both men and women. Another positive effect of increased exercise is the higher self-esteem people derive from physical effort (Baltatescu, 2003). Dolan et al. (2014) argue that participating in physical activities improves subjective well-being because exercise is perceived as healthy, pleasurable and goal orientated.

The relationship between physical activity and subjective well-being has been examined as well within different age-categories. Sport participation is found to help high school students with low self-esteem. Involvement in sports has a positive influence on body image, physical competence and the ability to approach the world with a self-determining, assertive attitude, according to Greenleaf et al. (2006). Arent & Landers (2000) demonstrate a significant mood-improving effect among the elderly when they start to exercise. Besides the objective physiological improvement, the mastery experience is believed to contribute to a better mood (Newman et al., 2013). The release of endorphins during exercise as well as the social support people experience in groups appear to be mood-improving (Schmiederberg and Schröder, 2017). Practising sports leads to several positive improvements, resulting in a possibly higher degree of happiness.

Voluntary work is a form of social active leisure with an altruistic aspect (Binder & Freytag, 2005). People participating in volunteer work donate their time to groups, organisations or to other people without seeking monetary compensation (Borgonovi, 2008). Such activity appears to improve both physical and mental health (Wilson, 2000). The study performed by Baker et al. (2005) demonstrates that being involved in volunteer work has a positive influence on happiness and leads to a lower mortality risk. Binder and Freytag (2012) found a positive causal impact of volunteering on happiness, which increases over time when volunteering is sustained. The positive effects of voluntary work can be explained by the social component of getting together with like-minded persons. Another reason is that the volunteer can experience a 'warm glow', a positive feeling, when helping others (Binder & Freytag, 2012). Borgonovi (2008) found that volunteering appeared to contribute to greater feelings of subjective well-being by increasing empathic emotions and shifting aspirations.

Informal care is a special form of voluntary work that can produce negative effects. Caregiving for a friend or relative is often intensive and requires a degree of effort. Several studies, including by Pavalko and Woodbury (2000), indicate that caregivers often experience negative feelings and a lower life satisfaction. In contrast with leisure activities, informal care is something that is required instead of freely chosen. For this reason, this study focuses on the freely chosen voluntary work and not on informal care. According to research literature, informal care is negatively correlated with happiness, while freely chosen voluntary work contributes to subjective well-being. These findings lead to the expectation that voluntary work has a positive impact on happiness.

Going outside the home is, similar to sport and voluntary work, considered as a leisure activity. Going out includes activities such as attending the cinema or theatre, dining out and terrace lounging in social settings. Uhrig (2005) found a strong positive effect on happiness from going to the cinema and lowered negative feelings of anxiety and depression. The visual stimulation of film can lead to emotive responses, which could work in a therapeutic way. Attending the cinema is a popular activity, and not just for the elite; it is a form of leisure that cuts across social boundaries (Uhrig, 2005). Wang and Sunny Wong (2013) argued that attending cultural events and getting together with relatives and friends are among the most important leisure activities associated with achieving happiness. Robinson and Martin (2008) demonstrated a high enjoyment rating for socialising activities. The more people engage in activities such as going out with friend and family, the happier they appear to be. These positive consequences of going out are due not only to the physical level of the activity, but also to the social character of these activities (Robinson & Martin, 2008).

The above-mentioned literature findings indicate that active leisure contributes to subjective well-being in different ways. Multiple studies demonstrated that being active can have positive consequences, such as higher self-esteem, better physical health and life satisfaction (e.g. Dolan et al., 2014; Lloyd & Little, 2010). In line with the previous literature about the influence of leisure activities (voluntary work, sports and going out) on subjective well-being, the next hypothesis is formed:

Hypothesis 2: Active leisure activities positively correlate to happiness.

According to the *activity theory*, not only is the physical level of leisure important, but the frequency of an activity is also significant (Rodríguez, 2008). The next subsection describes the importance of involvement in an activity and how this might affect happiness.

2.3.3 Leisure activities based on level of involvement

The level of involvement in leisure activities may have a measurable impact on happiness (Rodríguez, 2008). For example, Frey et al. (2005) argued that watching television is only problematic for your happiness if you spend too many hours watching television. Cao et al. (2011) demonstrated the negative consequences of excessive Internet use. Furthermore, a high involvement in reading is associated with a lower happiness level (Schnohr et al., 2005). Several studies show that passive leisure is not *per se* negatively correlated with happiness. Spending a healthy amount of time on passive activities can contribute to someone's happiness, while spending too much time on these activities is associated with negative consequences (Kubey & Csikszentmihalyi, 1990). To examine the different effects of high and low levels of involvement, this study distinguishes between high and low involvement in passive leisure.

On the other hand, a person's high involvement in sports is associated with a higher happiness level when compared to people who barely practice a sport (Leung & Lee, 2005). According to Robinson and Martin (2008), going out on a regular basis is important to achieve happiness. Going out and attending cultural and social events more than average is predictive of a higher happiness level when compared to lower levels of involvement in such activities (Robinson & Martin, 2008). Since the effect of leisure activities might be different for high and low involvement, the next hypotheses are formulated:

Hypothesis 3: High involvement in passive leisure activities has a more negative effect on happiness, when compared to lower levels of involvement.

Hypothesis 4: High involvement in active leisure activities has a greater positive effect on happiness, when compared to lower levels of involvement.

The relationship between leisure activities and happiness does not hold universally, however (Hill & Howel, 2014). The impact of leisure on subjective well-being partly depends on personal characteristics. In the following subsection different personality traits are explained, based on the Five Factor Model.

2.4 Personality traits

Roberts (2009) defines personality traits as 'the relatively enduring patterns of thoughts, feelings, and behaviours that reflect the tendency to respond in certain ways under certain circumstances'. Your personality impacts how you experience events and situations (Garcia, 2011). According to Ozer (2006) the difference in personality traits also affects the satisfaction derived from certain leisure activities. It is therefore important that to experience satisfaction, individuals must find activities that match with their personality.

Personality traits can be based on particular characteristics. The Five Factor Model, often used in personality studies to define personality traits, distinguishes five personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (McCrae & John 1992). These traits are generally accepted as a valid and reliable measurement of personality (Ha & Kim 2013).

Extraversion is often considered as the personality trait with the most influence on the relationship between leisure activities and happiness (Harris et al., 2017). Extraversion can be seen as a function of temperament, while the other personality traits are more sensitive to influences from the environment (Ozer, 2006). The next subsections describe the moderator effect of extraversion and introversion on the relationship between leisure consumption and happiness.

2.4.1 Personality trait: Extraversion

The personality trait, *extraversion*, is often associated with happiness. According to Schimmack et al. (2004), extraversion and subjective well-being have corresponding underlying neurological components. Cheerfulness and positive emotions are characteristics of extraverts and also characteristics of happy people. These components support the positive correlation between extraversion and happiness. Extraversion may have impact on happiness in both direct and indirect ways.

Ozer (2006) states that extraversion has a strong influence on how people experience activities and how they evaluate leisure. The reactivity model (Gross et al., 1998) states that extraverts react more

strongly to positive stimuli when compared to introverts. The increased positive emotions for extraverts is explained by their sensitivity to rewards (Lucas & Baird, 2004). An increase in positive feelings, pleasantness and satisfaction appears to lead to a higher sense of subjective well-being. In line with the reactivity model, extraverts are expected to benefit more from active leisure, because these activities generally involve multiple stimuli. The following hypothesis postulates the personality trait extraversion is a moderator on the relationship between leisure consumption and happiness:

Hypothesis 5: Extraversion strengthens the positive relationship between active leisure and happiness.

In contrast to active leisure activities, spending time on passive leisure is associated with a lower sense of subjective well-being. In line with the reactivity model, extraverts are expected to react more negatively to passive leisure because of their need for physical and social activities. Because of the calming nature of passive leisure activities, extraverts might not be able to satisfy their needs. The following hypothesis describes this effect:

Hypothesis 6: Extraversion strengthens the negative relationship between passive leisure and happiness.

2.4.2 Personality trait: Introversion

Extraverts are generally seen as 'highly verbal, bold and outgoing', while introverts are often more quiet and thoughtful (Cain, 2012). The qualities of introverted individuals are often overlooked. Introverts like to think first before they talk and they prefer depth over superficiality. Furthermore, they share their personal information only with their closest friends (Dossey 2016).

The main difference between extraversion and introversion is the need for social interaction with other people. While extraverts are energised by active, social events with a lot of other people, introverts enjoy spending time alone (Lu & Hu, 2005). Introverts perform better in quiet environments and they need less outside stimulation (Cain, 2012).

Activities with a high level of physicality, such as going out and voluntary work, often involve other people. According to research literature, individuals who have strong introvert characteristics do not benefit from consumption of active leisure activities (Swickert et al., 2010). Introverts have no strong reaction to positive stimuli and have less need for physical and social activities. The expected subjective well-being they derive from active leisure is therefore lower when compared to extraverts (Lucas and Baird, 2004). The following hypothesis describes this result:

Hypothesis 7: Introversion weakens the positive relationship between active leisure and happiness.

Although the consequences of passive leisure activities generally are expected to be negative, introverts appear to experience fewer of these negative consequences. Introverts have less need for physical and social activities, and therefore are less dependent on outside stimuli to improve their mood. Therefore, the following hypothesis is formed;

Hypothesis 8: Introversion weakens the negative relationship between passive leisure and happiness.

3. Data and Methods

This section explains the research methodology and describes the data that is used in this study. The first sections starts with a description of the data source. Thereafter, the relevant variables will be described and conceptualized, while the last section explains the research methodology.

3.1 Data

The data used for this study, to examine the research question, is from Centerdata. Centerdata is a research institute for collecting information. This organization provides data from the LISS (Longitudinal Internet Studies for the Social Sciences) panel. A representative sample of 7000 Dutch individuals give insight in their daily life, by answering questions about themselves and their household. The LISS Core study covers eight themes, which return every year and create a new Wave. The respondents are required to complete the questionnaire about their background first, before they can start completing other questionnaires. The background information is updated every month. The data that is used originates from datasets concerning background information, leisure activities and personalities. The different datasets that are used can be merged based on the unique number that every respondent gets. This study makes use of cross-sectional data, instead of panel data. Although panel data could provide more specific information, cross-sectional data is used due to the unbalanced data structure of the panel data. This imbalance is possibly caused by the fact that the variables that are used, are derived from multiple questionnaires.

3.2 Variables

3.2.1 Happiness

The dependent variable in this study is *happiness*. The LISS study measured subjective well-being by asking the respondents several direct questions. The question that captures the overall level of happiness is; *On the whole, how happy would you say you are?*. To determine how happy someone is, respondents rate their happiness on a scale from zero to ten. Where zero means totally unhappy and ten means totally happy. The option *I don't know* is treated as a missing value and is left out from the analyses. The overall happiness of an individual gives a more reliable and constant picture, compared to the mood and feeling in a particular moment. The level of happiness is included in Core Study number 7 *Personality*. Wave 9 includes 6010 individuals that completed this questionnaire.

3.2.2 Leisure activities: average hours per week

The leisure activities are the explanatory variables in this study. This study investigates the relationship between leisure activities and happiness. The LISS data provides insight in the most popular leisure activities. In Core Study number 4 *Social integration and Leisure*, the respondents are asked to estimate the time they spend on each activity. In wave 9 a total of 5466 individuals completed this questionnaire. Leisure consumption is measured by the number of hours an individual spends on that specific activity per week, on average. The activities that are most frequent are divided into the categories: active and passive leisure. The measurement of leisure activities is shown in Table 1.

Table 1: measurement of leisure activities.

Active Leisure	Measurement
Voluntary work	Did you perform any other Voluntary work over the past 12 months, other than informal care? Yes or No
Sport	How many hours do you spend on sports per week, on average?
Going out	How many hours do you spend on going out, cinema, theatre, dining out, terrace lounging per week, on average?

Passive Leisure	Measurement
Reading	Did you spend time on a regular basis on reading, the last 12 months? Yes or no.
Television	How many hours do you spend on watching television per week, on average?
Internet	How many hours do you spend on internet per week, on average?

Voluntary work includes many different activities. As mentioned above, a distinction can be made between informal care and other voluntary work, due to the 'freely chosen' nature of voluntary work. This study focuses on the freely chosen voluntary work and not on informal care. Unfortunately, Centerdata does not provide clear information about the amount of time someone spends voluntary work. The respondents have been asked how much time they spend on voluntary work on average, which also includes informal care. Therefore, it is not possible to determine the hours that people spend on average on voluntary work. Instead, this study uses the results of the following binary question to conceptualize voluntary work; *Did you perform any other voluntary work over the past 12 months, other than informal care? Yes or No.*

Reading is one of the passive activities. As mentioned above, the literature is not consistent concerning the impact of reading on happiness. The amount of time that is spend on reading is measured by the question: *How many hours do you spend on reading per week, on average?.* Besides the high amount of missing values (1565 from 5142) regarding this question, the results are not significantly correlated at all with happiness (sig. 0.638). Therefore, it can be assumed that reading is a weak predictor for the level of happiness. The lack of correlation could be explained by the decreased popularity of reading. Especially young adults do not spend time in reading, they replace this activity with watching television and Internet use (Mokhatari et al. 2009). The passive activity reading seems to be replaced by other passive activities. The number of hours someone spends on reading is not included in the regression, due to the lack of correlation with happiness. The amount of time that is spend on reading seems to have no effect on happiness. In contrast to watching television and using internet, reading is not addictive and does not lead to excessive reading. It could be more important *if* someone reads, instead of how many hours this person reads. Despite the inconsistent findings in the literature concerning the effect of reading, it is still expected that reading is negatively correlated to happiness, due to the individual character of it. To investigate if reading has negative consequences for your subjective well-being, this study uses the data of the binary question; *Did you spend time on a regular basis on reading, the last 12 months? Yes or no.*

Previous literature shows that watching television and Internet use only has negative consequences, if you spend a high amount of time on it. For active leisure the literature supports that exercising and going out on a regular basis will have a more positive impact on happiness, compared to do it occasionally (Robinson and Martin, 2008). In the following subsection, the leisure activities are divided on level of involvement, to examine the impact of spending a high amount of time on passive or active leisure.

3.2.3 Leisure activities: involvement

The leisure activities are categorized in different degrees of involvements, which is shown in Table 2. The leisure activities are categorized into low involvement (represented by the bottom 50% of the sample), medium involvement (50% - 75%) and high involvement (>75%). No access to Internet or television is associated with a low happiness level, however a small amount of time spend online or spend on watching television could contribute to subjective well-being (Henderson, 2001). For active leisure, some studies argue that the positive consequences are only visible, when there is a high involvement (Leung & Lee, 2005). To investigate the different consequences for high and low involvement, a distinction is made between high involvement and low involvement. The activities reading and voluntary work are binary variables. For these activities, there is a distinction between no involvement and involvement.

Table 2: Level of involvement in hours per week

Leisure activity	Low	Medium	High
Television	< 15	15 – 24	> 24
Internet	< 4	4 – 10	> 10
Going Out	< 0.15	0.15 – 3	> 3
Sports	< 1	1 – 4	> 4

3.2.4 Personality: Extraversion

The relationship between leisure activities and happiness could be influenced by one’s personality. This study investigates the moderator effect of extraversion. The data that provides information about someone’s personality is collected through multiple statements. For each statement the respondents have to decide to which degree it matches their personality. The answers have to be rated on a scale from 1 to 5. *One* means the characteristic is absolutely not corresponding with the personality of the respondent, while *five* refers to a strong connection. Respondents with a higher score correspond more with the characteristics of an extravert. The questions are asked in a direct way, and the degree of extroversion is indirectly derived from these questions. The personality traits are included in Core study number 7 *Personality*.

The questionnaire contains ten statements that are used to measure the degree of extroversion. Statements such as *I am the life of the party* and *I start conversations* corresponds with the characteristics of extroverts. Statements such as *I am quiet around strangers* and *I don’t like to draw attention to myself* are often attributed to introverts. The scores for the introvert statements will be recoded, high scores will turn into low scores. A high score represents a high degree of extraversion. The personality statements and their measurement are presented in Appendix A.

3.2.5 Control variables

The control variables are used to test the robustness of the correlation between leisure and happiness. Previous research has shown that age, gender, income, level of education and marital status might have impact on subjective well-being (Diener, 2002). The control variables are included in Core study 1 *background variables*.

The gross monthly income is measured directly by Centerdata. Multiple studies found a positive correlation between income and happiness, as mentioned above. This correlation is less strong in developed countries, because the basic needs are met (Diener, 2002). Despite the expected lower magnitude of this correlation, income is still an important control variable for happiness. Unfortunately many respondents prefer not to make their income information available to Centerdata. Centerdata warns for using this data, because the data could lead to wrong conclusions. Some respondents selected the option *I don't know* to show that they don't know their income or that they prefer not to say it. These answers are counted as missing values and should be excluded. However, more often respondents selected *zero income* instead of *I don't know*. This makes it impossible to determine if the value *zero* means that he or she has no income at all or does not want to make this information available (Lisdata, 2017). Besides the misinterpretation of the reported zero's, it is plausible that the information that is provided by respondents about their monthly income is biased. The variable income could not be included in the analyses, to avoid misinterpretation.

3.3 Methodology

The dependent variable *happiness* is predicted by several independent variables, using a multiple regression model. The ordinary least squares (OLS) method determines the coefficients (Field, 2013). The model has been tested on the underlying assumptions, to ensure the model is generalizable (Gelman & Hill, 2007). The data contains several outliers. The Cook's distance value provides information if these outliers have impact on the model as a whole. When the outliers do not influence the model's ability to predict all cases, then it is not necessary to exclude them. According to Cook and Weisberg (1982), a Cook's distance value lower than one, indicates that the outliers do not have a problematic influence on the regression results. Table C (Appendix) shows the output of the regression. Because, the Cook's distance value is lower than one, the outliers should not have a problematic influence on the model's ability to predict all cases together. Therefore, the outliers will not be deleted. The Durbin-Watson (Durbin & Watson, 1951) test is used to test for the independency between the errors. The errors should not be correlated, because this could lead to invalid confidence intervals and significance tests (Field, 2013). The Durbin-Watson score (Table C Appendix) is close to two, therefore it is assumed that there is no autocorrelation between the errors.

The moderation effect of extraversion is measured by the Process tool of Andrew Hayes (Hayes and Matthes, 2009). The Process tool automatically performs multiple steps to determine the effect of the moderator. The Process tool will center the predictors first and computes the interaction term automatically. The predictor is the amount of time someone spends on a certain activity. The outcome is the level of happiness and the moderator is the degree of extraversion. The Process tool makes a distinction between a high and low level of the moderator. The high level of the moderator is determined by the mean value of extraversion plus one standard deviation, while the low level of the moderator is determined by the mean value minus one standard deviation. Furthermore, the

Process tool provides a slope analysis, which explains the relationship for a low moderator, an average moderator and a high moderator (Field, 2013).

3.3.1 Regression models

Happiness is predicted by multiple independent variables. The multiple regression that is used to test hypotheses 1 and 2 includes the following variables:

$$\text{Happiness} = \beta_0 + \beta_1 \text{ television} + \beta_2 \text{ internet} + \beta_3 \text{ reading} + \beta_4 \text{ sport} + \beta_5 \text{ voluntary work} + \beta_6 \text{ going out} + \beta_7 \text{ control variables} + \epsilon$$

The control variables are age, gender, level of education and marital status. These factors could have impact on someone's subjective well-being, according to the literature (e.g. Diener, 2002). Because of the expected relationship between the control variables and the dependent variables, they are included in the regression. In this way, the regression model can predict the relationship between leisure and happiness, without the influence of age, gender, level of education and marital status.

The multiple regression that is used to test hypotheses 3 and 4 includes the level of involvement in each leisure activity.

$$\text{Happiness} = \beta_0 + \beta_1 \text{ medium involvement television} + \beta_2 \text{ high involvement television} + \beta_3 \text{ medium involvement internet} + \beta_4 \text{ high involvement internet} + \beta_5 \text{ reading} + \beta_6 \text{ medium involvement sport} + \beta_7 \text{ high involvement sport} + \beta_8 \text{ medium involvement going out} + \beta_9 \text{ high involvement going out} + \beta_{10} \text{ voluntary work} + \beta_{11} \text{ control variables} + \epsilon$$

Hypotheses 5, 6, 7 and 8 include the moderator effect of extraversion on the relationship between leisure and happiness. The moderator variable in these hypotheses is the degree of extraversion. The moderation will be measured for each leisure activity.

$$\text{Happiness} = \beta_0 + \beta_1 \text{ activity} + \beta_2 \text{ extraversion} + \beta_3 \text{ interaction} + \beta_4 \text{ control variables} + \epsilon$$

4. Results

This section provides the descriptive statistics and the correlations. Thereafter, the results of the different regression analyses are shown.

4.1 Descriptive statistics

This section shows the descriptive statistics of the control variables and the variables about happiness, leisure time and personality. Table 3 shows the amount of observations, minimum value, maximum value, the mean and standard deviation for the continuous variables; happiness, extraversion, television, internet, sport, going out and age. Table 4 shows the frequencies of the categoric variables; reading, voluntary work, gender and marital status. Table 5 shows the frequencies of the categoric variable; education.

Table 3: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Happiness	5199	0	10	7,48	1,26
Extravert	5189	10	50	32,37	6,68
Television	5152	0	169,75	18,38	15,55
Internet	4511	0	109	7,50	9,38
Sport	5159	0	40	2,21	3,25
Going Out	5145	0	48	1,62	3,13
Age	5199	16	100	52,22	18,10
Valid N (listwise)	4493				

The respondent rate their happiness with a 7.48 on average. This means the people in this dataset are quite satisfied with their life in general. The minimum value for happiness is zero, which refers to an extreme low happiness level, while the maximum value is ten, which refers to an extreme high happiness level. The variable extraversion is measured by the sum of ten statements. A high score means an individual has a personality that is strongly corresponding with extraversion. The minimum value is ten, which means that the respondent scores the minimum value *one* for each statement. The maximum value of 50, refers to the maximum score of *five*, for each statement. The respondents spend on average 18.38 hours every week on watching television. The minimum amount is zero, the maximum amount is 169.75, the standard deviation is 15.55. The range for watching television is large, which means that the differences between the respondents are large. The respondents spend on average 7.50 hours every week on internet. The minimum amount is zero, the maximum amount is 109, the standard deviation is 9.38. The variation is large, but less compared to watching television. The respondents spend on average 2.21 hours every week on participating in sports. The minimum and maximum number of hours are zero and 40. The standard deviation is 3.25, which means the variation is much lower compared to watching television and using internet. The average amount that is spend on going out is 1.62 hours per week. The minimum and maximum amount are zero and 48 hours, with a standard deviation of 3.13. The respondents spend, on average, much more hours a week on passive activities (watching television and internet), compared to the time that is spend on active activities (sports and going out). The range is also larger for passive activities compared to active activities.

The variables *reading* and *voluntary work* are binary variables. Approximately 70% of the respondents indicate they have spend time on reading this year, while only 17% indicate that they have spent time on voluntary work this year. Furthermore, more than half of the respondents are married and less than half of the respondents are male. Table 5 shows the frequencies of the different education levels. The categories ‘higher vocational education’ and ‘intermediate vocational education’ are represented the most in the data.

Table 4: Frequencies binary variables

Variables	N	No	Yes	Ratio
Reading	5156	1565	3591	30% / 70%
Voluntary	5163	4290	873	83% /17%
Married	5199	2489	2710	48% / 52%
Male	5199	2795	2404	54% / 46%

Table 5: Frequencies categorical variable

Education	Frequency	Percent
Primary school	366	7%
Intermediate secondary education	1111	21%
Higher secondary education	597	12%
Intermediate vocational education	1229	24%
Higher vocational education	1276	25%
University	612	12%
Total	5191	100%

4.2 Correlations

This section shows the correlation between the variables that are used in the regression model. Table 6 gives an overview of the correlations between the variables. Watching television and using Internet are negatively correlated to happiness. An increase in the amount of time that is spend on these activities is associated with a lower happiness level. The binary variable reading positively correlates to happiness. Someone who has spent time this year on reading is happier on average, compared to someone who never reads.

Sport positively correlates to happiness. An increase in the amount of time spend on exercising is associated with a higher happiness level. Going out is not significantly correlated with happiness. The binary variable voluntary work positively correlates to happiness. Someone who has spent time this year on voluntary work is happier on average, compared to someone who did not spend time on it.

To avoid multicollinearity, the independent variables should not be strongly correlated with each other. Most of the correlations between the activities are not significant, which means the variables can be used together in a regression analysis.

Extraversion positively correlates to active leisure, while it negatively correlates with Internet use. Extraversion is significantly positively correlated with happiness. This a direct effect on extraversion on happiness, which means that when extraversion increases, happiness increases as well. In general, extravert people are more happier on average, than introvert.

Table 6 : Correlations

Correlations	Happiness	Extravert	Television	Internet	Reading	Sport	Going Out	Voluntary
Happiness	1							
Extravert	,220**	1						
Television	-,053**	-0,015	1					
Internet	-,081**	-,039**	0,023	1				
Reading	,074**	-0,002	-,038**	-0,021	1			
Sport	,093**	,107**	-,044**	0,008	,040**	1		
Going Out	0,027	,149**	-,054**	,063**	,051**	,138**	1	
Voluntary	,045**	,041**	0,013	-0,02	,103**	,060**	-,032*	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.3 Regression results

4.3.1 *The relationship between leisure activities and happiness*

This section explains the regression analyses, used to examine hypotheses 1 and 2. The passive leisure activities in this regression analysis are reading, Internet use and watching television. The active leisure activities are participating in sport, voluntary work and going out. Table 7 shows the results of the multiple regression analysis. The leisure activities are included as independent variables. The dependent variable is overall happiness. The control variables are added in the regression, because of the impact they have on happiness (Appendix B). In this way, the effect of leisure on happiness can be measured more precisely, without influence of other aspects.

Table 7: Regression Hypothesis 1 and 2

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.
(Constant)	6,947	0,084		82,808	0,000
Television	-0,005	0,001	-0,059	-3,849	0,000
Internet	-0,007	0,002	-0,052	-3,550	0,000
Reading	0,108	0,042	0,040	2,564	0,010
Sport	0,036	0,006	0,092	6,240	0,000
Going Out	0,021	0,006	0,053	3,539	0,000
Voluntary	0,074	0,049	0,022	1,499	0,134

a. Dependent Variable: On the whole, how happy would you say you are?

The above regression results show the unstandardized β and standardized β for each leisure activity. The unstandardized β represents the impact that a leisure activity has on happiness, when this activity increases by one unit. The standardized β represents the impact that a leisure activity has on happiness, when this activity increases by one standard deviation. In this way, the coefficient does not depend on the units of measurement of the variables. This study uses the standardized β to interpret the results, because the range of the variables is different.

Watching television has a significant standardized β of -0.059. This value indicates that as the amount of time watching television increases by one standard deviation (15.55 hours), the happiness level decreases by 0.059 standard deviations. The standard deviation for happiness is 1.26 and so this

constitutes with a descent of 0.074 in happiness (-0.059×1.26). Therefore, for every 15.55 hours spend on watching television, the level of happiness decreases by 0.074.

The significant standardized β of internet is -0.052. An increase in using internet by one standard deviation (9.38 hours), is associated with a decrease in happiness by 0.052 standard deviations (1.26). For every 9.38 hours spend on using internet, the level of happiness decreases by 0.065 (-0.052×1.26).

Reading has a positive impact on the level of happiness. The significant effect of reading is 0.108. Due to the lack of information about the average hours of reading, the activity reading is added as binary variable. This means that respondents who have spent time on reading the last 12 months, have a higher happiness level (+0.108), compared to respondents who do not read.

The significant standardized β of sport is 0.092. An increase in the amount of time that is spend on sport by one standard deviation (3.25 hours), is associated with an increase in happiness by 0.092 standard deviations (1.26). For every 3.25 hours spend on participating in sports, the level of happiness increases by 0.116 (0.092×1.26).

The significant standardized β of going out is 0.053. An increase in the amount of time that is spend on going out by one standard deviation (3.13 hours), is associated with an increase in happiness by 0.053 standard deviations (1.26). For every 3.13 hours spend on going out, the level of happiness increases by 0.067 (0.053×1.26).

Voluntary work has no significant impact on the level of happiness. This is a binary variable and is not measured by the average hours a week. The significance value is 0.134, which is just above the significance level of 10%.

The multiple regression results show that spending more time on internet and television predicts a lower happiness level. Although, the effect is significant for both activities, the coefficients are small. This means that spending more time on Internet and television leads to a small decrease in happiness level. Reading has a positive effect on happiness, compared to not reading at all. Reading could increase your happiness, but this effect is also quite small. Because reading could improve your happiness, hypothesis 1: *Passive leisure activities negatively correlates to happiness*, cannot be accepted.

The multiple regression results show that spending more time on sports and going out predicts a higher happiness level. These effects are significant, but small. This means that spending more time on sports and going out leads to a small increase in happiness level. Voluntary work is positively correlated to happiness, however this correlation is just above the significance level. Because of the positive correlation between sports and going out and happiness, hypothesis 2: *Active leisure activities positively correlates to happiness*, can be accepted.

Table 7 shows the effect of different leisure activities on happiness. As mentioned in the literature, these effects might depend on the level of involvement in an activity. Especially for watching television and using Internet, excessive use is predictive of a lower subjective well-being (Çikrikci, 2016). For participating in sport and going out, some studies state that it could only improve your subjective well-being if you do it on a regular basis (Leung and Lee, 2005). The next section examines the difference between high and low involvement in leisure activities, to investigate if the negative and positive consequences are indeed present for individuals with a high involvement.

4.3.2 Leisure involvement and happiness

This section examines the impact of passive and active leisure on happiness further. The level of involvement is divided into three categories; low, medium and high involvement. Table 8 shows the results of the multiple regression analysis, which includes the control variables. Each leisure activity is divided into different categories. High and medium involvement will be compared to low involvement. The categorization for low, medium and high involvement can be found table 2, which is shown in paragraph 3.2.3.

Table 8: Regression Hypothesis 3 and 4

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.
(Constant)	6,861	0,084		81,554	-
Television Medium Inv.	-0,065	0,046	-0,022	-1,409	0,159
Television High Inv.	-0,197	0,048	-0,069	-4,103	0,000
Internet Medium Inv.	-0,023	0,042	-0,008	-0,552	0,581
Internet High Inv.	-0,150	0,050	-0,047	-3,038	0,002
Reading	0,097	0,043	0,035	2,283	0,022
Sport Medium Inv.	0,187	0,048	0,061	3,910	0,000
Sport High Inv.	0,214	0,046	0,073	4,690	0,000
Going out Medium Inv.	0,132	0,052	0,038	2,513	0,012
Going out High Inv.	0,188	0,046	0,064	4,106	0,000
Voluntary	0,078	0,049	0,023	1,576	0,115
a. Dependent Variable: On the whole, how happy would you say you are?					

Individuals who watch television more than 24 hours a week, have a significant lower happiness level, compared to individuals who watch television less than 15 hours a week. The difference in happiness between people with high and low involvement in television is 0.197 on average. This corresponds with the study of Frey et. al (2005). Tv watching has negative consequences for your well-being, but only if the involvement is too high. Medium involvement has no significant effect on happiness, compared to low involvement.

Individuals who spend more than 10 hours a week on internet, have a significant lower happiness level, compared to individuals who use internet less than 4 hours a week. The difference in overall happiness between people with high and low involvement in internet is 0.150. This result corresponds with the study of Cao et al. (2011), where especially high involvement in internet is associated with a lower happiness level. Medium involvement has no significant effect on happiness, compared to low involvement.

Reading is measured as a binary variable. Someone who spends time on reading has a higher happiness level, compared to someone who does not read. The difference in happiness between readers and non-readers is 0.097.

High involvement in watching television and using internet predicts a lower happiness level. The activity reading could not be distinguished in level of involvement. Based on these results; Hypothesis 3: *High involvement in passive leisure activities has a more negative effect on happiness, compared to low involvement*, can be accepted.

Participating in sports positively correlates to happiness. Individuals who participate in sport more than 4 hours a week, have a higher happiness level, compared to individuals who participate in sport less than 1 hour a week. The difference in overall happiness between people with high and low involvement in sport is 0.214. Participating in sports between 1 and 4 hours a week, is associated with a higher happiness level, compared to individuals who participate in sport less than 1 hour a week. The difference between medium and low involvement is 0.187.

Individuals who go out more than 3 hours a week, have a higher happiness level, compared to individuals who hardly go out. The difference in overall happiness between people with high and low involvement in going out is 0.188. A medium involvement in going out (between 0.15 and 3 hours a week), is associated with a higher happiness level, compared to individuals who hardly go out. The difference between medium and low involvement is 0.132, which is just above the 0.1 significance level.

Spending time on voluntary work has no significant effect on happiness. The significance value is 0.115, which is just above the 0.1 significance level.

Hypothesis 4: *High involvement in active leisure activities has a more positive effect on happiness, compared to low involvement*, can be accepted.

4.3.3 The moderator effect of Extraversion on passive leisure.

This section shows the moderator effect of extraversion on passive leisure activities. The Process tool is used to calculate the moderator effect of extraversion on the relationship between leisure and happiness. In Appendix G up to and including L the complete results of the moderator effect of extraversion is shown for each activity. Table 9 shows the moderation effect of extraversion on the relationship between watching television and happiness. The degree of extraversion is distinguished in a low, medium and high degree of extraversion. The type introvert is determined by the mean value minus one standard deviation of extraversion (-6.7). The type extravert is determined by the mean value plus one standard deviation of extraversion (+6.7). The distinction between introvert, neutral and extravert has been made for every activity.

Table 9: Moderation effect Television.

Type	Effect	Standard Error	p
Introvert	-0,008	0,002	0,000
Neutral	-0,006	0,002	0,000
Extravert	-0,003	0,002	0,089

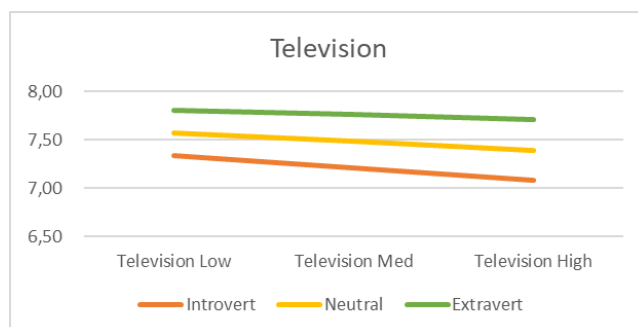


Figure 2: Moderation effect Television.

Table 9 shows the interaction effect of being an introvert or an extrovert on the relationship between watching television and happiness. For introverts, an increase in the amount of time that is spend on watching television leads to a stronger decrease of happiness, compared to extraverts. The interaction effect of extraversion on watching television is significantly negative for happiness for all three types. Figure 2 visualizes the moderation effect that is stated in table 9. When the number of hours watching television increases on the horizontal axis, the happiness level decreases on the vertical axis. The line that represents introversion, shows a steeper decline compared to non-introverts, which indicates that the negative effect is stronger for introverts compared to non-introverts.

Table 10: Moderation effect Internet

Type	Effect	Standard Error	p
Introvert	-0,009	0,003	0,001
Neutral	-0,006	0,002	0,006
Extravert	-0,003	0,003	0,379

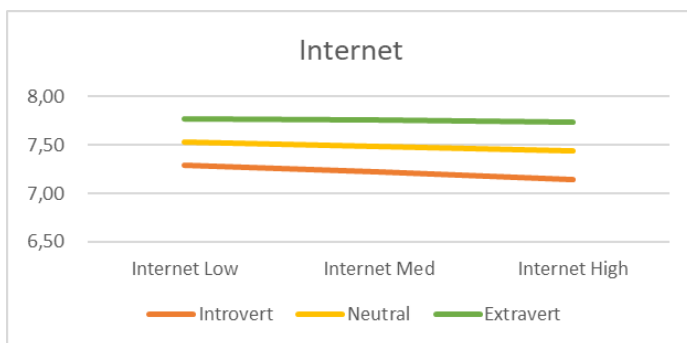


Figure 3: Moderation effect Internet.

Table 10 shows the interaction effect of extraversion on Internet use. Introverts experience a stronger negative effect of Internet use. For neutral persons, this effect is still negative, but less negative compared to introverts. For extraverts, there is no moderation effect on the relationship between internet and happiness. Figure 3 visualizes the different effects for internet, for extraverts and introverts.

Table 11: Moderation effect Reading

Type	Effect	Standard Error	p
Introvert	0,223	0,063	0,000
Neutral	0,162	0,041	0,000
Extravert	0,101	0,053	0,058

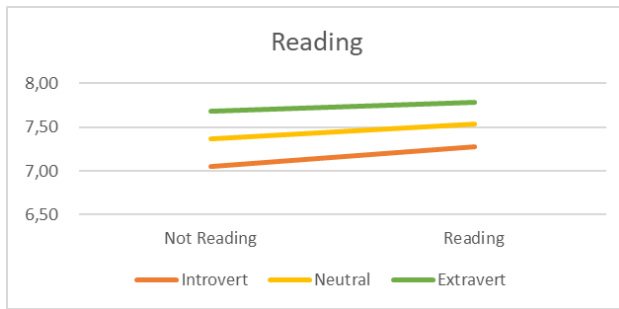


Figure 4: Moderation effect Reading

Table 11 shows the moderation effect of extraversion on reading, which is significant for all three types. Reading is positively related to happiness, compared to not reading. For introverts, this positive effect is the strongest and for extraverts this effect is the weakest. Figure 4 visualizes the different effects for reading.

Not all passive leisure activities have a negative effect on the level of happiness. An increase in watching television and using internet is negatively related to happiness. For introverts the negative impact of these activities on happiness is stronger, compared to extraverts. Reading is positively related to happiness, compared to not reading. This positive effect is stronger for introverts compared to extraverts. Extraverts encounter less disadvantages from television and internet, but they also benefit less from reading, compared to introverts. These results are contradictory with the expectations and do not support the hypotheses 6 and 8;

Hypothesis 6: Extraversion strengthens the negative relationship between passive leisure and happiness, cannot be accepted. Based on the results, extraversion strengthens the negative relationship for watching television, but there is no significant effect for internet use and strengthens the positive relationship between reading and happiness.

Hypothesis 8: Introversion weakens the negative relationship between passive leisure and happiness, cannot be accepted. Based on the results, introversion strengthens the negative relationship for internet use and watching television.

4.3.4 The moderator effect of Extraversion on active leisure.

This section shows the moderator effect of extraversion on active leisure. The following tables and figures give an overview of the interaction effect of extraversion for each activity.

Table 12: Moderation effect Sports

Type	Effect	Standard Error	p
Introvert	0,045	0,009	0,000
Neutral	0,034	0,005	0,000
Extravert	0,024	0,007	0,001

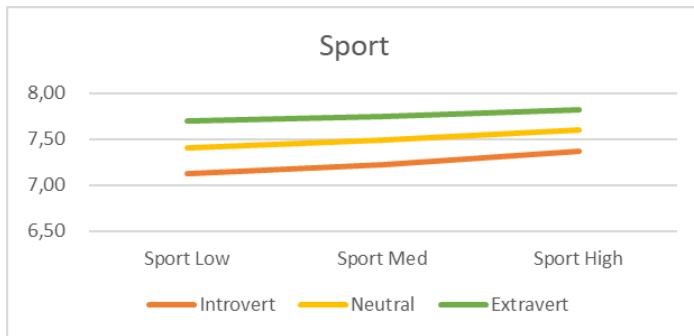


Figure 5: Moderation effect Sport

Table 12 shows the moderation effect of extraversion on the amount that is spend on exercising. An increase in exercising is positively related to happiness, regardless of which personality. This positive effect is stronger for introverts, compared to non-introverts. Figure 5 visualizes the different effects of participating in sports, for introverts and extraverts.

Table 13: Moderation effect Going out

Type	Effect	Standard Error	p
Introvert	0,018	0,012	0,138
Neutral	0,015	0,008	0,044
Extravert	0,012	0,006	0,059

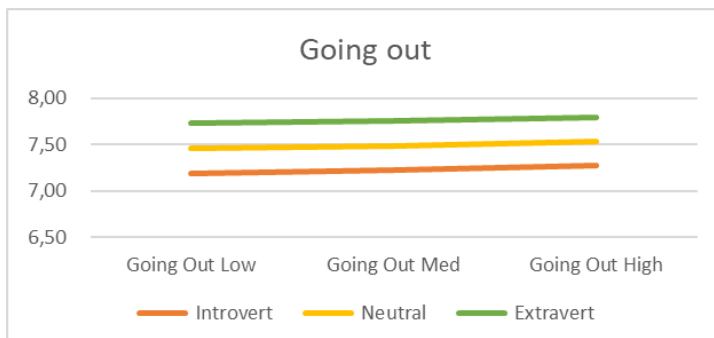


Figure 6: Moderation effect Going out

Table 13 shows the moderation effect of extraversion on the amount that is spend on going out. For introverts, going out has no significant effect on happiness. For extraverts, an increase in time that is spend on going out, has a small positive effect on happiness. The results are visualized in figure 6.

Table 14: Moderation effect Voluntary work

Type	Effect	Standard Error	p
Introvert	0,126	0,068	0,065
Neutral	0,076	0,043	0,077
Extravert	0,026	0,053	0,629

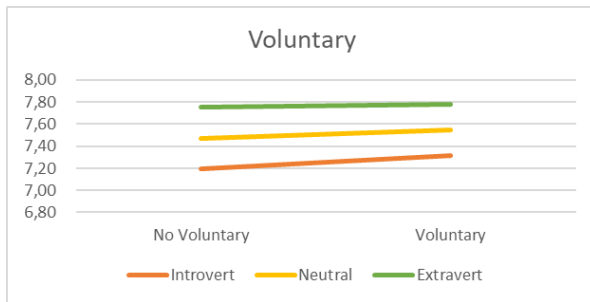


Figure 7: Moderation effect Voluntary work

Table 14 shows the moderation effect of extraversion on voluntary work. Volunteering is positively related to happiness, compared to not volunteering. For introverts, this positive effect is the strongest, compared to non-introverts. For extraverts, performing voluntary work has no significant effect on happiness. Figure 7 visualizes the different effect for volunteering, for extraverts and introverts.

Not all active leisure activities have a positive effect on happiness. An increase in exercising is positively related to happiness. For introverts the positive impact of exercising on happiness is stronger, compared to extraverts. The amount of time that is spend on going out is positively related to happiness, for introverts. For extraverts, going out has no significant impact on happiness. Performing voluntary work has a positive effect on happiness for introverts, but has no significant effect for extraverts. These results are contradictory with the expectations, based on the literature, and do not support the hypotheses 5 and 7;

Hypothesis 5: Extraversion strengthens the positive relationship between active leisure and happiness, cannot be accepted. Participating in sports and going out could contribute to happiness for extraverts, but volunteering has no significant effect on happiness.

Hypothesis 7: Introversion weakens the positive relationship between active leisure and happiness, cannot be accepted. Participating in sports and volunteering have a stronger positive effect for introverts, compared to extraverts. Going out has no significant effect on happiness.

5. Conclusion

This study aims to explain the relationship between leisure activities and happiness among extraverts and introverts. This relationship depends on the type of leisure activity and also on the type of person. Based on the literature, active leisure activities are associated with higher subjective well-being. This study's results correspond with the literature that participating in active leisure activities positively correlates with happiness. The expected negative correlation between passive leisure and happiness is not completely confirmed, however. A negative correlation between watching television and using the Internet and happiness is confirmed, while reading is not negatively correlated. The results confirm the concept that one can increase feelings of happiness by spending time on appropriate activities.

Besides the type of activity, the level of involvement in each activity appears to be relevant. The results in this study are in line with the previous literature. The negative effect of watching television and Internet use especially applies to people with a high involvement in these activities. The positive effect of exercising and going out for social interaction is more noticeable for people who regularly spend time on these types of activities.

However, this study found no support for the expected interaction effect of extraversion. Based on the previous literature, it was expected that a high level of extroversion would strengthen the negative impact of passive leisure and the positive impact for active leisure. The results contradict this expectation. The negative effect of television and the Internet is stronger for introverts, when compared to extraverts. The positive effect of exercising is also stronger for introverts, compared to extraverts. The interaction effects of other types of activities are not significant for each personality.

There is not an unambiguous answer to the research question; *How does extraversion influence the relationship between leisure activities and happiness?*

The results show that active leisure can contribute to happiness levels, while passive leisure can decrease happiness. In contrast to the expectations, this study shows that these correlations are less strong for extraverts, when compared to introverts. Introverts experience more disadvantages from certain passive activities, but they also benefit more from active leisure. However, the moderator effect of extraversion is small for most activities and even insignificant for some of the activities. Therefore, this study does not convincingly demonstrate an influence of extraversion on the relationship between leisure activities and happiness.

6. Discussion

The results of this study indicate that there is a positive correlation between active leisure and happiness. Participating in sports is, in studies, particularly associated with higher levels of subjective well-being. This study suggests that spending free time on physical activities can contribute to happiness, a result that is in line with previous literature. The positive correlation can be explained by the consequences of physical activity, such as a higher self-esteem, improved physical health and greater life satisfaction (Dolan et al., 2014). Another explanation for this positive correlation, may be the social character of active leisure activities. The activities that represent active leisure in this study (sports, going out and voluntary work) may also be considered as social activities (Lloyd & Auld, 2002). Therefore, the social aspect of these activities may have an impact on the positive feelings a person derives from them. The data used for this study does not contain information about the social level of each activity. It is recommended that further research focus on the social aspect as well.

This study finds a negative correlation between the passive leisure activities, such as using the Internet and watching television, and happiness. People who spend a high amount of time on watching television and using the Internet use report a lower happiness level. This negative correlation is in line with a study by Kubey and Csikszentmihalyi (1990). The authors argued that the negative consequences are caused by the reduction in real-life interaction and communication with friends and family. The negative effect of Internet use can also be explained by the role of social media. Social comparisons on social media can lead to negative feelings about ones' self (Pantic, 2014). Also, it is unknown if the passive activities are individual or social activities. For example, it is unclear how many hours people watch television by themselves or with others. The negative correlation can be caused by the low physical level, but also by a low social level. Although the passive activities are often considered as individual activities, it is recommended further research take the social level of each activity into account.

The activities that are used in this study to represent active and passive leisure categories are not exclusive. There could be other types of leisure activities that can affect subjective well-being. Furthermore, besides the control variables used in this study, there may be other aspects that have impact on the relationship between leisure and happiness. Based on previous studies, income normally is an important explanatory variable. However, because the respondents did not want to give this personal information, there is no reliable information about how income levels affected the respondents in this study.

The relationship between leisure activities and happiness is examined by using cross-sectional data. In this way, it was not possible to determine if there is a causal relationship between the variables. It is plausible that leisure affects the level of happiness, and also that the level of happiness affects the type of leisure people choose. To determine a causal relationship, a longitudinal approach could be used.

The moderator effect of extraversion is not unambiguous. Based on the literature, it was expected that the positive effect of active leisure would be stronger for extraverts, when compared to introverts. The negative effect of passive leisure was also expected to be stronger for extraverts, compared to introverts. The results contradict these expectations. For active and passive leisure, respectively, both positive and negative effects are stronger for introverts. This can be explained by

the positive correlation between extraversion and active leisure and the negative correlation between extraversion and passive activities. It is plausible that the degree of extraversion has an impact on the particular activities individuals choose to do in their free time. When extraverts already spend a high amount on active leisure, one hour extra would not have a high impact. When extraverts spend only a small amount of time on passive activities, this will not lead to a lower happiness level. In this way, it is possible that extraversion does not have impact on happiness as a moderator, but as a mediator. Extraversion as a mediator might explain the effect between personality and the type of activity someone chooses. For further research it is advised to examine the mediator effect as well.

Although some hypotheses are supported with significant results, the coefficient is small. This means that the impact of the different activities only predicts a small part of the level of happiness. Furthermore, the sample used in this study is quite large. A small deviation could lead to significant results due to the large number of respondents.

Despite the limitations of the research, this study can give insight in how leisure affects happiness. The degree of extraversion has an impact on how certain activities are experienced and how they affect the level of happiness. The results confirm that individuals can increase their happiness by choosing the most appropriate activities for their personality. Also, the government could have impact on the subjective well-being of its society by encouraging individuals to spend time on active leisure and discouraging them from choosing passive activities.

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Appendix

Table A: Statements degree of extraversion

Statements linked to extrovertism	Measurement
Am the life of the party	Higher score means higher level of extrovertism
Feel comfortable around people	Higher score means higher level of extrovertism
Start conversations	Higher score means higher level of extrovertism
Talk to a lot of different people at parties	Higher score means higher level of extrovertism
Don't mind being the center of attention	Higher score means higher level of extrovertism
Don't like to draw attention to myself	Lower score means higher level of extrovertism
Don't talk a lot	Lower score means higher level of extrovertism
Keep in the background	Lower score means higher level of extrovertism
Have little to say	Lower score means higher level of extrovertism
Am quiet around strangers	Lower score means higher level of extrovertism

Table B: Correlation

Correlations	Happiness	Extravert	Television	Internet	Reading	Sport	Going Out	Voluntary	Married	Male	Age	Education
Happiness	1											
Extravert	,220**	1										
Television	-,053**	-0,015	1									
Internet	-,081**	-,039**	0,023	1								
Reading	,074**	-0,002	-,038**	-0,021	1							
Sport	,093**	,107**	-,044**	0,008	,040**	1						
Going Out	0,027	,149**	-,054**	,063**	,051**	,138**	1					
Voluntary	,045**	,041**	0,013	-0,02	,103**	,060**	-,032*	1				
Married	,190**	0,007	,059**	-,143**	,048**	-,063**	-,184**	,047**	1			
Male	0,009	-0,004	-,028*	,097**	-,154**	,078**	-,038**	-,047**	,080**	1		
Age	,073**	-0,019	,289**	-,068**	,193**	-,061**	-,180**	,124**	,315**	,083**	1	
Education	,059**	,074**	-,205**	-0,017	,160**	,094**	0,022	0,026	0,01	,088**	-,135**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table C: Output regression hypotheses 1 and 2, with control variables

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.	Model details	
(Constant)	6,947	0,084		82,808	0,000	R Square	0,061
Television	-0,005	0,001	-0,059	-3,849	0,000	Adjusted R Square	0,059
Internet	-0,007	0,002	-0,052	-3,550	0,000	Durbin Watson	2,014
Reading	0,108	0,042	0,040	2,564	0,010	F	29,419
Sport	0,036	0,006	0,092	6,240	0,000	Significance	0,000
Going Out	0,021	0,006	0,053	3,539	0,000	Cook's distance (Max)	0,029
Voluntary	0,074	0,049	0,022	1,499	0,134	Control variables	Yes
Married	0,471	0,039	0,187	12,018	0,000		
Male	-0,016	0,038	-0,006	-0,418	0,676		
Age	0,003	0,001	0,037	2,226	0,026		
Education	0,027	0,013	0,033	2,145	0,032		
a. Dependent Variable: On the whole, how happy would you say you are?							

Table D: Output regression hypotheses 1 and 2, without control variables

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.	Model details	
(Constant)	7,410	0,046		161,245	0,000	R Square	0,023
Television	-0,004	0,001	-0,045	-3,046	0,002	Adjusted R Square	0,022
Internet	-0,011	0,002	-0,080	-5,411	0,000	Durbin Watson	2,008
Reading	0,173	0,041	0,063	4,248	0,000	F	17,958
Sport	0,033	0,006	0,085	5,709	0,000	Significance	0,000
Going Out	0,006	0,006	0,016	1,037	0,300	Cook's distance (Max)	0,049
Voluntary	0,110	0,050	0,033	2,199	0,028	Control variables	No
a. Dependent Variable: On the whole, how happy would you say you are?							

Table E: Output regression hypotheses 3 and 4, with control variables

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.	Model details	
(Constant)	6,86	0,08		81,55	-	R Square	0,061
Television Medium Inv.	-0,06	0,05	-0,02	-1,41	0,16	Adjusted R Square	0,058
Television High Inv.	-0,20	0,05	-0,07	-4,10	0,00	Durbin Watson	2,011
Internet Medium Inv.	-0,02	0,04	-0,01	-0,55	0,58	F	20,966
Internet High Inv.	-0,15	0,05	-0,05	-3,04	0,00	Significance	0,000
Reading	0,10	0,04	0,04	2,28	0,02	Cook's distance (Max)	0,008
Sport Medium Inv.	0,19	0,05	0,06	3,91	0,00	Control variables	Yes
Sport High Inv.	0,21	0,05	0,07	4,69	0,00		
Going out Medium Inv.	0,13	0,05	0,04	2,51	0,01		
Going out High Inv.	0,19	0,05	0,06	4,11	0,00		
Voluntary	0,08	0,05	0,02	1,58	0,12		
Married	0,47	0,04	0,19	12,02	0,00		
Male	-0,01	0,04	-0,01	-0,34	0,73		
Age	0,00	0,00	0,05	2,94	0,00		
Education	0,02	0,01	0,02	1,35	0,18		
a. Dependent Variable: On the whole, how happy would you say you are?							

Table F: Output regression hypotheses 3 and 4, without control variables

Variables	Unstand. Coefficient	Std. Error	Stand. Coefficient	t	Sig.	Model details	
(Constant)	7,33	0,05		152,98	-	R Square	0,022
Television Medium Inv.	-0,00	0,05	-0,00	-0,03	0,98	Adjusted R Square	0,020
Television High Inv.	-0,13	0,05	-0,05	-2,93	0,00	Durbin Watson	2,002
Internet Medium Inv.	-0,05	0,04	-0,02	-1,16	0,25	F	10,033
Internet High Inv.	-0,23	0,05	-0,07	-4,64	0,00	Significance	0,000
Reading	0,17	0,04	0,06	4,05	0,00	Cook's distance (Max)	0,008
Sport Medium Inv.	0,18	0,05	0,06	3,67	0,00	Control variables	No
Sport High Inv.	0,18	0,05	0,06	3,99	0,00		
Going out Medium Inv.	0,09	0,05	0,03	1,66	0,10		
Going out High Inv.	0,06	0,05	0,02	1,40	0,16		
Voluntary	0,12	0,05	0,04	2,37	0,02		

a. Dependent Variable: On the whole, how happy would you say you are?

Table G: Moderation of television

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	6,978	0,077	90,849	0,000	6,827	7,129
Television	-0,006	0,002	-3,817	0,000	-0,009	-0,003
Extravert	0,041	0,003	14,824	0,000	0,036	0,047
Interaction	0,000	0,000	1,686	0,092	0,000	0,001
Married	0,455	0,036	12,695	0,000	0,385	0,525
Male	-0,036	0,034	-1,057	0,291	-0,102	0,031
Age	0,003	0,001	3,251	0,001	0,001	0,005
Education	0,029	0,012	2,444	0,015	0,006	0,052

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,682	-0,008	0,002	-3,905	0,000	-0,012	-0,004
0	0,000	-0,006	0,002	-3,817	0,000	-0,009	-0,003
+ 1	6,682	-0,003	0,002	-1,700	0,089	-0,007	0,001

Table H: Moderation of Internet

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	7,015	0,081	86,653	0,000	6,857	7,174
Internet	-0,006	0,002	-2,750	0,006	-0,010	-0,002
Extravert	0,039	0,003	13,879	0,000	0,034	0,045
Interaction	0,001	0,000	1,710	0,087	0,000	0,001
Married	0,437	0,038	11,375	0,000	0,362	0,512
Male	0,009	0,036	0,248	0,805	-0,061	0,079
Age	0,002	0,001	1,465	0,143	-0,001	0,004
Education	0,043	0,012	3,502	0,001	0,019	0,067

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,736	-0,009	0,003	-3,253	0,001	-0,015	-0,004
0	0,000	-0,006	0,002	-2,750	0,006	-0,010	-0,002
+ 1	6,736	-0,003	0,003	-0,879	0,379	-0,008	0,003

Table I: Moderation of reading

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	7,084	0,078	90,797	0,000	6,931	7,237
Reading	0,162	0,041	3,950	0,000	0,082	0,242
Extravert	0,041	0,003	14,971	0,000	0,036	0,046
Interaction	-0,009	0,006	-1,468	0,142	-0,021	0,003
Married	0,462	0,036	12,846	0,000	0,391	0,532
Male	-0,001	0,035	-0,031	0,975	-0,070	0,067
Age	0,001	0,001	1,038	0,299	-0,001	0,003
Education	0,028	0,012	2,343	0,019	0,005	0,051

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,680	0,223	0,063	3,549	0,000	0,100	0,346
0	0,000	0,162	0,041	3,950	0,000	0,082	0,242
+ 1	6,680	0,101	0,053	1,897	0,058	-0,003	0,206

Table J: Moderation of sport

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	7,027	0,076	92,525	0,000	6,878	7,176
Sport	0,034	0,005	6,825	0,000	0,025	0,044
Extravert	0,039	0,003	14,259	0,000	0,034	0,045
Interaction	-0,002	0,001	-1,794	0,073	-0,003	0,000
Married	0,472	0,036	13,139	0,000	0,401	0,542
Male	-0,046	0,034	-1,367	0,172	-0,113	0,020
Age	0,002	0,001	2,201	0,028	0,000	0,004
Education	0,032	0,012	2,786	0,005	0,010	0,055

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,680	0,045	0,009	5,219	0,000	0,028	0,062
0	0,000	0,034	0,005	6,825	0,000	0,025	0,044
+ 1	6,680	0,024	0,007	3,370	0,001	0,010	0,037

Table K: Moderation of going out

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	6,982	0,077	90,294	0,000	6,831	7,134
Going out	0,015	0,008	2,014	0,044	0,000	0,030
Extravert	0,040	0,003	14,302	0,000	0,035	0,046
Interaction	-0,001	0,001	-0,533	0,594	-0,002	0,001
Married	0,469	0,036	12,937	0,000	0,398	0,540
Male	-0,026	0,034	-0,776	0,438	-0,093	0,040
Age	0,003	0,001	2,439	0,015	0,001	0,004
Education	0,038	0,012	3,273	0,001	0,015	0,061

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,684	0,018	0,012	1,484	0,138	-0,006	0,043
0	0,000	0,015	0,008	2,014	0,044	0,000	0,030
+ 1	6,684	0,012	0,006	1,890	0,059	0,000	0,024

Table L: Moderation of voluntary work

Moderation	Coefficient	se(HC0)	t	p	LLCI	ULCI
constant	7,024	0,077	91,858	0,000	6,874	7,174
Voluntary	0,076	0,043	1,770	0,077	-0,008	0,160
Extravert	0,041	0,003	14,759	0,000	0,035	0,046
Interaction	-0,008	0,007	-1,141	0,254	-0,020	0,005
Married	0,459	0,036	12,762	0,000	0,388	0,529
Male	-0,025	0,034	-0,730	0,466	-0,091	0,042
Age	0,002	0,001	1,796	0,073	0,000	0,004
Education	0,037	0,012	3,176	0,002	0,014	0,060

SD	Extravert	Effect	se(HC0)	t	p	LLCI	ULCI
- 1	-6,682	0,126	0,068	1,844	0,065	-0,008	0,259
0	0,000	0,076	0,043	1,770	0,077	-0,008	0,160
+ 1	6,682	0,026	0,053	0,483	0,629	-0,079	0,131