



**Psychometric properties of the Satisfaction with life scale
(SWLS) in a sample of individuals over the age of 40 years
old from the Icelandic population**

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Lokaverkefni til B.Sc-gráðu
Sálfræðideild
Heilbrigðisvísindasvið



HÁSKÓLI ÍSLANDS

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Lokaverkefni til B.Sc.-gráðu í sálfræði
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Abstract

Background: The psychometric properties of different language versions of the Satisfaction with Life Scale (SWLS) has been shown to be good to excellent in general populations and clinical samples. The current study estimated the psychometric properties of the Icelandic version of the SWLS as well as general life satisfaction for a large, population-based sample of Icelandic individuals over the age of 40. The current study is part of the largest scientific study to date conducted in Iceland, which evaluates the value of screening for a precursor of myeloma in Icelanders over the age of 40.

Methods: All Icelandic individuals born preceding the year of 1976 (i.e., 40 years or older) were offered participation in a study screening for monoclonal gammopathy of undetermined significance (MGUS), which is a precursor to multiple myeloma. Individuals that provided informed consent were 78,581 and about half of those individuals completed at least one of the five self-report measures used in the current study.

Results: The mean score on the SWLS was relatively high with females scoring slightly higher than males in most age groups. The relationship between satisfaction with life and age followed a nonlinear, slightly U-shaped curve, in which life satisfaction decreased until late middle age and then increased again. The SWLS had good internal consistency and construct validity in the current sample.

Conclusions: The results of the current study were in accordance with previous studies into satisfaction with life. On average, the Icelandic population over the age of 40 reported being satisfied with their lives. Additionally, females reported being slightly more satisfied with their lives than males, and the relationship between life satisfaction and age was nonlinear and slightly U-shaped. Results from the current study indicate that the psychometric properties of the Icelandic version of the SWLS are good, and therefore, the Icelandic version of the scale is a reliable and valid measure of life satisfaction.

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**Psychometric properties of the Satisfaction with life scale (SWLS) in a
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Satisfaction with life refers to an individual's evaluation of the overall quality of life based on personal, subjective criteria (López-Ortega, Torres-Castro, & Rosas-Carrasco, 2016). Assessing satisfaction with life, therefore, requires a comparison of one's perceived life circumstances with a self-imposed standard or set of standards. In short, satisfaction with life is the degree to which an individual accepts life as satisfactory (Veenhoven, 1996). Satisfaction with life is often measured as a component of the construct of subjective well-being (SWB). SWB is defined as an individual's cognitive (i.e., satisfaction with life) and affective (i.e., happiness) evaluation of life, in other words, SWB refers to thinking and feeling that life is going well (López-Ortega et al., 2016). Since cognitive evaluation of life will impact affective reactions (e.g., interpretations that one's life is satisfactory will lead to comfortable affective reactions such as happiness), the two components of SWB are closely related and associated with each other (e.g., Peterson, Park, & Seligman, 2005; Peterson, Ruch, Beermann, Park, & Seligman, 2007), and some researchers even consider them to be the same construct (Fugl-Meyer, Bränholm, & Fugl-Meyer, 1991). Immediate factors, such as current mood and situational factors, have a weak effect on reported life satisfaction, indicating that life satisfaction is constant across situations and across time (Eid & Diener, 2004). Iceland has repeatedly been ranked as one of the happiest countries in the world in the World Happiness Report, which ranks countries by happiness. The World Happiness Report estimates happiness by various factors such as gross domestic product per capita, social support and healthy life expectancy. In the most recent report, Iceland placed fourth on the list (Helliwell, Layard, & Sachs, 2017).

Many studies have examined the association between life satisfaction and sex with varying results. Some studies have revealed no sex differences in life satisfaction for

individuals at the age of 10 to 75 years old (i.e., Hong Kong, China, Japan, and Taiwan; Chui & Wong, 2016; Kong, Ding, & Zhao, 2015; Kong, Zhao, & You, 2012; Oshio, 2012; Wu & Yao, 2006), while other studies indicate that males at the age of 18 to 60 years old (i.e., Spain; Matud, Bethencourt, & Ibáñez, 2014) or females at the age of 16 to 64 years old have greater life satisfaction (i.e., Scotland and Iceland; Bell & Blanchflower, 2007; and Gestsdottir, Arnarsson, Magnusson, Arngrimsson, Sveinsson, & Johannsson, 2015). The varying results of studies assessing sex differences in SWB could be explained by differences in gender equality. Scotland and Iceland have greater gender equality (World Economic Forum, 2017) compared to the other aforementioned countries, which could explain the greater life satisfaction indicated by females in those countries. Some studies have indicated that it is not life satisfaction in general that differs between the sexes, but different aspects of it. For example, in a study on middle aged adults in Germany (i.e., $M_{age} = 48.40$), females reported greater satisfaction with family life, while males reported greater satisfaction with leisure activities (Daig, Herschbach, Lehmann, Knoll, & Decker, 2009).

Various studies have assessed the relationship between life satisfaction and age with mixed results. In China, older age was related to greater global life satisfaction for individuals between the ages of 16 to 85 years old (Xing & Huang, 2014). Results from multiple studies (e.g., in Scotland, USA, and Britain) suggest a nonlinear, U-shaped relationship between SWB (i.e., life satisfaction and happiness) and age (e.g., Bell & Blanchflower, 2007; Blanchflower & Oswald, 2004; Stone, Schwartz, Broderick, & Deaton, 2010). The U-shaped relationship between SWB and age shows that well-being gradually decreases from early adulthood (i.e., 15–24 years old) until middle age (i.e., 45–54 years old), and thereafter, increases again with older age (i.e., 55+ years old; Steptoe, Deaton, & Stone, 2015). The U-shaped relationship between SWB and age has been demonstrated to be particularly prominent in rich Western

countries participating in the Gallup World poll (e.g., USA, Canada, United Kingdom, New Zealand, and Australia; Steptoe et al., 2015).

Life satisfaction (i.e., the cognitive component of SWB) and happiness (i.e., the affective component of SWB) have been associated with a variety of health outcomes. Life satisfaction and happiness are directly associated with physical health, for example, individuals with low life satisfaction are more likely to have adverse health conditions, such as sleep insufficiency, physical pain, and dementia (Helliwell et al, 2018; Peitsch, Tyas, Menec, & John, 2016; Smith & Bryant, 2016; Strine, Chapman, Balluz, Moriarty, & Mokdad, 2008). Previous research with older adults indicates that life satisfaction is positively associated with factors such as self-perceived health, cognitive functioning, and personal activity (Adams et al., 2016; Berg, Hassing, McClearn, & Johansson, 2006). Life satisfaction and happiness are also associated with life expectancy; individuals that report low life satisfaction and happiness are more likely to die prematurely than others after controlling for other factors such as physical health and socioeconomic status (Diener & Chan, 2011; Kimm, Sull, Gombojav, Yi, & Ohrr, 2012; Koivumaa-Honkanen et al., 2000; St. John, MacKenzie, & Menec, 2014), and acute deterioration in life satisfaction predicts proximity to death more strongly than chronological age for individuals aged between 70 and 100 years old in Germany (Gerstorf et al., 2008). Greater life satisfaction is associated with high perceived social support (Ali et al., 2010; Berg et al, 2006; López-Ortega et al., 2016), (e.g., frequency of help, amount of contact, number of close relationships) provided by family members, friends, and others (Barrera, 1986). Greater life satisfaction has been associated with lower rates of depressive symptoms across the lifespan (Adams et al., 2016; López-Ortega et al., 2016; Moksnes, Løhre, Byrne, & Haugan, 2014), fewer anxiety symptoms between the ages of 13 to 18 years (Moksnes et al., 2014), and lower perceived stress in middle aged adults (Rey & Extremera, 2015). Additionally, greater life satisfaction is positively associated with self-esteem (Moksnes et al., 2014).

Satisfaction with Life Scale

Satisfaction with life has been assessed by measuring various constructs such as health status, economic status, employment, and level of activity. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was developed due to the lack of proper measures evaluating satisfaction with life (i.e., the cognitive component of SWB). Originally, 48 items were included in the scale and the results from the initial factor analysis revealed that the scale consisted of three factors (i.e., positive affect, negative affect, and satisfaction). Based on results from the initial factor analysis, items with factor loadings below .60 (i.e., 38 items) were excluded from the scale, in addition to items that were very similar to other items (i.e., five items). The final version of the SWLS consists of the following five items assessing satisfaction with life (items assessing positive and negative affect were excluded from the scale): (1) In most ways my life is close to my ideal; (2) The conditions of my life are excellent; (3) I am satisfied with my life; (4) So far, I have gotten the important things I want in life; and (5) If I could live my life over, I would change almost nothing (Diener et al., 1985). All the items are globally worded to estimate overall life satisfaction (Pavot & Diener, 1993), and therefore, can be judged by the respondent's personal values and criteria of satisfaction with life. The SWLS was an improvement to other scales assessing satisfaction with life since previous scales were mostly based on researchers' personal values and criteria of specific areas of life deemed as important (Diener et al., 1985).

Total scores on the SWLS range from five to 35 and the neutral point of the scale is 20, which refers to being neither satisfied nor dissatisfied with life. Total scores ranging from five to nine indicate extreme dissatisfaction, 10 to 14 dissatisfaction, 15 to 19 slight dissatisfaction, 21 to 25 slight satisfaction, 26 to 30 satisfaction, and 31 to 35 extreme satisfaction with life (Diener et al., 1985; Pavot & Diener, 2008). The average score on the SWLS in the general population usually falls in the range of slightly satisfied to satisfied (Pavot & Diener, 2008).

The mean SWLS score in a general population sample in Iceland was 26.95 ($SD = 4.29$; Petursdottir, 2011) indicating a general satisfaction with life. However, the mean score for undergraduate students in Illinois was 23.50 ($SD = 6.43$; Diener et al., 1985) and 24.90 ($SD = 6.30$) in the general population sample in Germany (Glaesmer, Grande, Braehler, & Roth, 2011), indicating overall a slight satisfaction with life. A recent study comparing satisfaction with life between different nations in middle aged and older individuals (i.e., 50–79 years of age) reported that individuals in the USA are in general slightly satisfied with their lives ($M = 24.58$, $SD = 6.37$), individuals in England are satisfied with their lives ($M = 26.27$, $SD = 6.11$), and individuals in Japan are neutral to slightly satisfied with their lives ($M = 20.90$, $SD = 5.81$; Whisman & Judd, 2016).

The difference in SWLS scores between Western countries (i.e., Iceland, Germany, USA, and England) and Japan could be due to cultural differences and values held in high regard by the different countries. By looking at cultural differences in the countries in which the aforementioned studies were conducted, differences in life satisfaction may at least be partly impacted by whether individualism or collectivism are a more prominent cultural feature. In individualistic cultures, freedom, autonomy, and happiness are highly valued and self-concept is defined by personal attributes (Realo, Koido, Ceulemans, & Allik, 2002). In collectivistic cultures, groups that individuals belong to are held to the highest regard and self-concept is defined by an individual's interpersonal relationships (Realo, 2003). A meta-analysis on studies conducted in 55 nations showed individualism to be a strong predictor of SWB (i.e., life satisfaction and happiness; Diener, Diener, & Diener, 1995). A potential reason for why individualistic countries measure higher on SWB might be that individualistic societies allow an individual more freedom to choose a life course, another potential reason is that, in individualistic countries, successful people may be more likely to attribute success to themselves (Diener et al., 1995). The mean scores on the SWLS in clinical samples are overall

lower than the mean scores in the general population and usually fall in the range of slightly dissatisfied to dissatisfied (Pavot & Diener, 2008).

The SWLS has been translated to various languages including Icelandic (Olason, 2001), Spanish (López-Ortega et al., 2016; Vázquez, Duque, & Hervás, 2013), Portuguese (Sancho et al., 2014), German (Glaesmer et al., 2011), French (Blais et al., 1989), and Chinese (Bai, Wu, Zheng, & Ren, 2011). Therefore, the SWLS has been used in various countries and diverse cultures, such as Mexico, Spain, Portugal, Germany, France, and China (Bai et al., 2011; Blais, Vallerand, Pelletier, & Briere, 1989; Galiana, Gutierrez, Francisco, & Tomás, 2014; López-Ortega et al., 2016; Sancho et al., 2014; Glaesmer et al., 2011; Vázquez et al., 2013). Additionally, the scale has been administered in various populations, for example, children (Gadermann, Schonert-Reichl, & Zumbo, 2010), undergraduate students (Di Fabio, & Gori, 2016; Duffy, Allan, & Bott, 2012; Samaranayake, & Fernando, 2011), adults (Bai et al., 2011; Glaesmer et al., 2011; Strine et al., 2008), older adults aged 62–97 years old (Gana, Bailly, Saada, Joulain, & Alaphilippe, 2013; López-Ortega et al., 2016), and individuals that are diagnosed with chronic illnesses, for example, Parkinson's Disease (Løvereide & Hagell, 2016) and Hepatitis C (Sandovici, Pruteanu, Robu, & Ciudin, 2017).

The psychometric properties of the SWLS have been assessed in the general population (e.g., Aishvarya et al., 2014; Durak, Senol-durak, & Gencoz, 2010; López-Ortega et al., 2016; Sancho et al., 2014; Silva, Taveira, Marques, & Gouveia, 2015) and clinical samples (e.g., Lucas-Carrasco, Den Oudsten, Eser, & Power, 2014; Wu & Wu, 2008). The SWLS had good internal consistency in the general populations (i.e., Cronbach's α ranging from .74 to .89) and clinical samples (i.e., Cronbach's α ranging from .81 to .84). The SWLS additionally had good test-retest reliability (i.e., correlation coefficient was .84 following a 1-month interval; Pavot, Diener, Colvin, & Sandvik, 1991). Criterion-related validity for the SWLS was demonstrated to be good by correlating scores on the SWLS with measures assessing theoretically linked

constructs, which increased as life satisfaction increased (i.e., the correlation was .33 for perceived health, .20 for generativity, .42 for perceived control and, lastly, .42 for emotional support; Sancho et al., 2014).

Satisfaction with life has been shown to be negatively correlated with depressive symptoms as well ($r = -.29$; López-Ortega et al., 2016). Therefore, the SWLS had good criterion-related validity. Convergent validity of the scale was also adequate as is evident by the fact that scores on the SWLS were correlated with scores on other well-established measures of SWB (e.g., Andrews and Withey Scale, Campbell, DPQ Bradburn-PAS and, Bradburn-NAS; Diener et al, 1985). The results from a preliminary study assessing the psychometric properties of the Icelandic version of the SWLS in the general population, aged 18 to 71 years old, are promising (Petursdottir, 2011). The internal consistency of the scale was good (i.e., Cronbach's $\alpha = .86$) and test-retest reliability was adequate ($r = .88$). Construct validity was also good as demonstrated by associations between life satisfaction and theoretically related constructs, such as optimism ($r = .52$) and pessimism ($r = -.47$; Petursdottir, 2011).

The current study is part of a large research project in Iceland titled iStopMM (Iceland Screens, Treats, and Prevents Multiple Myeloma [Blóðskimunarverkefnið]). iStopMM in part determines the psychological effects of screening positive for a precursor to bone marrow malignancies (i.e., monoclonal gammopathy of undetermined significance [MGUS]) on an individual's mental health and quality of life. In the current study, life satisfaction of individuals over the age of 40 from the Icelandic general population will be assessed and compared both independent and dependent of sex and age. In addition, the psychometric properties of the Satisfaction with Life Scale (SWLS) will be assessed, which is one of the questionnaires participants of the study completed. iStopMM is a rare opportunity to assess mental health (i.e., depressive and anxiety symptoms, and worry) and quality of life (i.e., life

satisfaction and happiness) in such a large, population-based sample, and is to date the largest scientific study ever conducted in Iceland.

In summary, satisfaction with life usually falls in the range of being slightly satisfied to satisfied in Western countries (i.e., Iceland, Germany, USA, and England; Petursdottir, 2011; Glaesmer et al., 2011; Diener et al., 1985; Whisman & Judd, 2016). Additionally, happiness (i.e., the affective component of SWB), which is strongly associated with life satisfaction (i.e., the cognitive component of SWB), has been measured to be very high in Iceland compared to most other countries (Helliwell et al., 2017). We therefore expect the general population of Icelandic individuals over the age of 40 to have a mean score on the SWLS that falls in the range of satisfied, or at least in the upper range of slightly satisfied, and to score relatively high on the single item measure for happiness. Studies examining the association between life satisfaction and sex have revealed mixed results (i.e., Chui & Wong, 2016; Kong et al., 2015; Kong et al., 2012; Oshio, 2012; Wu & Yao, 2006; Matud et al., 2014; Bell & Blanchflower, 2007; Gestsdottir et al., 2015), however, results from studies conducted in Scotland and Iceland indicate that females have greater life satisfaction than males (i.e., Bell & Blanchflower, 2007; Gestsdottir et al., 2015), females will also be expected to score higher than males on the SWLS in this study. Considering that the U-shaped relationship between life satisfaction and age has repeatedly been demonstrated in rich Western countries (i.e., Steptoe et al., 2015), in which life satisfaction gradually decreases until middle age (i.e., 45–54 years old), and thereafter, increases again with older age (i.e., 55+ years old; Steptoe et al., 2015), we expect a similar relationship between life satisfaction and age in the current study. The psychometric properties of the SWLS have been shown to range from good to excellent in the general population and clinical samples, across different cultures and countries (i.e., Aishvarya et al., 2014; Durak et al., 2010; López-Ortega et al., 2016; Sancho et al., 2014; Silva et al., 2015; Lucas-Carrasco et al., 2014; Wu & Wu, 2008) and in the Icelandic general population

(Petursdottir, 2011). We therefore expect the Icelandic version of the scale to have good to excellent properties in the current sample. The aim of the study is threefold: (1) To evaluate life satisfaction in the Icelandic general population for individuals over the age of 40. (2) To compare life satisfaction between males and females both independent of age and across age groups. (3) To assess the psychometric properties of the Icelandic version of the SWLS.

Method

Participants

The study population consisted of all Icelandic individuals born preceding the year of 1976 ($N = 151,184$). The complete list of these individuals was obtained from the National Registry of Iceland [Þjóðskrá Íslands]. In total, 78,581 (51.98%) individuals provided informed consent to be screened for MGUS and 36,134 (45.98%) completed at least one of the self-report questionnaires included in the study. About 5,000 more females (56.70%, $n = 20,040$; $M_{age} = 55.57$ years, $SD_{age} = 9.46$) than males (43.29%, $n = 15,295$; $M_{age} = 57.23$, $SD_{age} = 20.03$) participated in the study. In total, sex was not listed for 796 respondents. In the Icelandic general population over the age of 40, the number of females (i.e., 50.81%) and males (i.e., 49.19%) are about equal (Hagstofa Islands, n.d.). Therefore, a higher percentage of females participated in the study. The mean age for all participants was 56.29 years ($SD = 9.74$) with age ranging between 41 and 98 years old. The participants were volunteers who neither got paid nor received any reward for their participation.

Instruments

The Satisfaction with Life Scale (SWLS). As described earlier, the SWLS (Diener et al., 1985) is a five item self-report scale used to measure global life satisfaction. The items are scored on a 7-point scale, ranging from one (strongly disagree) to seven (strongly agree). A higher score reflects a greater satisfaction with life (Diener et al., 1985).

As was noted above, the SWLS has been shown to have good psychometric properties, with high internal consistency (e.g., Aishvarya et al., 2014; López-Ortega et al., 2016; Lucas-Carrasco et al., 2014; Sancho et al., 2014; Silva et al., 2015; Wu & Wu, 2008) and good criterion-related validity in a general population sample (López-Ortega et al., 2016). In the

current study an Icelandic version of the SWLS was used (Olason, 2001). The psychometric properties of the Icelandic version of the scale have demonstrated good internal consistency (i.e., Cronbach's $\alpha = .86$), test-retest reliability ($r = .88$) and, construct validity (Petursdottir, 2011).

The Patient Health Questionnaire (PHQ-9). The PHQ-9 (Kroenke, Spitzer, & Williams, 2001) is a nine item self-report questionnaire that measures frequency of depressive symptoms in the past two weeks. Each item measures one of the nine symptoms included in the diagnostic criteria for major depressive disorder (American Psychiatric Association, 1994) and is scored on a 4-point scale ranging from zero (none at all) to three (nearly every day). Therefore, overall scores range from zero to 27, with a higher score indicating more severe depressive symptoms.

Psychometric properties of the PHQ-9 have been studied in both the general population and clinical samples with good results. In a general population sample in China, the PHQ-9 had good internal consistency (Cronbach's $\alpha = .86$) and good construct validity (Wang et al., 2014). The PHQ-9 had good internal consistency (i.e., Cronbach's α ranging from .87 to .89; Beard, Hsu, Rifkin, Busch, & Bjorgvinsson, 2016; Kroenke et al, 2001) and good test-retest reliability in a clinical sample in the U.S. (i.e., .78; Beard et al, 2016). Furthermore, the PHQ-9 had good criterion (Kroenke et al., 2001) and construct validity (Beard et al, 2016; Kroenke et al., 2001).

In the current study, an Icelandic version of the PHQ-9 (Palsdottir, 2007), was used. The Icelandic version of the PHQ-9 has been shown to have good internal consistency (i.e., Cronbach's $\alpha = .84$), and good convergent and divergent validity (i.e., PHQ-9 correlates positively with GAD-7; $r = .75, p < .001$, and negatively with SWLS; $r = -.57, p < .001$).

The Generalized Anxiety Disorder scale (GAD-7). The GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006) is a self-report questionnaire that is used to measure the frequency

of anxiety symptoms in the past two weeks, which in part correspond to the diagnostic criteria of generalized anxiety disorder in the DSM-IV (Spitzer et al., 2006). The questionnaire consists of seven items that assess how often in the past two weeks respondents experienced various symptoms of anxiety (e.g., feeling nervous, anxious or on edge). Each item is assessed on a 4-point scale that ranges from zero (not at all) to three (nearly every day). Total scores therefore range from zero to 21.

Psychometric properties of the GAD-7 have been studied in general population and clinical samples with good results. For general population samples (García-Campayo, et al., 2010; Hinz, et al., 2017), the internal consistency was good to excellent (i.e., Cronbach's α range from .85 to .94) and construct validity was good, for example, the means recorded for the individuals diagnosed with GAD-7 was significantly higher ($M = 13.96$, $SD = 4.19$) than the mean score for a healthy control group ($M = 3.54$, $SD = 3.32$). In the clinical samples, internal consistency was good to excellent (i.e., Cronbach's α range from .89 to .92) and the construct validity was adequate (Beard & Bjorgvinsson, 2014; Spitzer et al., 2006

In the current study, an Icelandic version of the GAD-7 was used. The Icelandic version has been shown to have good psychometric properties, including good internal consistency (Cronbach's $\alpha = .88$), and good convergent and divergent validity (i.e., GAD-7 correlates positively with PHQ-9, $r = .76$, $p < .001$ and negatively with SWLS, $r = -.47$, $p < .001$; Ingolfsson, 2014).

A single item measure for happiness. A single item measure for happiness (unpublished work) is one question that was drafted by the researchers of the study to determine happiness in an individual's life. Happiness is estimated by an individual's response to the question: "By taking into account all aspects of your life, how happy do you consider yourself?" that is scored on a 10-point scale ranging from one (very unhappy) to ten (very happy). Higher scores indicate more happiness.

A single item measure for health-related worry. A single item measure for health-related worry (unpublished work) is one question drafted by the researchers of the study to determine worry in an individual's life. Worry is estimated by an individual's response to the question: "How much do you worry about your health?" that is scored on a 10-point scale ranging from one (very little) to ten (very much). Higher scores indicate more worry.

Procedure

Eligible participants, which were all residents of Iceland born in 1976 or earlier, received information about the study (i.e., the aim, the outline, and the benefits of the study) by mail. To provide informed consent, participants could give an electronic signature by signing in to the official website of the study (i.e., blodskimun.is) with their personal identification number given to citizens by the government (similar to a social security number) and a password that was received in the mail. They could also give their informed consent by signing the consent form that was enclosed in the envelope and mail it back in the postage-paid envelope provided. Thereafter, participants were asked to complete various self-report questionnaires electronically on the official website for the study by using the same sign in information previously provided. The questionnaires that participants were asked to complete were the SWLS, PHQ-9, GAD-7, and the single item measures assessing happiness and health-related worry. Participants completed the questionnaires prior to being screened for MGUS; the baseline measures were used for statistical analysis in the current study.

Data analysis

The study had three primary aims. The first aim was to evaluate life satisfaction in the Icelandic general population for individuals over the age of 40. To address the aim: (1) The mean and standard deviation of the total scores for the SWLS were calculated to estimate the level and variability of satisfaction with life for adults over the age of 40 in the Icelandic

population. Means and standard deviations for total scores on other self-reports measuring depressive and anxiety symptoms, worry, and happiness for adults over the age of 40 years old in the Icelandic population were also calculated. In addition, frequencies and percentages of participants with total scores indicating different levels of satisfaction with life (i.e., extremely dissatisfied, slightly dissatisfied, dissatisfied, neutral, satisfied, slightly satisfied, satisfied, and extremely satisfied) were calculated. (2) The participants were divided into two groups based on their total scores on the SWLS, one group consisted of participants reporting dissatisfaction with their lives (i.e., scores ranging from five to 19), and the other group consisted of participants reporting satisfaction with their lives (i.e., scores ranging from 20 to 35). Descriptive statistics (i.e., means and standard deviations) were calculated for each group to assess the difference between participants reporting dissatisfaction with life or satisfaction with their lives. According to Diener (2006) scores between 20 and 24 are considered to be an average score, in which individuals assess their life as mostly satisfying in general but with some need for improvement. Participants that scored 20 on the SWLS (i.e., the neutral point according to Diener et al., 1985) were categorized with individuals that are satisfied with their lives. The second aim of the study was to compare life satisfaction between males and females, both independent of age and across age groups. To address the aim: (3) The mean and standard deviation for the SWLS total scores were calculated for males and females separately to examine sex differences. A *t*-test was run to examine whether there were significantly different means for males and females, and a one-way ANOVA was performed to examine whether age was connected to satisfaction with life. The third aim of the study was to assess the psychometric properties of the Icelandic version of the SWLS. To address the aim: (4) Cronbach's α (i.e., the mean of all possible correlation coefficients) was computed to determine whether all the items on the SWLS measure the same construct, (i.e., internal consistency), additionally, each item's impact on the internal consistency was estimated by calculating

Cronbach's α for the scale by deleting individual items one at a time and comparing the results to the overall Cronbach's α . (5) Item discrimination was assessed by calculating the correlations between each item's score and the scale's total score. Item discrimination provides information about how effectively each item differentiates between total scores (e.g., a high correlation indicates that individuals with high total scores are more likely to score highly on the individual item). (6) The means and standard deviations for each item were calculated to assess item difficulty and variability of responses. (7) Item functioning was estimated by examining the usage of item response options on each item both independent and dependent on the level of satisfaction with life (e.g., each item functions well if all response options are used, which for example, implies that items are phrased in a way that ensures usage of the lowest and highest response options). (8) To assess the degree to which the SWLS measures life satisfaction (i.e., construct validity), the correlation between total scores on the SWLS and total scores on the other scales measuring theoretically related constructs (i.e., depressive and anxiety symptoms, worry, and happiness) were calculated.

Nearly all participants (97.88%, $n = 35,371$) completed the SWLS, therefore, missing data were minimal (2.12%, $n = 755$). For unknown reasons, some participants, who completed the SWLS, did not answer the other questionnaires, and vice versa. Nonetheless, most participants also completed the PHQ-9 (97.24%, $n = 35,135$), GAD-7 (97.81%, $n = 35,343$), and the single item measures for worry (97.90%, $n = 35,376$) and happiness (97.90%, $n = 35,376$). No imputation techniques for handling missing data were considered necessary since missing data was minimal. All data were included in the statistical analysis, independent of whether scores on all measures were present.

Results

Descriptive statistics

The first aim of the study was to evaluate life satisfaction in the Icelandic general population over the age of 40. To address the aim, the level and variability of depressive and anxiety symptoms, worry, and happiness for adults over the age of 40 in the Icelandic population, means and standard deviations for total scores on administered self-report measures were calculated. The mean total scores on the PHQ-9 ($M = 4.51$, $SD = 4.15$) and GAD-7 ($M = 3.33$, $SD = 3.43$), which measured depressive and anxiety symptoms, were low with a moderate variability. The single item measure for worry ($M = 4.87$, $SD = 2.26$) had a moderate mean score and moderately high variability. The mean total score on the single item measure for happiness was high ($M = 7.80$) and the variability was moderate ($SD = 1.60$). The total scores for the study measures covered the entire range of all the scales (i.e., ranging from zero to 27 on the PHQ-9, from zero to 21 on the GAD-7, from one to 10 on the single item measure for worry and from one to 10 on the single item measure for happiness).

To estimate the level and variability of satisfaction with life for adults over the age of 40 in the Icelandic general population, the mean score and standard deviation for the SWLS was calculated. On average, participants reported moderate life satisfaction with moderate variability ($M = 26.15$, $SD = 4.63$, with scores ranging from five to 35). The minority of the participants were extremely dissatisfied (0.32%, $n = 113$; $M = 7.60$, $SD = 1.32$), dissatisfied (1.62%, $n = 574$; $M = 11.97$, $SD = 1.39$), or slightly dissatisfied (6.36%, $n = 2,250$; $M = 16.55$, $SD = 1.33$) with their lives. The majority of the participants were slightly satisfied (29.92%, $n = 10,548$; $M = 22.53$, $SD = 1.36$), satisfied (43.86%, $n = 15,515$; $M = 27.48$, $SD = 1.37$), or extremely satisfied (15.50%, $n = 5,484$; $M = 32.42$, $SD = 1.39$) with their lives. A few individuals reported a life satisfaction score that reflected the neutral point of 20 (2.51%, $n =$

887; $M = 20$, $SD = 0$). The participants were divided into two groups based on total scores on the SWLS, one group consisted of participants reporting dissatisfaction with their lives (i.e., $n = 2,937$; scores ranging from five to 19), and the other group consisted of participants reporting satisfaction with their lives (i.e., $n = 32,434$; scores ranging from 20 to 35). The mean score for participants that were dissatisfied with life was 16.12 ($SD = 2.93$) and the mean score for participants that were satisfied with life was 27.06 ($SD = 3.56$; see Table 1 which shows item response patterns), therefore, the difference in life satisfaction between the groups is large.

The second aim of the study was to compare life satisfaction between males and females, both independent of age and across age groups. To address the aim the mean and standard deviation for the SWLS total scores were calculated. Overall, females ($M = 26.32$, $SD = 4.64$) scored higher compared to males ($M = 25.98$, $SD = 4.61$) on the SWLS with similar variability, $t(34,738) = -6.71$, $p < .001$, indicating that females are more satisfied with their lives. The overall difference, however, was small (i.e., 0.34). The sex difference was also low across age groups. Females scored slightly higher than males in most age groups (i.e., seven out of ten age groups; see Table 2 for a table displaying descriptive statistics for the sexes by age groups). In six of the youngest age groups, or between the ages of 41 to 70 years old, females scored higher than males with an average difference of 0.45. Males scored higher in only three age groups, between the ages of 71 to 85+ years old, with an average difference of 0.88. In the oldest age group females scored slightly higher with a difference of 0.11, however, only 47 females and 39 males were categorized in that age group (see Table 2).

To examine the relationship between life satisfaction and age, the mean and standard deviation for the SWLS total scores were calculated for different age groups (i.e., 41–45; 46–50; 51–55; 56–60; 61–65; 66–70; 71–75; 76–80; 81–85; and 86+) and a one-way ANOVA significance test was calculated. Total mean scores on the SWLS were statistically different between age groups, $F(9, 34,730) = 13.14$, $p < .001$. The relationship between life satisfaction

and age was found to be non-linear and followed a slightly U-shaped curve. Life satisfaction gradually decreased from age 41 ($M = 26.29$, $SD = 4.57$) to 60 years old ($M = 25.90$, $SD = 4.76$), and thereafter, gradually increased from age 61 ($M = 26.13$, $SD = 4.52$) to 86+ years old ($M = 27.01$, $SD = 4.28$; see Appendix B). However, the largest difference between the age groups is only 1.11 points, and all groups had a mean that indicated satisfaction with life (see Figure 1).

Internal consistency

The third aim of the study was to assess the psychometric properties of the Icelandic version of the SWLS. The Icelandic version of the SWLS had good internal consistency (Cronbach's $\alpha = .88$), indicating that all the items on the SWLS measure the same construct. When looking at the sexes separately, the same internal consistency is found for both males and females (Cronbach's $\alpha = .88$). Omitting individual items from the SWLS to estimate each item's impact had hardly any effect on the internal consistency (i.e., decreases or increases in Cronbach's α ranged from .01 to .04, depending on the item deleted, see Table 3 which shows item response patterns independent of life satisfaction scores).

Item analysis

Correlations between total scores on the SWLS and scores on each item ranged from .62 to .79, indicating that all items on the SWLS had sufficient to almost good discriminant ability. The first four items (i.e., "In most ways my life is close to my ideal," "The conditions of my life are excellent," "I am satisfied with my life," and "So far, I have gotten the important things I want in life") had correlations ranging from .72 to .79. The last item (i.e., "If I could live my life over, I would change almost nothing") had a lower correlation of .62, however, the discriminant ability of the item was still sufficient.

To assess item difficulty and variability of responses, the means and standard deviations

for each item were calculated, see Table 3. Each item's mean score ranged from 4.55 ($SD = 1.38$) to 5.60 ($SD = 1.05$), which suggests that on average the participants were satisfied with their lives. Each item on the scale is scored on a 7-point scale, ranging from one (strongly disagree) to seven (strongly agree). Frequencies and percentages for item response options indicated that the "strongly disagree" and "disagree" were the least endorsed options by participants, which is in accordance with the aforementioned high mean score on the SWLS, indicating overall high life satisfaction in the Icelandic general population for individuals over the age of 40. All of the item response options were used for each of the scale's items, which indicated good item functioning (see Table 3).

As can be seen in Table 1, the participants reporting dissatisfaction with life barely used the "strongly agree" and "agree" item response options (i.e., between 0.07 to 3.20% of participants used the response options). The most commonly used item response options for participants reporting dissatisfaction with life were "slightly disagree" and "neither agree nor disagree" (i.e., between 8.17 to 44.33% of participants used the response options). Participants that were satisfied with their lives used "strongly disagree" and "disagree" the least (i.e., between 0.04 to 2.66% of participants used the response option). The most frequently used options for participants that were satisfied with life were "slightly agree" and "agree" (i.e., between 22.36 to 46.12% of participants used the response options). In sum, participants that reported being satisfied with their lives more frequently used response options indicating satisfaction with life on all items on the SWLS than options indicating dissatisfaction with life, and the opposite applied to participants that reported being dissatisfied with their lives. These results further demonstrate that the items and item response options function well on the scale.

Validity

The correlations between total scores on the SWLS and the other scales measuring theoretically related constructs (i.e., depressive and anxiety symptoms, worry, and happiness)

were calculated to assess construct validity. The SWLS had a moderate negative correlation with depressive symptoms, PHQ-9; $r(34,921) = -.57, p < .001$, and anxiety symptoms, GAD-7; $r(34,740) = -.47, p < .001$, and a weak negative correlation with scores on the single item measure for health-related worry, $r(35,371) = -.29, p < .001$. However, a strong correlation was found between the SWLS and the single item measure for happiness, $r(35,371) = .62, p < .001$.

Discussion

The current study is to date the largest scientific study ever conducted in Iceland, representing a unique opportunity to assess mental health and quality of life in a large population sample for Icelandic individuals over the age of 40). The aim of the study was threefold: (1) To evaluate life satisfaction in the Icelandic general population for individuals over the age of 40. (2) To compare life satisfaction between males and females both independent of age and across age groups. (3) To assess the psychometric properties of the Icelandic version of the SWLS. Individuals over the age of 40 in the Icelandic general population were on average satisfied with their lives (i.e., $M = 26.15, SD = 4.63$). Overall, in the current study, the majority of participants reported being satisfied with their lives and only a small portion of the participants reported being dissatisfied with their lives. In fact, only 0.32% of the participants reported being extremely dissatisfied with their lives, and the mean score for participants reporting dissatisfaction with life was in the higher range and only indicated slight dissatisfaction with life. In addition, Icelandic adults over the age of 40 were on average happy (i.e., $M = 7.80, SD = 1.60$). In sum, the Icelandic general population over the age of 40 years old considered themselves satisfied with life and happy, which is in accordance with the fact that Iceland has repeatedly been ranked as one of the happiest countries in the world in the World Happiness Report (Helliwell et al., 2017). The Icelandic general population over the age of 40 reported

similar satisfaction with life as had previously been found in the Icelandic general population (i.e., 18–71 years of age; $M = 26.95$; Petursdottir, 2011), and in a general population sample of English middle aged and older individuals (i.e., 50–79 years of age; $M = 26.27$). However, the Icelandic general population over the age of 40 reported higher satisfaction with life than individuals in the German general population (i.e., 14–91 years of age; $M = 24.88$; Glaesmer et al., 2011), undergraduate students from the USA (i.e., $M = 23.50$; Diener et al., 1985), middle aged and older individuals from the USA (i.e., 50–79 years of age; $M = 24.58$; Whisman & Judd, 2016), and Japanese middle aged and older individuals (i.e., 59–70 years of age; $M = 20.90$; Whisman & Judd, 2016). The mean score on the SWLS for the German general population, undergraduate students from the USA, and middle aged and older individuals from the USA reflects slight satisfaction with life, whereas, the mean score for Icelandic individuals and English adults reflects satisfaction with life. Although the labels used to describe life satisfaction in Iceland and England differ from the labels used in Germany and the USA (i.e., satisfaction versus slight satisfaction), the difference is small (i.e., a mean difference ranging from 1.27 to 2.65 on the SWLS), and therefore, Icelandic individuals over the age of 40 seem to experience comparable life satisfaction to individuals in other Western countries (i.e. Germany, USA, and England).

Middle aged and older Japanese individuals reported much lower satisfaction with life compared to Icelandic individuals over the age of 40 (i.e., the difference on the SWLS was 5.25). The mean score on the SWLS for Japanese middle aged and older individuals reflects slight satisfaction with life, however, the score is in the lower range of that category. The difference in satisfaction with life between middle aged and older individuals in Western countries (i.e., Iceland, Germany, USA, and England) and Japan may be due to cultural differences; in Western countries individualism is prominent compared to collectivism in Japan (i.e., self-concept is defined by personal attributes in individualistic cultures and by individual

interpersonal relationships in collectivistic cultures; Realo, 2003; Realo et al, 2002). It's been hypothesized that the effect individualism seems to have on life satisfaction is due to individualistic societies allowing an individual more freedom to choose a life course and that in individualistic countries, successful people may be more likely to attribute success to themselves (Diener et al., 1995). Thus, the noteworthy difference in life satisfaction was between middle aged and older individuals in Iceland and Japan.

In the current study, females scored slightly higher on the SWLS compared to males in all except three of the oldest age groups age groups (i.e. between 71–75, age 76–80, and 81–85 years old). For the most part the sex difference was as expected since previous research in Iceland ($M_{\text{females}} = 26.50$, $M_{\text{males}} = 24.40$) and Scotland (satisfaction with life was measured using a different scale than the SWLS) had revealed females to be more satisfied with their lives than males (Gestsdottir et al., 2015; Bell & Blanchflower, 2007). The fact that males scored higher in some age groups was not completely unexpected since a study in Spain revealed that males had higher scores than females (i.e., $M_{\text{males}} = 24.62$, $M_{\text{females}} = 24.01$). However, the scores on the SWLS were similar between the sexes across all age groups (i.e., between 41 and 86+ years old), which is in accordance with the results of various studies conducted in Asia that have found no significant difference between the sexes (Chui & Wong, 2016; Kong et al., 2015; Kong et al., 2012; Oshio, 2012; Wu & Yao, 2006). In accordance to results from multiple studies suggesting a nonlinear, U-shaped relationship between SWB (i.e., life satisfaction and happiness) and age (e.g., Bell & Blanchflower, 2007; Blanchflower & Oswald, 2004; Steptoe et al., 2015; Stone et al., 2010), in the current study satisfaction with life gradually decreased from age 41 to 60 years old, and thereafter, increased with older age (i.e., 81–85 and 86+ years old). Life satisfaction was lowest at an older age (i.e., 51–60 years old) than in previous research (i.e., 45–54 years old), however, the difference is only by a couple of years and not of much practical significance. The differences between age groups were very small (i.e., ranging

from 0 to 1.11), and therefore, probably not indicating any practical significance in daily life. The mean scores for all except two age groups reflect satisfaction with life and the two age groups (i.e., 51–55 and 56–60 years old) with the lowest mean scores had scores that reflect slight satisfaction with life and the scores were in the upper range of that category, and therefore, providing further support for the small difference in life satisfaction between age groups.

In line with previous studies on the psychometric properties of the SWLS, the Icelandic version of the scale had good psychometric properties in the current sample (i.e., individuals older than 40 from the Icelandic general population). The internal consistency was good (i.e., Cronbach's $\alpha = .88$), which is in accordance with results from previous studies conducted in general population samples (Aishvarya et al., 2014; Durak, Senol-durak, & Gencoz, 2010; López-Ortega et al., 2016; Sancho et al., 2014; Silva, Taveira, Marques, & Gouveia, 2015). All items had adequate correlations with the total scores on the SWLS, however, the first four items (i.e., “In most ways my life is close to my ideal,” “The conditions of my life are excellent,” “I am satisfied with my life,” and “So far, I have gotten the important things I want in life”) had higher correlations (i.e., r ranging from .72 to .79) than the last item (i.e., “If I could live my life over, I would change almost nothing”; $r = .62$). A high correlation between total and item scores, and the fact that Cronbach's α slightly decreased by omitting the first four items from the scale and increased only by .01 by omitting the last item from the scale, demonstrates sufficient to almost good discriminant ability of the items.

The results from item analysis revealed that all the response options on each item were used, indicating good item functioning (i.e., variation in responses is maximized if all response options are used on individual items, allowing each item to better discriminate between various levels of life satisfaction). Overall, the response options indicating greater levels of life satisfaction were the most used by the participants in the current sample, which is in accordance

with a high mean score on the SWLS. This was as expected considering previous research on life satisfaction and happiness in the general population of Iceland (Petursdottir, 2011; Helliwell et al., 2018). However, the most used response options depended on overall reported satisfaction with life. In general, participants that reported being satisfied with their lives more frequently used response options indicating satisfaction with life on all items on the SWLS than options indicating dissatisfaction with life, and the opposite applied to participants that reported being dissatisfied with their lives. These results further demonstrate that the items and item response options function well on the scale. Clinical samples usually have slightly lower mean scores on the SWLS, and thus, the response options indicating lower levels of life satisfaction would probably have been used more in a clinical sample.

Correlations between the SWLS scores and the results of the single item measure for happiness showed a moderate positive correlation (i.e., $r = .62$). Life satisfaction (i.e., the cognitive component of SWB) and happiness (i.e., the affective component of SWB) are strongly related constructs, therefore, a moderate positive correlation between the two constructs indicates good construct validity. Correlations between the SWLS scores and scores on scales measuring other theoretically related constructs (i.e., depressive and anxiety symptoms, and worry) were weakly to moderately negative, which furthermore supports the discriminant validity of the measure in the current sample. Depressive (i.e., scores from PHQ-9) and anxiety symptoms (i.e., scores from GAD-7) were moderately and negatively correlated (i.e., PHQ-9, $r = -.57$; GAD-7, $r = -.47$) with scores from the SWLS, and the scores from the single item measuring worry showed a weak negative correlation (i.e., $r = -.29$) with scores from the SWLS. The weak to moderate negative correlations is in accordance with the fact that life satisfaction and depressive and anxiety symptoms, and health-related worry are considered opposing constructs, and therefore, should be negatively correlated (i.e., uncomfortable internal experiences and related behaviors negatively impact satisfaction with life). Previous

studies have revealed similar results, for example, studies conducted in general populations in various countries and cultures (e.g., USA, Mexico, and Norway) have revealed that greater dissatisfaction with life is associated with higher depressive and anxiety symptoms, and depressive disorders (e.g., Adams et al., 2016; López-Ortega et al., 2016; Moksnes et al., 2014).

The study has several strengths worth mentioning. First, the study population consisted of all Icelandic individuals born preceding the year of 1976 ($N = 151,184$). Second, a very large number of individuals provided informed consent (i.e., $n = 78,581$; 51.98%) and a high proportion of participants (i.e., $n = 36,134$; 45.98%) completed at least one of the self-report questionnaires included in the study. Third, the measures used in the study have been validated in various countries, languages, and samples, and are considered reliable measures. Therefore, the results are likely to be representative of the life satisfaction of Icelandic individuals over the age of 40.

The study was not without limitations. First, considering only adults over the age of 40 were selected for the study, conclusions about younger individuals or sex differences in younger cohorts cannot be drawn. Second, the scales (i.e., the SWLS, PHQ-9, GAD-7, and the single item measures assessing worry and happiness) were administered electronically, and therefore, the study team had no control over factors that could influence the reliability and validity of participants answers (e.g., noise level, misunderstanding or misreading the test directions, and other distractions). Third, individuals in the general population of Iceland with high depressive symptoms, and therefore presumably lower satisfaction with life, might have been less likely to participate in a study of this kind due to low motivation often related to depressive disorders. Therefore, gathered data could be skewed and result in an unrepresentative life satisfaction mean score for the general population of Iceland over the age of 40. Fourth, no other measurement for life satisfaction was administered, which makes it impossible to correlate the SWLS with another, well established measurement for life

satisfaction. Therefore, gather data could be skewed and result in an unrepresentative life satisfaction mean score for the general population sample over the age of 40 in Iceland.

In conclusion, the results of the current study are mostly in accordance with other studies conducted on life satisfaction in Western countries. Overall, the average life satisfaction was similar to scores previously found in the Icelandic general population, and slightly higher than scores in other Western countries (i.e., Germany, USA, and England). A higher mean score on the SWLS was to be expected considering that, compared to other countries, Iceland ranks among the highest in happiness (i.e., the affective component of SWB), which is closely related to life satisfaction (i.e., the cognitive component of SWB). However, the difference in life satisfaction was slight. The sex difference in life satisfaction was in accordance with previous studies conducted in countries that have great gender equality (e.g., Iceland and Scotland). Although females scored higher than males on the SWLS, the sex difference was very slight and probably not of much relevance in real life. The relationship between satisfaction with life and age was nonlinear and slightly U-shaped, which was in accordance with previous studies and was thus as expected. The difference between SWLS scores and age groups was, however, slight and is therefore not likely to be of much relevance. The results show that the Icelandic version of the SWLS is a reliable and valid measure of satisfaction with life in the Icelandic general population for individuals over the age of 40. To further study the psychometric properties of the SWLS in Iceland, future research should include all age groups in both the general population and in clinical samples. It is also important to compare the SWLS with other scales measuring life satisfaction and theoretically unrelated constructs such as income and physical health to assess divergent validity.

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Table 1.

Item response patterns for dissatisfaction and satisfaction with life on the Satisfaction with Life Scale

Item	Group ^a	<i>M (SD)</i>	Frequency (%) ^b						
			1	2	3	4	5	6	7
In most ways my life is close to my ideal	Dissatisfied	3.12 (.97)	155 (5.28)	519 (17.67)	1,302 (44.33)	767 (26.12)	176 (5.99)	16 (.54)	2 (.07)
	Satisfied	5.45 (.87)	14 (.04)	61 (.19)	569 (1.75)	2,737 (8.44)	13,764 (42.44)	11,857 (36.56)	3,432 (10.58)
The conditions of my life are excellent	Dissatisfied	3.64 (1.16)	109 (3.71)	338 (11.51)	900 (30.64)	875 (29.79)	608 (20.70)	94 (3.20)	13 (.44)
	Satisfied	5.78 (0.83)	8 (.02)	30 (.09)	251 (.77)	1,216 (3.75)	10,038 (30.95)	14,604 (45.03)	6,287 (19.38)
I am satisfied with my life	Dissatisfied	3.59 (1.02)	91 (3.10)	263 (8.95)	994 (33.85)	1,040 (35.41)	513 (17.47)	32 (1.09)	4 (.14)
	Satisfied	5.76 (0.79)	7 (.02)	15 (.05)	119 (.37)	1,111 (3.43)	10,628 (32.77)	14,959 (46.12)	5,595 (17.25)
So far, I have gotten the important things I want in life	Dissatisfied	3.31 (1.05)	145 (4.94)	385 (13.11)	1,246 (42.42)	790 (26.90)	322 (10.96)	45 (1.53)	4 (.14)
	Satisfied	5.32 (.89)	7 (.02)	33 (.10)	745 (2.30)	4,235 (13.06)	13,630 (42.02)	11,234 (34.64)	2,550 (7.86)
If I could live my life over, I would change almost nothing	Dissatisfied	2.47 (1.09)	603 (20.53)	895 (30.47)	1,077 (36.67)	240 (8.17)	83 (2.83)	28 (.95)	11 (.37)
	Satisfied	4.74 (1.25)	203 (.63)	830 (2.56)	4,877 (15.04)	6,674 (20.58)	10,524 (32.45)	7,253 (22.36)	2,073 (6.39)
Total score	Dissatisfied	16.12 (2.93)							
	Satisfied	27.06 (3.56)							

Note. *M* = mean score; *SD* = standard deviation; *n* = sample size.

^aDissatisfied equals scores between five and 19, and satisfied refers to scores between 20 and 35. ^bFrequency and percentages for participants responses to each item. Response options range from one (strongly disagree) to seven (strongly agree).

Table 2.

Descriptive statistics for females and males divided by age groups on the Satisfaction with Life Scale

	Females		Males		Total	
	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>
Age group						
41–45	26.58 (4.56)	3,362	25.84 (4.55)	2,196	26.29 (4.57)	5,558
46–50	26.41 (4.69)	3,408	25.61 (4.69)	2,293	26.09 (4.70)	5,701
51–55	26.19 (4.80)	3,683	25.55 (4.84)	2,482	25.93 (4.82)	6,165
56–60	26.01 (4.76)	3,337	25.76 (4.75)	2,514	25.90 (4.76)	5,851
61–65	26.17 (4.61)	2,695	26.08 (4.46)	2,284	26.13 (4.52)	4,979
66–70	26.64 (4.48)	1,792	26.49 (4.35)	1,753	26.56 (4.42)	3,545
71–75	26.49 (4.14)	880	26.95 (4.26)	976	26.73 (4.20)	1,856
76–80	26.26 (4.24)	310	27.12 (4.18)	405	26.74 (4.23)	715
81–85	26.29 (4.22)	129	27.62 (3.91)	155	27.01 (4.10)	284
86+	27.06 (4.30)	47	26.95 (4.30)	39	27.01 (4.28)	86

Note. *M* = mean score; *SD* = standard deviation, *n* = sample size.

Table 3.

Item response patterns independent of life satisfaction scores

Item	<i>M</i> (<i>SD</i>)	Total score correlation	α' without item	Frequency (%) ^a						
				1	2	3	4	5	6	7
In most ways my life is close to my ideal	5.26 (1.10)	.77	.84	169 (0.48)	580 (1.64)	1,871 (5.23)	3,504 (9.91)	13,940 (39.41)	11,873 (33.57)	3,434 (9.71)
The conditions of my life are excellent	5.60 (1.05)	.73	.85	117 (0.33)	368 (1.04)	1,151 (3.25)	2,091 (5.91)	10,646 (30.10)	14,698 (41.56)	6,300 (17.81)
I am satisfied with my life	5.58 (1.01)	.79	.84	98 (0.28)	278 (0.79)	1,113 (3.15)	2,151 (6.08)	11,141 (31.50)	14,991 (42.38)	5,599 (15.83)
So far, I have gotten the important things I want in life	5.16 (1.06)	.72	.85	152 (0.43)	418 (1.18)	1,991 (5.63)	5,025 (14.21)	13,952 (39.44)	11,279 (31.89)	2,554 (7.22)
If I could live my life over, I would change almost nothing	4.55 (1.38)	.62	.89	806 (2.28)	1,725 (4.88)	5,954 (16.83)	6,914 (19.55)	10,607 (29.99)	7,281 (20.58)	2,084 (5.89)
Total scale	26.15 (4.63)									

Note. *M* = mean score; *SD* = standard deviation, *n* = sample size; total score correlation = item-total correlation.

^aFrequency and percentages for participants responses to each item. Response options range from one (strongly disagree) to seven (strongly agree).

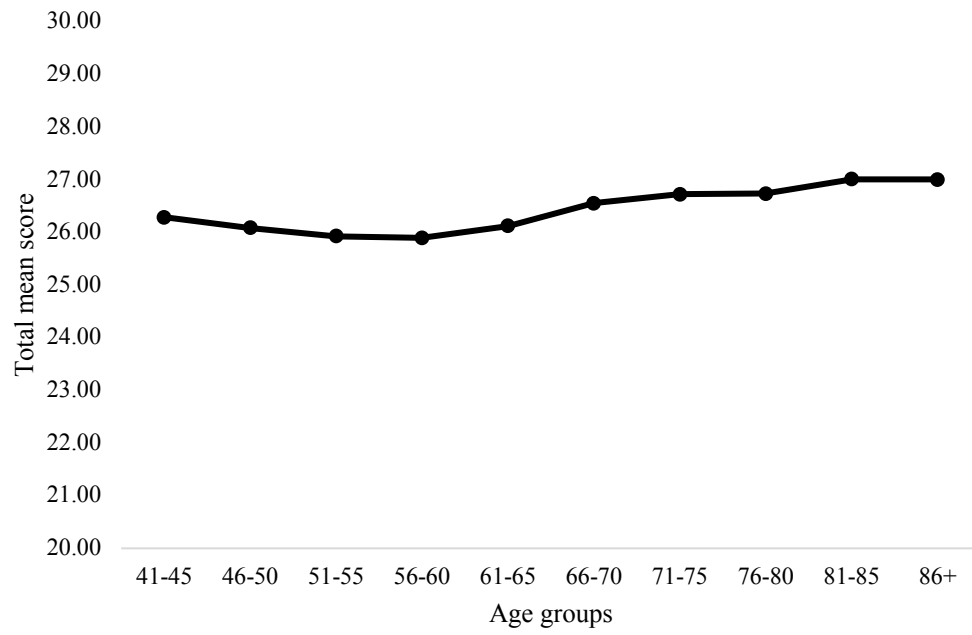


Figure 1. The relationship between life satisfaction and age groups.