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Accelerated Psychosocial Aging: Japanese Expect Lower Life Satisfaction Earlier than U.S.
Adults

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Joanna Heejeong Hong

Thesis Committee:
Professor Susan T. Charles, Chair
Professor Linda J. Levine
Assistant Professor Jacqueline M. Chen

2017

DEDICATION

This thesis is dedicated to my parents and my brother. I could not have made it this far without their endless love and support. I also dedicate this work to my amazing friends here in graduate school and back home, particularly Meg, Cortney, Brendon and Alissa and Soomin and Yeerang, as well as my Emotion research lab mates, especially Emily and Kate. Their encouragement and help have meant so much to me.

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ABSTRACT OF THE THESIS

Accelerated Psychosocial Aging:
Japanese Expect Lower Life Satisfaction Earlier than U.S. Adults

By

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Master of Arts in Social Ecology

University of California, Irvine, 2017

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The current study examined whether perceptions of change in life satisfaction vary by age and culture. Perceptions of past, present and future life satisfaction were examined in adults aged 33-79 from the Midlife in the United States (MIDUS; N = 4803) and from the Survey of Midlife in Japan (MIDJA; N=974). Age differences in perceived change in life satisfaction were similar across the two nations such that the younger adults perceived improvement and the older adults perceived decline from the past to present and from present to the future. Despite similarities in age-related patterns, however, perceptions of declining life satisfaction were observed at younger ages in midlife for the Japanese adults compared to the U.S. adults. Also, younger U.S. adults foresaw more improvement in their life satisfaction from the past to the future compared to younger Japanese adults. Similarly, older U.S. adults perceived a moderate decrease in trajectory of life satisfaction whereas older Japanese adults perceived a sharp decline. Findings suggest that cultural context plays a role in perceptions of change in well-being across adulthood.

Keywords: age, culture, subjective well-being, life satisfaction

INTRODUCTION

From 2015 to 2050, the percentage of adults over 60 years-old is estimated to increase from 12% to 22% of the world's population (World Health Organization [WHO], 2017). Given this rapid demographic transformation, understanding how subjective well-being (SWB) varies across adulthood has become a highly relevant issue. Life satisfaction is a subjective well-being measure that includes both a global cognitive judgement of one's life and an affective component (Diener, 1984). Researchers have found that self-reported life satisfaction is an important indicator of quality of life, strongly associated with such outcomes as adaptive functioning and longevity (Diener & Chan, 2011; Sin, 2016).

Current life satisfaction is important to assess, but so is how people perceive their life satisfaction as changing over time (e.g., Ryff, 1984; Lachman, Rocke, Rosnick & Ryff, 2008; Staudinger, Bluck & Herzberg, 2003; Lang, Weiss, Gerstorf & Wagner, 2013). Individuals use their perceptions of how life satisfaction has changed from the past to the present and what they expect in their future to inform their overall SWB. Assessment of one's SWB, therefore, varies depending on whether people perceive their well-being as getting better or worse (Ryff, 1991; Abramson, Seligman, & Teasdale, 1978; Cross & Markus, 1991; Okun, Dittburner & Huff, 2006). Moreover, these perceived changes in life satisfaction have been found to be strongly associated with various psychological and physical health outcomes including levels of depressive symptoms, number of functional limitations and chronic conditions (Lachman et al., 2008; Lang et al., 2013).

Studies examining perceived changes in life satisfaction have focused mostly on Western cultures (Staudinger et al., 2003; Lachman et al., 2008; Lang et al., 2013). In addition, these studies generally compare either past rating to present ratings, or present ratings compared to

anticipated SWB in the future (Conway & Ross, 1984; Cross & Markus, 1991; Ross, 1989; Wilson & Ross, 2001; Woodruff & Birren, 1972; Lang et al., 2013) as opposed to ratings across the past, present and future (Ryff, 1991; Staudinger, Bluck & Herzberg, 2003). Further, only a few of these studies have examined age differences in perceived changes in SWB (e.g., Ryff, 1991; Lachman et al., 2008), yet these perceptions may have different meanings for individuals of different ages. For younger adults, anticipating a positive outlook (whereby the past is the lowest rating and the future the highest) may function as a source of support that motivates them during times of stress (Taylor, Lichtman, & Wood, 1984; Taylor, Neter, & Wayment, 1995). In contrast, older adults may benefit from construing a more positive perception of the past well-being and the present as improvements in the future may not be a likely outcome (Lachman, 2004). The current study expands on the previous research to examine age differences in perceived changes in life satisfaction across the past, present and future, and how they may vary across people from two different cultures.

CHAPTER 1

Cultural Differences in Levels of Life Satisfaction

Subjective well-being is strongly influenced by one's situational and environmental context (Diener, Suh, Lucas, & Smith, 1999; Smith, 2001; Steptoe, Deaton, & Stone, 2015). Past research consistently indicates higher mean levels of current well-being in Western nations compared to Eastern nations (Diener, Suh, Smith, & Shao, 1995). For example, North Americans generally report greater positive affect, life satisfaction, and lower negative affect compared to East Asians (Diener et al., 1995; Diener & Suh, 2000; Okazaki, 2000). In addition, individuals from Western countries often report higher levels of SWB when later recalling their past well-being compared to the actual levels measured during the experience (Oishi, 2002). In contrast, East Asians tend to remember more stable and accurate levels of past well-being (Oishi, 2002).

Several reasons may explain these consistently lower levels of well-being in Asian compared to Western cultures, and why we would expect lower means of past, present and future life satisfaction in the current study as well. One potential explanation is cultural differences in self-construal, such that individualistic cultures view SWB as the result of one's effort and self-determination; thus, North Americans with independent self-construal may feel the greater pressure to anticipate and achieve high levels of future life satisfaction (Diener & Suh, 2000). In collectivist cultures with interdependent self-construal, however, SWB is thought to be shaped by external sources and less controlled by the individuals. U.S. adults, therefore, may be more motivated to perceive higher levels of past, present and future life satisfaction than Japanese adults. Another potential explanation could simply be response bias: Japanese participants tend

to endorse items near the mid-point of most questionnaires, whereas U.S. participants are more likely to endorse items at scale end-points regardless of the question asked (Chen, Lee, & Stevenson, 1995).

Age Differences in Perceived Past, Present and Future Life Satisfaction Across Cultures

Although cultural differences in current well-being have been examined across adulthood, previous studies have not yet examined people's perceived changes in life satisfaction across adulthood in Asian cultures. In studies of Western samples, older adults are more likely to perceive their pasts as more positive compared to relatively younger adults (e.g., Charles, Mather, & Carstensen, 2003; Kennedy, Mather, & Carstensen, 2004). For example, one study had adults rate their current levels of emotional well-being (Kennedy et al., 2004). Ten years later, they were asked to recall their previous emotional well-being. People generally remembered experiencing higher levels of positive emotions than what they had originally reported, but this bias was more pronounced among older than middle-aged adults. Similarly, studies using data from the Midlife in the United States (MIDUS) found that older adults reported their past life satisfaction more positively than their current life satisfaction compared to middle-aged adults (Lachman et al., 2008; Röcke & Lachman, 2008).

Socioemotional selectivity theory posits that these findings reflect an age-related bias referred to as the positivity effect, whereby older age is related to attending to and remembering more positive versus negative stimuli (see review by Reed & Carstensen, 2012; Mather & Carstensen, 2003, 2005). Socioemotional selectivity theory explains the positivity effect as the result of age-related shifts in time perspective, whereby older adults perceive time left in life growing shorter and therefore focus their goals on maintaining well-being more so than younger adults. Chung and Lin (2012) found that Chinese older adults showed an even greater decrease in

memory for negative stimuli than the U.S. adults. Given that time perspective is related to time left in life and, therefore related to chronological age in most cultures (e.g., Carstensen, Isaacowitz, & Charles, 1999), older adults in both nations may perceive higher levels of past life satisfaction compared to the present than do middle-aged adults.

Prior studies using the MIDUS data also found that older adults anticipate declines in life satisfaction whereas younger and middle-aged adults expect improvements in the future (Lachman et al., 2008; Röcke & Lachman, 2008). Perhaps these differences reflect the perceptions of younger adults who anticipate self-improvement, and continued identity formation, and who perceive a long and optimistic future ahead of them to achieve these goals (Baltes, Lindenberger, & Staudinger, 2006; McFarland, Ross & Giltrow, 1992; Carstensen et al., 1999). In contrast, older adults recognize that time left in life is growing shorter with limited opportunities; in addition, they may also anticipate declines in various domains of functioning. Consequently, we predict similar age-related patterns of future life satisfaction in the U.S. and Japan.

The current study extends the findings by Lachman and colleagues (2008) to examine how culture may differentially shape perceived changes in life satisfaction by comparing responses from the United States and Japan. Both nations have a similar economic standard of living which has a strong influence on individuals' SWB, particularly for older adults (Swift, Vauclair, Abrams, Bratt, Marques, & Lima, 2014). Distinct cultural roots and traditions, however, may lead to differences in how the two cultures perceive changes in life satisfaction. No previous research has explicitly compared responses from participants from Western and Eastern cultures to examine this question. Previous literature on cultural differences in subjective well-being (Suh, Diener, Oishi & Triandis, 1998; Markus & Kitayama, 1991, 1998), however,

suggests that Japanese adults may begin to perceive decline in life satisfaction trajectory at an earlier age compared to U.S. adults. This prior research found that Western cultures hold independent self-construal whereby SWB is based on hedonic well-being such as emotions and feelings. In contrast, SWB in Eastern culture is more heavily influenced by one's duties and societal roles based on their interdependent self-construal (Suh et al., 1998). In addition, Kitayama and colleagues (2010) found that personal control is most predictive of SWB and health for U.S. adults whereas absence of relational strain is more important for Japanese adults. Thus, Japanese adults may be more strongly influenced by the increased responsibilities and burden beginning in midlife particularly to care for both younger and older family members and may perceive negative changes in life satisfaction at younger ages than the U.S. adults.

The Present Study

The present study examined whether perceptions of change in life satisfaction vary by age and culture. We used two national data sets from the Midlife in the United States (MIDUS) and the Survey of Midlife in Japan (MIDJA) that sampled a wide age range of individuals across adulthood to test three hypotheses. First, based on prior research, we hypothesized an overall difference across the two cultures such that Japanese adults will report lower levels of past, present and future life satisfaction than U.S. adults across adulthood (Hypothesis 1; H1). Second, we predicted that across cultures, older adults will show negative trajectories of perceived life satisfaction (where perceptions of past life satisfaction are higher than current life satisfaction, which in turn are higher than perceptions of future life satisfaction), whereas younger adults will show the opposite pattern, or a more positive trajectory of change (Hypothesis 2: H2). Finally, we predicted that age differences would vary by culture, such that more negative perceptions of

change across past, present and future life satisfaction will be observed at earlier ages for Japanese adults compared to U.S. adults (Hypothesis 3: H3).

CHAPTER 2

Method

Sample and Design

Participants in the current study were from Midlife in the United States (MIDUS II), a national sample of non-institutionalized, English-speaking U.S. adults ($N = 4963$), and from the Survey of Midlife in Japan (MIDJA), a probability sample of Japanese adults living in the Tokyo metropolitan area ($N = 1,027$). Data from MIDUS II were used for the current analyses due to the proximate time of data collection as MIDJA data. Comprehensive details of the larger study design can be found in Brim, Ryff, and Kessler (2004). Data for MIDUS were collected using telephone interviews and self-administered questionnaires; all data for MIDJA were collected through mailed questionnaires. A key purpose of the Japanese sample (MIDJA) was to make cross-cultural comparisons with the U.S. (MIDUS) on the role of various psychosocial factors on health outcomes. Data for MIDUS II were collected in 2004-2006 and participants ranged in age from 28-84 ($M = 55.43$, $SD = 12.45$). MIDJA data were collected in 2008 and participants ranged from 30-79 years-old ($M = 54.36$, $SD = 14.15$). Data collection for both studies were approved by the Education and Social/Behavioral Sciences and the Health Sciences IRBs at the University of Wisconsin-Madison.

To compare the same age range between the two data sets, we removed people older than 79 and younger than 30 in MIDUS. In addition, the MIDUS sample only included one person in each of the following ages: 30, 31, and 32. As a result, we limited our analyses to people aged 33-79. This new age range resulted in a final sample size of 4,803 MIDUS participants and 974 MIDJA participants. Thus, the final analytic sample of the current study was 5,777 adults from both nations who ranged in age from 33-79 years-old ($M = 55.43$, $SD = 12.45$). Both samples

had similar percentage of males (MIDUS= 46.9%; MIDJA= 49.2%) and a greater proportion of individuals in the MIDUS sample reported more than high school education (MIDUS= 67%; MIDJA= 43.3%).

Measures

The MIDJA questionnaires parallel those found in MIDUS, which assess various sociodemographic and psychosocial characteristics, mental health (e.g., affect, life satisfaction, depression) and physical health. All scales were recoded so that higher numbers reflect greater levels of the construct being measured (Appendix A).

Life Satisfaction. Using three separate items, participants rated their life overall these days; looking back ten years ago; and looking ahead ten years using a scale from 0 to 10 where 0 means “the worst possible life overall” and 10 means “the best possible life overall.”

Age. To examine non-linear effects of age and to further extend the previous findings by Lachman and colleagues, five age groups were formed as follows: (1) 33-40 (MIDUS & MIDJA Group 1, n=789, 13.66%); (2) 41-53 (MIDUS & MIDJA Group 2, n=1971, 34.12%); (3) 54-65 (MIDUS & MIDJA Group 3, n=1756, 30.40%); (4) 66-72 (MIDUS & MIDJA Group 4, n=730, 12.64%); (5) 73-79 (MIDUS & MIDJA Group 5, n=531, 9.19%).

Covariates. We adjusted for the following sociodemographic, family, psychological and health characteristics that may be associated with life satisfaction: gender (1=female; 0= male), marital status (1=married/partnered and 0=single), number of current chronic illnesses which ranged from 0 (no chronic illness) to 3 (more than three chronic illnesses), and highest level of education (Z-scored due to different scales between two countries). Personality traits included neuroticism (moody, worrying, nervous, and calm-reserve coded) (MIDUS alpha = .61; MIDJA alpha = .75) and extraversion (outgoing, friendly, lively, active, and talkative) (MIDUS alpha =

.76; MIDJA alpha = .84), which were constructed by calculating the mean score across all the items; responses ranged from 1 (not at all) to 4 (a lot). Lastly, a life orientation score was calculated by summing the values of three optimism items (e.g., “In uncertain times, I usually expect the best; I’m always optimistic about my future; I expect more good things to happen to me than bad”) and three reverse-coded pessimism items (e.g., “I rarely count on good things happening to me; I hardly ever expect things to go my way; If something can go wrong for me, it will”) (MIDUS alpha = .80; MIDJA alpha = .62).

Statistical Analyses

We used multilevel modeling to examine within-person perceived changes in life satisfaction that may vary by culture and age (Bryk & Raudenbush, 1992). Each respondent from both nations provided three ratings of life satisfaction – one for the past, one present and one future -- resulting in 12,331 repeated observations nested within 5,777 individuals. To simplify the model structure, we used two-level models with level-2 indicating person-level. The intra-class correlation (*ICC*) of life satisfaction indicated that 45% of the variance was attributable to between-person differences and the rest was due to within-person variations, justifying the use of multilevel modeling. Respondents from the MIDUS survey were coded as 0 (=U.S.) and respondents from the MIDJA were coded as 1 (=Japan). A person-level Time variable (0=*past*, 1=*present*, and 2=*future*) was created to examine the slope of life satisfaction from the past to future. The simplified version of life satisfaction model was specified:

LifeSatisfaction_{ti}

$$\begin{aligned}
 &= \beta_{0i} + \beta_1(Nation_i) + \beta_2(Time_{ti}) + \beta_3(Agegroup_i) \\
 &+ \beta_4(Nation_i)(Time_{ti}) + \beta_5(Time_{ti})(Agegroup_i) \\
 &+ \beta_6(Nation_i)(Agegroup_i) + \beta_7(Nation_i)(Time_{ti})(Agegroup_i) + u_{0i} + e_{bi}
 \end{aligned}$$

β_1 represents cultural differences in overall life satisfaction across the measures (past, present and future) and tests H1; β_2 indicates within-person trajectories of life satisfaction from the past to the future; and β_3 indicates age differences in overall life satisfaction. Model 1 tested the main effects of nation, time, and age group before adding interaction terms. In Model 2, we added interaction terms between nation, time, and age group ($\beta_4 - \beta_7$). For H2, β_5 indicates age differences in within-person trajectories of life satisfaction. For H3, β_7 tests how two nations differ in age-related trajectories of life satisfaction. Models were fit using SAS Proc Mixed with all continuous variables centered at the sample means.

Results

Descriptive Results. Table 2.1 presents descriptive statistics and correlations of all variables used in this study. Relationships between sociodemographic variables with the past, present and future life satisfaction were in the expected direction, exhibiting a similar pattern between the U.S. and Japanese samples. People who were married (vs. not married) and had higher levels of education reported higher levels of past, present and future life satisfaction. A greater number of chronic illnesses were associated with lower levels of present and future life satisfaction. Higher levels of extraversion and optimism were associated with higher past, present and future life satisfaction, whereas higher levels of neuroticism and pessimism were associated with lower levels of life satisfaction. Older age was associated with higher levels of perceived past life satisfaction and lower future life satisfaction in both the U.S. and Japanese sample. Age was associated with higher current life satisfaction in the U.S. sample, but unrelated to age in the Japanese sample.

Mean Levels of Past, Present and Future Life Satisfaction by Age Group and Culture. The first two columns in Table 2.2 shows results from a multilevel model predicting

patterns in the perceptions of past, present and future life satisfaction. In support of H1, a significant main effect of nationality indicates that Japanese adults reported lower life satisfaction on average for all three life satisfaction scores than U.S. adults. A main effect of time (past, present and future) indicated that, independent of cultures and age groups, individuals reported higher levels of satisfaction for the future and lower levels in the past compared to current life satisfaction. A significant main effect of the age group also indicated higher level of life satisfaction for older groups compared to younger age groups on average.

The second two columns in Table 2.2 shows results after adding interactions between nation, time, and age groups. In support of H2, the two-way interaction between time and age groups was significant. A post-hoc test indicated that the two oldest age groups (66-72 and 73-79) showed negative trajectories of past, present and future life satisfaction, whereas the three younger groups (aged 33-40 to 54-65) showed positive trajectories. These post-hoc tests illustrate a clear linear relationship between age and the perceived trajectory of life satisfaction, such that the youngest group exhibited the greatest increase from the past to future life satisfaction and the oldest group exhibited the greatest perceived decrease.

This two-way interaction effect was further qualified by the significant three-way interaction between nationality, time and age group, supporting H3. Figure 2.1 depicts the nature of this interaction. Age-related negative trajectories of past, present and future life satisfaction appeared earlier in Japan compared to the U.S. In addition, younger U.S. adults perceived a steeper positive trajectory of life satisfaction compared to Japanese younger adults and the oldest sample of Japanese adults perceived greater decrease in negative trajectory compared to their same-aged U.S. peers. Table 2.3 further shows slope differences in life satisfaction by five age groups separately by nation. Slopes of the perceived changes in life satisfaction (past to future

life satisfaction) were calculated separately for each age group for each nation. In the MIDUS sample, Age Group 1 (33-40), Age Group 2 (41-53) and Age Group 3 (54-65) perceived an increase in life satisfaction from the past to the future, whereas this same perceived linear increase was only observed in Age Groups 1 and 2 in the MIDJA sample. In the U.S., only the last two age groups over the age of 65 (Age Group 4; 66-72 & Age Group 5; 73-79) perceived a linear decline in life satisfaction from the past to the future, whereas perceptions of decline in life satisfaction trajectory appeared ten years earlier in Japan. In other words, by late middle-age (Age group 3), Japanese adults reported a declining trajectory. Tests of slope differences between the two nations revealed significant slope differences across all age groups.

Exploratory Analysis. We explored whether the Japanese adults had profiles in life satisfaction that made them appear 10 years earlier than the Americans. For this test, we matched the Japanese adults with U.S. adults who were 10 years older so that they “appeared” older than they were, and then compared them to that actual age group in MIDUS using multi-level modeling. Age Group 1 in the U.S. and Age Group 5 in Japan were not included in the analysis because they had no same-age comparison group after this artificial shift. Results, illustrated in Figure 2.2, indicated that the previous significant three-way interaction between the nationality, time, and age groups no longer remained ($F(1, 8387) = 2.11, p = 0.12$). In both nations, older adults (MIDUS: 66-72 & 73-79; MIDJA: 54-65 & 66-72) showed trajectories of decrease in life satisfaction and younger adults (MIDUS: 41-53 & 54-65; MIDJA: 33-40 & 41-53) showed trajectories of increase in past, present and future life satisfaction, confirming the patterns of accelerated aging in Japan.

CHAPTER 3

Discussion

The current study examined perceived change in life satisfaction, and how these perceptions vary by age and between participants from the U.S. and Japan. In both nations, the youngest adults exhibited positive trajectories of past, present and future life satisfaction, whereby the past was rated less positively than current life satisfaction, which was rated less positively than their future satisfaction. This pattern, however, was more pronounced in the U.S. sample. In both samples, relatively older adults exhibited negative trajectories, such that the past was higher than their current levels, which in turn were higher than those anticipated in the future. This declining pattern was observed in middle age groups among the Japanese adults, however, and the declining pattern was much steeper among the oldest Japanese compared to the oldest American participants.

Japanese Adults Report Lower Life Satisfaction Across All Age Groups When examining overall levels of life satisfaction, results are consistent with past research whereby Japanese adults reported lower mean levels of past, present and future life satisfaction than the Americans. These differences may reflect cultural differences in the appraisals people use to form their SWB across the two cultures, as discussed in prior research (Suh et al., 1998). Alternatively, this difference could reflect a general response bias seen across all surveys, whereby people from Asian countries are more likely to endorse items in the midpoint of a scale, whereas people from North American are more likely to endorse items on the endpoints (Chen et al., 1995).

Japanese adults reported lower levels of past life satisfaction compared to the Americans. Past research indicates that Asian Americans show little discrepancy between recalled SWB and

momentary reports of SWB whereas European Americans remember past SWB as higher than what they had reported during the actual experience (Oishi, 2002). This cultural difference may reflect how independent versus interdependent self-construals influence perceptions of past life satisfaction. U.S. adults hold independent self-construals whereby SWB is achieved through one's effort and ability whereas Japanese adults have interdependent self-construal and do not perceive SWB as one's own responsibility. Thus, the responses from the U.S. adults may reflect a social desirability bias to perceive higher levels of past life satisfaction (e.g., Diener & Suh, 2000).

Similar Age Differences in Trajectories of Life Satisfaction Across Cultures Overall age differences in perceived changes in past, present and future life satisfaction were similar across the two nations. In both samples, younger adults perceived positive changes such that ratings increased successively for past, present and future life satisfaction. In successively older age groups, however, the pattern reversed such that by the oldest age group, the trajectory showed a negative decline across past, present and future ratings.

In both nations, the higher ratings of past life satisfaction compared to current life satisfaction among successively older age groups may be explained by differences in goals. Socioemotional selectivity theory posits that older age is related to a greater focus on emotional goals, as reflected in the positivity effect (Reed & Carstensen, 2012). With increasing age, older adults attend to and recall a greater proportion of positive information relative to neutral or negative information. In contrast, younger adults do not show the same bias towards positive stimuli. In addition, younger adults have goals focused more heavily on self-improvement, so it may be beneficial for them to predict increases in future life satisfaction. Older adults, in

contrast, may be more focused on maintenance and prevention of potential losses, and therefore be more focused on the present as opposed to the future (Staudinger, 2003).

Cultural Differences in Age-related Patterns of Past, Present and Future Life

Satisfaction Japanese adults in early midlife exhibited perceptions of decline in life satisfaction, whereas this pattern was observed among U.S. adults who were slightly older. People who were aged 54 to 65 in the U.S. still perceived improvement in life satisfaction trajectory, mirroring younger Americans' optimistic perception of change in life satisfaction. In contrast, Japanese adults who were aged 54-65 perceived and further anticipated decline, perceiving a pessimistic trajectory of life satisfaction paralleling perceptions of their older adults. In addition, the American group in their 30s had the most "youthful" perceptions, in that they have the steepest positive trajectory whereby perceptions from the past to the future increase more than any other age group. In contrast, to the extent that the negative trajectory is characteristic of older age, the oldest Japanese had the steepest downward perceptions of declining satisfaction from the past to the future.

These findings indicate that the Japanese adults may be psychologically aging faster, as far as their perceptions of life satisfaction are concerned, than the U.S. adults. This finding is further supported by the exploratory multilevel modeling analysis where Japanese age groups were matched with those who are ten years older in the U.S. Perception and anticipation of change in life satisfaction were not statistically significantly different across the two nations in this analysis. At first glance, this finding may seem counterintuitive given the cultural differences in health and longevity. Research consistently shows healthier profiles in Japan compared to the U.S., which may also explain the longer life expectancy. For example, Coe and colleagues (2011) found lower levels of interleukin-6 (IL-6), the pleiotropic cytokine predictive

of cardiovascular disease and mortality, in Japanese compared to U.S. adults. Despite the objective evidence of better health in Japan, our results indicate that Japanese adults perceive a more pessimistic trajectory of life satisfaction at younger ages than U.S. adults.

A combination of differences in cultural values and appraisals, however, may explain why Japanese adults may begin to perceive decline in life satisfaction trajectory at an earlier age compared to U.S. adults. (Suh, et al., 1998; Markus & Kitayama, 1991, 1998). Suh and colleagues (1998) explain the “chronic” influence of culture whereby individuals from different cultures utilize different sources of information to formulate one’s life satisfaction. For example, emotion is the only predictor of life satisfaction in individualistic cultures whereas both emotions and norms significantly predicted life satisfaction in collectivist cultures (Suh et al., 1998). Based on independent self-construal in Western cultures, SWB is grounded more heavily in hedonic well-being such as feelings and emotions. In contrast, Eastern cultures hold interdependent self-construal and rely more heavily on one’s societal duties and responsibilities to construct SWB. Perceptions of fulfilling one’s duties within a group may have greater influence on one’s SWB than feelings and emotions. Midlife is a period of balancing multiple roles and responsibilities in various domains of life such as work and family (Lachman, 2004). Compared to U.S. middle-aged adults, Japanese middle-aged adults may be more heavily impacted by the increased demands and responsibilities in midlife leading to a more negative trajectory of life satisfaction.

Self-construals may also interact with control strategies to differentially shape individuals’ anticipation of future life satisfaction across the two nations. Primary control is conceptualized as effort and attempt to change the environment to fit one’s own preferences and needs whereas secondary control is changing the self in order to fit in with the environment (Rothbaum, Weisz, & Snyder, 1982). Individuals in Western cultures tend to assume greater

control over their environment in comparison to Eastern cultures, as reflected in more frequent use of primary control (Langer, 1983). In individualistic cultures, SWB is regarded as the result of one's effort and self-determination, so North Americans may feel the increased pressure to anticipate, achieve and display high levels of future life satisfaction (Diener & Suh, 2000). In collectivist cultures, however, SWB is thought to be shaped by external sources and less controlled by the individual. Consequently, secondary control is more readily utilized. Research indicates that sense of control is the most important predictor of SWB and health in the U.S. whereas relationship strain is a stronger predictor for Japanese adults (Kitayama et al., 2010). Based on greater confidence and belief in one's control over the environment (e.g., more use of primary control), U.S. adults may be more motivated to perceive and express possible increase in SWB than Japanese adults.

Moreover, Japan has the fastest aging population in the world. The rapidly growing proportion of older adults accompanied by changes in the economy and family structures may create especially burdensome roles and duties for middle-aged adults. Facing multiple responsibilities such as financial burden to care for their children and elderly adults, Japanese middle-aged adults may, beginning earlier in adulthood, perceive stronger decreases in life satisfaction (Elmelech, 2005; Lachman et al., 2008). Social and political commentary about the impact of aging in Japan may also influence how older adults construe their usefulness and contribution to society. Ultimately, interdependent self-construal may lead Japanese adults to construct life satisfaction more heavily based on external and social factors such as the well-being of the family and the roles and duties they must fulfill or are no longer filling. In contrast, independent self-construal may allow U.S. adults to focus on their own feelings and emotions, less influenced by the societal context or social roles.

In addition, younger U.S. adults perceived great improvement whereas younger Japanese adults perceived only a slight increase in perceived trajectory of life satisfaction. Similarly, older U.S. adults reported a moderate decline in perceived trajectories of life satisfaction whereas older Japanese adults perceived a steep decrease in their life satisfaction trajectory. Cultural differences in the use of self-enhancing biases may explain the steeper perceived changes in life satisfaction trajectory in Japan. Previous research has shown that self-enhancing biases (e.g., construing oneself under an extremely idealistic light) are most adaptive for those in individualistic cultures (Heine, Lehman, Markus & Kitayama, 1999). Individualistic cultures value autonomy and self-sufficiency (Markus & Kitayama, 1991) and view higher levels of SWB as a reflection of a person's own ability. Eastern collectivist cultures with interdependent self-construal, however, emphasize harmony and conformity with others. For example, greater levels of optimism (Scheier & Carver, 1985) and lower levels of pessimism (Lee & Seligman, 1997) were found in North Americans compared to East Asians (Heine & Lehman, 1995). Thus, U.S. adults may anticipate a greater increase and limited decrease in life satisfaction due to more frequent use of self-enhancing biases.

The observed national differences in SWB, however, remained significant after adjusting for levels of optimism and pessimism. Thus, we may conclude that, although levels of optimism and pessimism may have some influence, cultural differences in age-related patterns of life satisfaction trajectory is not simply a reflection of one's levels of optimism. Changes in economic outlook may be another contributing factor. Japan has had a stagnant economy for years. Although the U.S. economy has had downturns in the recent past, people may be more positive about its future than the projected relatively flat line of Japan.

Limitations and Future Directions

One limitation of the current study is the use of a one-item self-report measure of life satisfaction. The questionnaire asked participants to rate their overall levels of life satisfaction without examining satisfaction in specific domains of life. Past research has shown, however, that the global measure of life satisfaction is useful when comparing population samples (Andrews & Withey, 1976). This study also used cross-sectional data, but future work would benefit from a longitudinal approach to examine age and cultural differences in discrepancies between recalled, predicted, and actual life satisfaction ratings. Past research with U.S. adults indicates a strong association between people's ability to accurately perceive past and future life satisfaction and positive adaptive functioning (Lachman et al., 2008). Individuals who were more realistic (e.g., less discrepancy between perceived past and future life satisfaction and the actual life satisfaction measured in future corresponding time point) reported better health outcomes than those who showed greater illusions. Lastly, future studies can examine the mechanisms behind people's recalled and predicted levels of SWB. Due to the nature of our study design and questionnaires, the current study could not directly determine the sources of information used by the individuals when reporting their current and perceived SWB.

Conclusion

The current study examined age differences in perceived changes in life satisfaction in Japan and the U.S. Although both nations showed similar age-related patterns of perceived changes in life satisfaction, U.S. younger adults perceived greater improvement and Japanese older adults perceived greater decline in life satisfaction trajectory. Moreover, Japanese adults preceded the U.S. adults by beginning, at an earlier age, to anticipate a decline in life satisfaction. Japan has the longest life span and the healthiest profiles in the world. Despite all its advantages, reports of SWB indicate that Japanese adults begin to perceive a bleak life trajectory

earlier in adulthood than U.S. adults. Results of the current study raise important questions about the unique qualities in each culture that influence both current and perceived change in SWB. Further, our findings highlight the importance of taking a comprehensive approach to understanding SWB by not only examining current levels but also perceptions of change in SWB. Finally, our study emphasizes the need for more cross-cultural research before findings and theories in Western cultures are generalized to the rest of the world.

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Table 2.1

Correlations Among All Variables of Interest for U.S. and Japan.

Variable (Mean, SD or %)	1	2	3	4	5	6	7	8	9	10	11
	(49.18%=Male) (16.04%=No illness) (29.73%=Single) (Z-score)(1.98, 0.66)(2.42, 0.68)(19.41, 3.57)(18.28%=Youngest)(6.36, 2.01)(6.14, 2.05)(6, 2.39)										
1. Gender (Ref=Male)(46.87%=Male)	-	0.08*	-0.09*	-0.22**	-0.11*	0.05	0.07*	-0.04	0.08*	0.14**	0.11*
2. Chronic Illnesses (Ref=No illness)(22.71%=No illness)	0.12*	-	-0.06	-0.07*	0.17**	-0.04	-0.18**	0.11*	-0.06	-0.13**	-0.16**
3. Marital Status (Ref=Single)(28.48%=Single)	-0.14**	-0.07**	-	0.09*	-0.07*	0.08*	0.16**	0.08*	0.20*	0.28**	0.19**
4. Highest Education(Z-score)	-0.10**	-0.13**	0.05*	-	0.06	0.10*	0.13**	-0.27**	0.06	0.16**	0.23**
5. Neuroticism(2.08, 0.69)	0.12**	0.18**	-0.05*	-0.11**	-	0.03	-0.29**	-0.24**	-0.15**	-0.22**	-0.09*
6. Extraversion(3.11, 0.57)	-0.08**	-0.09**	-0.004	-0.03*	-0.15**	-	0.36**	-0.05	0.22**	0.33**	0.34**
7. Life Orientation(23.12, 4.8)	-0.02	-0.17**	0.11**	0.21*	-0.44**	0.36**	-	0.04	0.24**	0.41**	0.41**
8. Five Age Groups (Ref=Youngest)(12.72%=Youngest)	-0.005	0.24**	-0.06**	-0.14**	-0.16**	0.06**	0.09**	-	0.14**	0.02	-0.23**
9. Past Life Satisfaction(7.4, 1.85)	-0.03*	-0.02	0.15**	-0.03	-0.16**	0.19**	0.19**	0.27**	-	0.48**	0.29**
10. Present Life Satisfaction(7.86, 1.54)	0.01	-0.15**	0.2**	0.06*	-0.29**	0.32**	0.44**	0.13**	0.41**	-	0.67**
11. Future Life Satisfaction(8.1, 1.78)	0.02	-0.2**	0.14**	0.12**	-0.17**	0.25**	0.35**	-0.23**	0.13**	0.64**	-

Note: * $p < 0.05$, ** $p < 0.001$. Lower triangle comprises of correlations for the U.S. sample. Upper triangle comprises of correlations for the Japanese sample.

Table 2.2

Multilevel Models Predicting Past, Present, and Future Life Satisfaction by Five Age Groups and Nationality

Variable	Perceived Life Satisfaction without Interactions		Perceived Life Satisfaction with Interactions	
	<i>b</i> (SE)	<i>df</i>	<i>b</i> (SE)	<i>df</i>
Intercept	7.00 (.06)**	4725	6.11 (.07)**	4724
Gender	0.16 (.04)**	4725	0.16 (.04)**	4724
Number of Chronic Illnesses	-0.09 (.02)**	4725	-0.09 (.02)**	4724
Marital Status (ref=Single)	0.60 (.04)**	4725	0.60 (.04)**	4724
Education (Z-score)	0.04 (.02)*	4725	0.04 (.02)*	4724
Neuroticism	-0.17 (.03)**	4725	-0.17 (.03)**	4724
Extraversion	0.52 (.03)**	4725	0.52 (.03)**	4724
Life Orientation	0.08 (0)**	4725	0.08 (0)**	4724
Nationality (reference=U.S.)	-0.95 (.05)**	4725	-0.08 (.10)	4724
Time (ref=Past)	0.25 (.01)**	9413	1.05 (.03)**	9410
Age Group (ref=Youngest grp)	0.04 (.02)*	4725	0.47 (.02)**	4724
Nationality*Time			-0.62 (.06)**	9410
Nationality*Age Group			-0.20 (.05)**	4724
Time*Age Group			-0.40 (.01)**	9410
Nationality*Time*Age Group			0.06 (.03)*	9410

Note. $p < 0.05$, * $p < 0.001$ **. Standard Errors are indicated by the parentheses.

Table 2.3

Mean, Slope, and Slope Differences of Life Satisfaction Ratings in the Past(10 years ago), Present(current), Future(10 years in the future) by Five Age Groups and Nationality

	U.S.				Japan				U.S. vs. Japan
	Past LS	Present LS	Future LS	Slope	Past LS	Present LS	Future LS	Slope	Slope Difference
<i>Age Groups</i>									
Age Group 1	6.11(.06)**	7.16(.06)**	8.21(.06)**	1.05(.03)**	6.03(.1)**	6.46(.08)**	6.89(.1)**	0.43(.05)**	0.62(.06)**
Age Group 2	6.58(.05)**	7.23(.05)**	7.88(.05)**	0.65(.02)**	6.30(.08)**	6.39(.07)**	6.47(.08)**	0.09(.04)*	0.56(.04)**
Age Group 3	7.06(.05)**	7.31(.05)**	7.56(.05)**	0.25(.02)**	6.57(.07)**	6.31(.06)**	6.06(.07)**	-0.26(.03)**	0.50(.04)**
Age Group 4	7.53(.06)**	7.38(.06)**	7.23(.06)**	-0.15(.02)**	6.84(.09)**	6.24(.08)**	5.65(.09)**	-0.6(.04)**	0.45(.05)**
Age Group 5	8.01(.07)**	7.46(.07)**	6.91(.08)**	-0.55(.04)**	7.11(.12)**	6.17(.1)**	5.23(.12)**	-0.94(.06)**	0.39(.07)**

Note. * $p < 0.05$. ** $p < 0.001$. Standard errors are presented in parentheses.

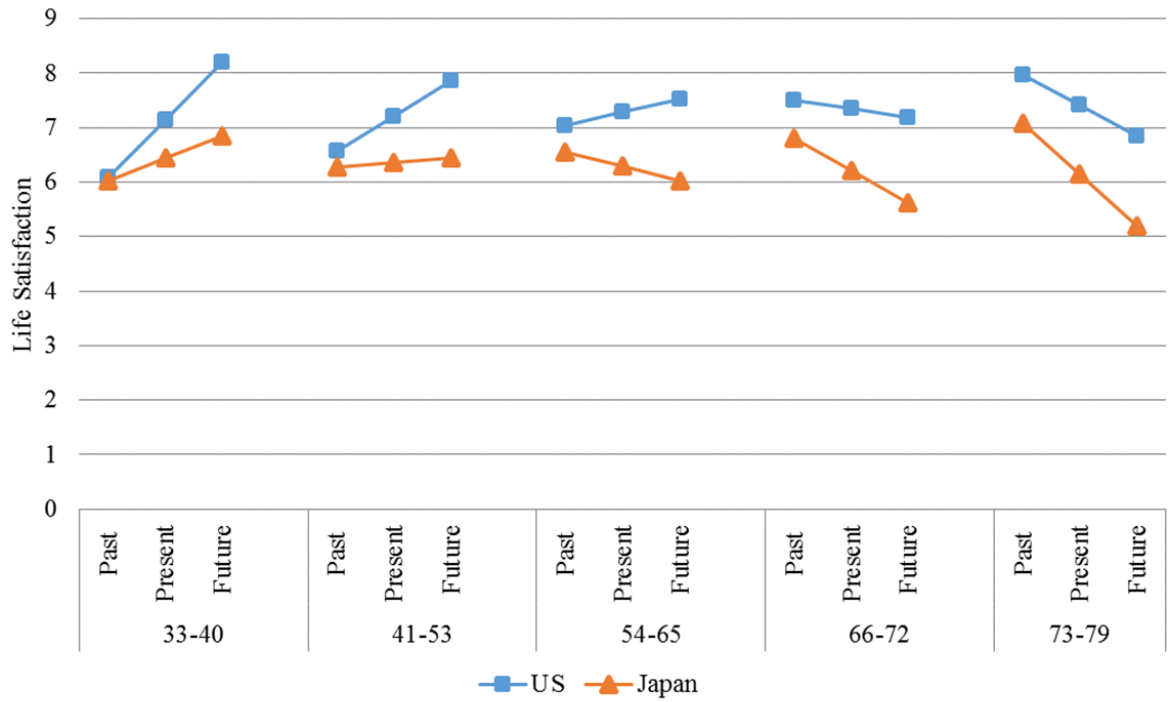


Figure 2.1. Perceived past, present and future life satisfaction by age group and nationality.

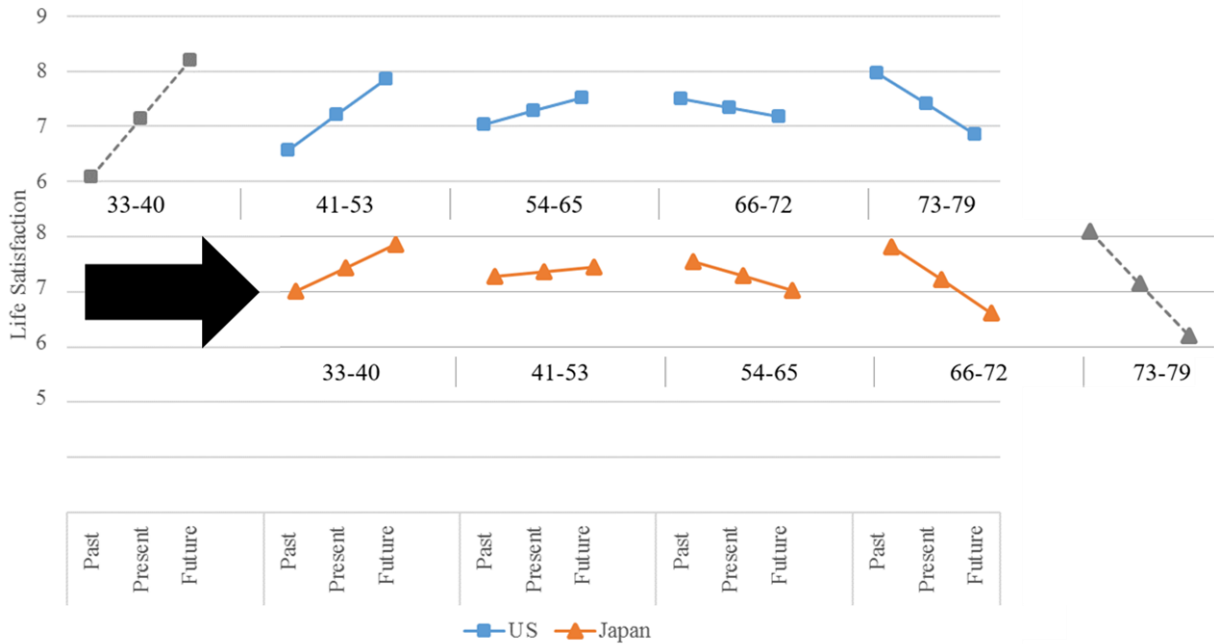


Figure 2.2. Japanese perceived past, present, and future life satisfaction pushed forward by one age group.

Appendix A Study Measures

Past, Present and Future Life Satisfaction:

Scale: 0 (Worst) to 10 (Best)

Using a scale from 0 to 10 where 0 means "the worst possible life overall" and 10 means "the best possible life overall," how would you rate your life overall [ten years ago/these days/ten years in the future]?

Extraversion:

Scale: 1 (Not at all) to 4 (A lot)

How much does [Outgoing/Friendly/Lively/Active/Talkative] describe you?

Neuroticism:

Scale: 1 (Not at all) to 4 (A lot)

How much does [Moody/Worrying/Nervous/Calm(reverse-coded)] describe you?

Life Orientation:

Scale: 1 (A lot disagree) to 4 (A lot) agree

Optimism

1. In uncertain times, I usually expect the best
2. I'm always optimistic about my future
3. I expect more good things to happen to me than bad

Pessimism

1. If something can go wrong for me, it will
2. I hardly ever expect things to go my way
3. I rarely count on good things happening to me

Number of chronic illnesses:

Scale: 0 (None) to 3 (3 or more number of chronic illnesses)