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Understanding "silver" consumers through cognitive age, health condition, financial status, and personal values: Empirical evidence from the world's most mature market Japan

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ABSTRACT

Older consumers remain under-researched, especially in Japan, the country most severely affected by demographic change with a rapidly aging and shrinking population. This paper aims at a better understanding of Japanese older consumers through cognitive age, health condition, financial status, and personal values. This study is the first one using these variables together on a sample of 316 older Japanese consumers. The age perception of the respondents was found on average 8 years younger than their actual chronological age, in line with the assumption of cognitive age being universal. Four groups were identified revealing a decrease in the difference between chronological and cognitive age with lower levels of health and wealth. The difference was found higher for people feeling healthy and poor than for people feeling in poor health and wealthy, thus indicating that feeling in good health was having somewhat more impact on the difference between actual and cognitive age than feeling wealthy. Respondents gave top ranking to "warm relationships with others", second importance to "security", and third importance to "fun and enjoyment in life". The rankings of "excitement", "fun and enjoyment in life", and "sense of accomplishment" were showing a significant decrease of importance with higher cognitive age groups.

INTRODUCTION

Despite the growing importance of the 50+ age group in the population, older consumers are still under-researched and still often not included in a range of marketing practices (Szmigin and Carrigan, 2001, Sudbury and Simcock, 2009). The vast majority of the research on older consumers published so far has been conducted in North America and Europe, whereas Japan – the country most severely affected by the demographic shift with both a rapidly aging and shrinking population – has been widely neglected. This is all the more surprising given the fact that in Japan, older people hold a disproportionately large amount of personal financial assets, spending power, and time to consume. Older consumers in Japan obviously form an attractive market segment – the "silver" market – and they have already overtaken younger age groups in terms of average household purchasing power and consumption, a trend that is forecast to increase even further over the next three years (The Nikkei Weekly, 2010). This is also one of the reasons why experts have pointed to the fact that managers and marketers around the globe can learn from experimenting in the Japanese lead market and why some foreign companies have already invested to take advantage of attractive opportunities represented by the demographic trend in Japan (Kohlbacher *et al.*, 2011).

This paper aims to contribute to the state-of-the-field of research on older consumers in general and the Japanese older ("silver") consumer in particular. It attempts to achieve a better understanding of the Japanese older consumer through the concept of cognitive age, personal values, health condition, and financial status. Whereas cognitive age – as a form of self-concept – has proven important in gerontology and marketing, empirical studies outside the Western world are relatively scarce, at least in comparison to the large number of research conducted in the USA (cf. e.g. Barak, 2009, Sudbury and Simcock, 2009). Health condition and financial status have been used to investigate the silver market (e.g. Moschis, 1996), but rarely in combination with cognitive age. As for values, Sudbury and Simcock (2009) have so far been the only ones to look into the relationship between personal values and cognitive age for mature consumers in the UK.

Given the aforementioned gaps in the literature and its suggestions for further research (e.g. Wilkes, 1992, Gwinner and Stephens, 2001, Mathur and Moschis, 2005), this research partly replicates and – more importantly – extends previous studies (e.g. Moschis, 1996, Sudbury and Simcock, 2009, Van Auken and Barry, 2009). It replicates previous research by using cognitive age, health condition, financial status, and personal values and extends it by using the four variables together on a Japanese sample (the most mature market in the world).

THEORETICAL BACKGROUND AND PREVIOUS RESEARCH

Cognitive age

Despite its value and various uses, the limitations of chronological age as a meaningful predictor variable have long been acknowledged (Sudbury and Simcock, 2009: p. 23). According to Barak and Schiffman (1981: p. 602), the use of chronological age is particularly problematic for researchers interested in age-related research that examines the

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attitudinal or behavioral patterns of older consumers as it does not take into account the fact that people frequently perceive themselves to be at an age other than their birth age. This subjective age[1] is an individual's perception of how old he or she is (Gwinner and Stephens, 2001). It provides a multidimensional view of the aging process (Henderson *et al.*, 1995) and is congruent with the framework of self-concept theory (Sirgy, 1982, Barak and Gould, 1985). Research on self-perceived age strongly suggests that non-chronological age measures may contribute more than chronological age to an understanding of how older consumers view themselves and how they make consumption-related decisions (Wilkes, 1992: 292). Indeed, Moschis and Mathur (2006: 344) have found that "subjective age has a significant impact on old age-related consumer behaviors [. . .] suggesting that old-age consumer behaviors may be the manifestation of a person's old-age identity development". Several empirical studies have confirmed this link between cognitive age and consumer behavior, including the propensity to try new brands (Stephens, 1991), information seeking (Gwinner and Stephens, 2001), fashion consciousness (Wilkes, 1992), and media (Barak & Gould, 1985) and internet usage (Eastman and Iyer, 2005). More recently, research has also established the usefulness of subjective age for segmentation and targeting (Sudbury and Simcock, 2009; Van Auken and Barry, 2009).

According to Sudbury and Simcock (2009), self-perceived age has been studied by American gerontologists for more than 50 years and by American marketing researchers for more than 25 years. This research typically reports cognitive age to be 8–12 years lower than chronological age (e.g. Van Auken and Barry, 1995, Barak and Rahtz, 1999, Sherman *et al.*, 2001). Cognitive age has been investigated in various different countries, but the bulk of the research comes from the USA (see e.g. Barak, 2009 for a review on cognitive age studies around the globe). As far as Japan is concerned, there seems to be only one empirical study on subjective age of which the results have been published in English; both papers reporting results from this study confirm the validity of the cognitive age concept in the Japanese context and suggest that cognitive age is culture free (cf. also Van Auken *et al.*, 2006, Barak, 2009, Van Auken and Barry, 2009). Even though not directly studying subjective age, these findings seem to be corroborated by Hori's (1994) result that Japanese people in their 60s do not think of themselves as being old and believe that old age begins at around 70.

Proposition 1: Cognitive age of Japanese older consumers tends to be lower than their actual age.

Proposition 2: The magnitude of the difference between actual age and cognitive age is similar in comparison with previous studies.

One frequently reported correlate of cognitive age is health (e.g. Gwinner and Stephens, 2001, Mathur and Moschis, 2005, Ong *et al.*, 2009), with the relationship being stable both after controlling for chronological age and other factors, as well as over time (Markides and Boldt, 1983). In a nutshell, research found older adult's health status to be a significant correlate of subjective age with poorer health related to an older subjective age (e.g. Hubley and Russell, 2009, Teuscher, 2009) and that health variables usually explain the greatest proportion of variance in subjective age among all the variables contributing to subjective age identities (Hubley and Hultsch, 1994). Socioeconomic status (Markides and Boldt, 1983) and income (Wilkes, 1992) also show a negative correlation with cognitive age, even though this relationship can disappear when controlling for chronological age (Henderson *et al.*, 1995). Finally, a study by Barrett (2003) found that the older age identities held by the less socioeconomically advantaged are explained by their worse health level. In addition, differences in age identity by higher education level and perceived financial well-being are greatest among older adults (Barrett, 2003).

Proposition 3: The difference between actual age and cognitive age is influenced by the financial status and the health level.

Personal values

Values are widely used in trying to understand and predict the behavior of people in their roles as consumers, employees, or other relevant ones to business and marketing. In particular, empirical research links personal values to various consumption attitudes and behavior (e.g. Kahle *et al.*, 1986, Homer and Kahle, 1988, Burroughs and Rindfleisch, 2002; Schiffman *et al.*, 2003). Moreover, personal values are also used in marketing studies as a basis for market segmentation and product positioning (Kahle and Kennedy 1988; Schiffman *et al.*, 2003).

A variety of approaches to measure personal values have been developed, employed, and compared with each other (e.g. Kahle *et al.*, 1986, Novak and MacEvoy, 1990, Kamakura and Novak, 1992), with Kahle's (1983) list of values (LOV) having emerged as one of the most widely employed approaches to measure personal values in consumer research. Its theoretical underpinnings come mainly from Rokeach's and Maslow's reasoning on human nature, motivation, and personality. LOV has been used in a wide variety of consumer research settings in a variety of countries and cross-cultural contexts (Kahle *et al.*, 1999). Its brevity, simplicity, and general application to everyday life make the LOV scale easy to use, straightforward, and comprehensible for respondents in many contexts and cultures (Lee *et al.*, 2007: 1046).

According to Kahle *et al.* (1986: 407), "identified age differences [in personal values] could be due to the obvious factor of age, but could also be due to development, history, biological influences, situational influences, cohort effects, or interactions of these factors". In a similar vein, Sudbury and Simcock (2009: 27) remark that "[t]he literature devoted to older consumers clearly suggests that older people have different values than younger people" and LOV studies have identified differences in values between generations or

[1]The terms subjective age, cognitive age and self-perceived age are used interchangeably in this paper.

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cohorts (e.g. Kahle *et al.*, 1986, Kahle *et al.*, 1988, Muller *et al.*, 1992. However, as Sudbury and Simcock (2009: 28) note, "[d]espite the obvious importance of values in consumer behavior, and the fact that age differences have been identified in values research, only one study, from Australia, has investigated values in relation to a form of self-perceived age, where respondents were asked how old they felt". In this study, Cleaver and Muller (2002) found that the importance placed on the value "fun and enjoyment in life" was predictive of a younger perceived age, and those who felt closer to their actual age placed more importance on "security". Overall, empirical research addressing the issues of values and cognitive age and analyzing them further has remained almost non-existent.

Based on the fact that "cognitive age is now the preferred method of measuring self-perceived age among marketers", Sudbury and Simcock (2009: p. 28) were the first to have tackled this research gap with their study of values and cognitive age among older consumers in the UK. Using quota sampling and a self-administered questionnaire, they obtained 650 usable responses from people 50 years and older in the UK. Measuring self-perceived age with Barak and Schiffman's (1981) cognitive age scale and personal values through Kahle's (1983) LOV scale, they found that their respondents perceived themselves to be almost 10 years younger than their actual age and that there are differences between cognitive age groupings in the relative rankings of values. Indeed, for their sample, significant differences appeared between cognitive age groups for all values except for "self-respect", which was of great importance to all respondents regardless of their cognitive age (Sudbury and Simcock, 2009: p. 30). Sudbury and Simcock's (2009) approach is an important step in enhancing the understanding of older consumers in general and the concept of cognitive age in general. However, it is not enough to test the approach only in one single country. In further enhancing knowledge on these issues, it is crucial to establish whether their findings also hold in other locations (e.g. Mathur *et al.*, 2001). Japan lends itself as a particularly suitable country for replicating and extending their approach as it is the most mature market in the world.

Proposition 4: Groupings of Japanese older consumers classified according to cognitive age levels will show variation in LOV rankings that may differ from those of the previous study in the UK.

RESEARCH AIMS AND METHOD

Following the preceding review of previous research, this study aims to focus on the exploration of our research propositions: (i) cognitive age of Japanese older consumers tends to be lower than their actual age; (ii) the magnitude of the difference between actual age and cognitive age is similar in comparison with previous studies; (iii) the difference between actual age and cognitive age is influenced by the financial status and the health level of older Japanese consumer in line with previous studies suggesting the importance of these two variables to understand the lifestyles of seniors; and (iv) groupings of Japanese older consumers classified according to cognitive age levels will show variation in LOV rankings that may differ from those of the previous study conducted in the UK by Sudbury and Simcock (2009).

Sample

The data sample was collected face to face by a team of Japanese-speaking trained research assistants in the main commercial street of the Sugamo district in northeastern Tokyo. This area is well known in Tokyo as a place of social interaction and gathering of older Japanese. We used 50 years as the lower cut-off point for the respondents to our survey, because it is the lowest age used in studies of older consumers in the literature (e.g. Moschis and Ong, 2011).

A total of 316 completed surveys were obtained for a response rate of 45.6 per cent. Refusals in terms of gender and estimated age groups were not found to be different from the proportions in the final sample. Thus, there is no reason to believe that the final sample is not representative of the Japanese people 50 years and older frequenting the shopping area of Sugamo at the time of research. As the objective of this research was to replicate and extend previous research with the use of a different sample in a different country and to test for relationships between theory-driven concepts, such a convenience sample was deemed appropriate, even though it neither enables to make population-related estimates nor to generalize the findings all over Japan (cf. also the studies by Mathur and Moschis, 2005; Barak *et al.*, 2011).

Measures

The survey instrument was prepared in a series of steps following a systematic review of the literature. An original English shortened version of the survey was prepared including 18 questions fitted on three pages. The questions directly connected to the research aims for this paper included a measure of cognitive age following the four-statement scale proposed by Barak and Schiffman (1981), which is a measure of actual age-role self-concept (Barak and Gould, 1985), and has proved reliable and valid in international contexts (Barak *et al.*, 2011). Respondents were asked to select a decade from 20s to 90s for: (i) "feel age"; (ii) "look age"; (iii) "do age"; and (iv) "interest age". Two questions to measure self-perceived health level and financial status were designed by the authors of this paper. For health level, respondents were asked to rate their state of health as "Well", "Fairly well", "Somewhat poor", and "Poor". This self-assessment health measure was deemed sufficiently valid and reliable given that past research has revealed a persistent, positive congruence of self and physicians' assessments of general health status of older people and that there is a substantial stability of the rating through time (Maddox and Douglass, 1973) and given that objective health measures are difficult to obtain. For financial status, respondents were invited to describe their present financial situation as "Financially well off", "Relatively financially well off", "Having a bit more than needed for their daily life", "Enough to afford their daily life", "Only enough to be able to live their daily life", and

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"Not enough to afford their daily life". The question on values used the LOV scale developed by Kahle (1983) and requested respondents to read carefully all nine statements shown in Table 4 before giving their answer on a scale of importance from 1 to 5.

In the last part of the questionnaire, actual age and gender were asked in a series of other descriptive questions. A first draft of the original English version of the questionnaire was translated into Japanese by four bilingual students. In relation to several face-to-face pretests, sensitive questions were reordered to appear at the end of the Japanese version of the survey. The fine-tuning and back translation for verification purposes of the Japanese version of the survey questionnaire was completed by a Japanese professional expert working for a company specializing in the study of senior people in Japan.

RESULTS

The final sample of 316 completed surveys consisted of a larger proportion of female respondents (66%), in line with the higher average number of older female consumers found in the shopping area of Sugamo where the data were collected (in addition to the fact that women outnumber men in the Japanese population of those 50 years and older, even though to a lesser extent). Average age of the sample was 71 years (min = 51, max = 93, SD = 9). Concerning age groups, the largest proportion of the sample was in the 60 to 79 age bracket (73.7%).

Difference between actual and cognitive age

In line with the scale developed by Barak and Schiffman (1981), a cognitive age score was computed for each respondent using the four statements corrected for the midpoint of the decade given as an answer. Internal reliability using Cronbach's alpha was found to be very good with a coefficient of 0.87, and no improvement resulted from deletion of any of the four statements underlying the scale. The four statements were found highly correlated and a principal components analysis extracted a dominant eigenvalue accounting for 74.34 per cent of variance. A confirmatory factor analysis using AMOS 18 also revealed a good fit with a chi-square value of 0.797 (df = 2; $p = 0.671$), an RMSEA of 0.000 (0.000–0.083), a CFI of 1.000, and an SRMR of 0.0055. The factor loadings were also very good: 0.74 for interests age, 0.81 for do age, 0.85 for look age, and 0.86 for feel age.

Table 1 shows the mean values of actual age of older Japanese men and women respondents of the sample in comparison with cognitive age as well as the average difference between actual and cognitive age. The age perception of older Japanese respondents of the sample was on average 8 years younger than their actual biological age. *T*-tests for the equality of the mean values for men and women of the sample on actual age, cognitive age, and the difference between actual age and cognitive age did not reveal any significant statistical differences as indicated in the last column of Table 1.

Previous research on older people has shown that wealth and health were key variables underlying the lifestyle and well-being of older consumers in general as well as in Japan (Moschis, 1996, Van Auken and Barry, 2009). The two survey questions developed by the authors were used to classify respondents into categories of health and wealth levels. For the variable of financial status, the survey additionally included a question on monthly income, allowing to check that the subjective answers to the more objective measure of financial status were significantly correlated (Kendall tau b = 0.227, $p = 0.00$; Spearman correlation = 0.27; $p = 0.00$).

The symmetric measures of association for ordinal data (Somers'D = 0.185, $t = 3.75$, $p = .00$; Spearman correlation coefficient = 0.21, $t = 3.77$, $p = 0.00$) were also indicating a statistically significant relationship between health and wealth of Japanese older respondents. Those perceiving themselves in better wealth condition tend to associate themselves as being in better health and vice versa. Because more than half of the samples (165) defined themselves as in good health, they were classified as in good health and all others as in (fair to) poor health. For wealth, those answering "financially well off", "relatively financially well off", and "a bit more than needed" were classified as wealthy and others as financially poor. With these classification cut-offs, four groups were formed whenever no missing data were present for either wealth status or health level. The distribution of respondents for the four groups is shown in Table 2.

A substantial number of the survey respondents (39%) said they were in the "wealthy and healthy" category. However, 13 per cent of the respondents were classified as financially poor while saying they were in good health. The observed numbers of respondents in the last two categories are respectively 28.5 and 19.7 per cent. The four categories

Table 1. Actual age, cognitive age, and difference between actual age and cognitive age

	Gender	N	Mean	Std	*T* and *p* values
Actual age	Females	207	70.63	9.01	
	Males	109	71.72	9.01	
	Total	316	71.01	9.01	$T = 1.02$; $p = 0.31$
Cognitive age	Females	193	62.93	11.48	
	Males	102	63.73	10.83	
	Total	295	63.20	11.24	$T = 0.58$; $p = 0.56$
Difference	Females	193	7.88	7.07	
	Males	102	8.08	7.33	
	Total	295	7.95	7.15	$T = 0.22$; $p = 0.82$

Table 2. Sample distribution by level of wealth and health

Wealth and health levels	N	Per cent
Wealthy and healthy	115	38.98
Poor and healthy	38	12.88
Wealthy and fair to poor health	84	28.47
Poor wealth and fair to poor health	58	19.66
Total	295	100.00

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of wealth and health were then cross-tabulated with the difference between actual and cognitive age to test for relationships. The difference between chronological and cognitive age was found decreasing with lower levels of wealth and health. More specifically, wealthy and healthy older Japanese showed the highest age difference (9.19); next came those who felt rather poor but in good health (8.16). They were followed by those feeling wealthy but in less good health (7.05) and finally by those feeling poor and in less good health (6.66). Comparing the two categories in the middle, it seems that feeling in good health has somewhat more impact on the difference between actual and cognitive age than feeling wealthy. However, this trend must be interpreted with caution because an analysis of variance test of the four mean age differences is only statistically significant at the 10-per cent level ($F = 2.27$, $DF = 3$, $p = 0.08$).

List of values scale by score and rank

Mean scores and standard deviations given by the sample of respondents appear in Table 3. The sample of Japanese older respondents gave a top mean score of 4.73 to "warm relationships with others", followed by 4.71 for "security". The least important values were respectively: "sense of belonging" with 3.72 and "excitement" with 3.71. It can be noted that a higher consensus prevails among Japanese respondents for values scoring at the top. Larger standard deviations tend to be observed for values perceived as less important such as for example: "sense of belonging" with a standard deviation of 1.43.

Table 3. List of values average scores of older Japanese (N = 314)

Values	Mean score*	Standard deviation
Warm relationships with others	4.73	0.63
Security	4.71	0.63
Fun and enjoyment in life	4.69	0.77
A sense of accomplishment	4.24	1.10
Self-respect	4.22	1.09
Being well respected	4.02	1.20
Self-fulfillment	4.01	1.17
Sense of belonging	3.72	1.43
Excitement	3.71	1.35

*On a scale of 1 to 5 where 1 is "Not important at all" and 5 is "Extremely important".

List of values ranking/means by cognitive age decade

The LOV scores and rankings are further investigated in relation to five cognitive age groups. As shown in Table 4, the ranking of values of older Japanese fluctuates with cognitive age. For respondents up to the cognitive age group of 60 years old, "fun and enjoyment" is ranked first or second and drops down to third for those feeling in their 70s and 80s. "Warm relationships with others" tends to stay in first or second positions for Japanese respondents with no trend in relation to cognitive age. "Security" comes third for Japanese feeling younger than 50 years old, moves to the second or third most important value for those who consider themselves in their 50s, 60s, and 70s reaching first importance for those who consider themselves in their 80s. "Being well respected" is another value showing a big jump (from seventh to fourth place) in importance for the group of Japanese respondents feeling in their 80s.

A Kruskal Wallis nonparametric test was calculated to check if there was an overall significant statistical rank difference between cognitive age groups for each value in Table 4. A significant difference was found for "Excitement" (Chi-square = 22.71; df = 4; $p = 0.00$), "Sense of accomplishment" (Chi-square = 17.87; df = 4; $p = 0.00$) and for "Fun and enjoyment" at the 10-per cent level (Chi-square = 9.18; df = 4; $p = 0.057$). When significant statistical differences were found in ranking, further investigation was conducted to explore statistical differences between pairs of age groups. The Mann–Whitney tests confirmed significant ranking differences for: "Excitement" between 50s and 60s ($Z = 3.24$, $p = 0.00$); "Sense of accomplishment" between the 70s and 80s ($Z = 1.88$, $p = 0.06$). However, no statistical differences were found for "Fun and Enjoyment" between pairs of age groups. Bivariate Kendall's tau b correlations between cognitive age and "Excitement", Fun and enjoyment", and "Sense of accomplishment' were computed and found negative and significant (Respectively: −0.20, −0.12, and −0.17). This confirms the lower importance of these three personal values with higher cognitive age.

Assuming a metric level of measurement of the data, the overall statistical significance of the value importance for the five age groups was checked using MANOVA. An overall significant difference (Wilks lambda = 1.92; $p = 0.00$) was found. Further, univariate ANOVAs confirmed the significant differences for "Excitement", Fun and enjoyment", and "Sense of accomplishment" (Respectively: $F = 7.1$, $p = 0.00$; $F = 3.85$, $p = 0.00$; $F = 5.93$, $p = 0.00$). Similar

Table 4. List of values average scores and rankings of older Japanese by cognitive age groups (N = 296)

Values	<= 50 ($n = 49$)	50s ($n = 72$)	60s ($n = 93$)	70s ($n = 67$)	80s ($n = 15$)
Self-fulfillment	4.13 (8)	3.92 (8)	4.18 (5)	3.91 (6)	3.27 (7)
A sense of accomplishment	4.50 (4)	4.51 (4)	4.21 (4)	4.01 (5)	3.27 (7)
Being well respected	4.13 (7)	4.06 (7)	4.05 (7)	3.75 (7)	4.00 (4)
Self-respect	4.31 (5)	4.35 (5)	4.14 (6)	4.27 (4)	3.60 (5)
Warm relationships with others	4.85 (1)	4.75 (2)	4.68 (1)	4.72 (1)	4.60 (2)
Sense of belonging	3.85 (9)	3.71 (9)	3.69 (8)	3.54 (8)	3.47 (6)
Security	4.77 (3)	4.75 (2)	4.62 (3)	4.63 (2)	4.80 (1)
Fun and enjoyment in life	4.85 (1)	4.82 (1)	4.66 (2)	4.51 (3)	4.13 (3)
Excitement	4.25 (6)	4.14 (6)	3.42 (9)	3.37 (9)	3.13 (9)

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results as for the nonparametric paired comparisons were also obtained using the Scheffé and Bonferroni procedures.

Impact of variables on cognitive age

In order to further explore the relationships between the four variables, a multiple, stepwise regression was used to test the impact of health, wealth, and personal values on cognitive age. The independent variables that were not coded in increasing order (such as income) were reversed coded to facilitate interpretation. Other independent variables (such as health level) were structured as a linear combination of statements allowing us to reach an acceptable level of measurement reliability. The health level variable was formed using a linear combination of nine statements related to ability to move and constraints to conduct activities related to travel, going out of home, and performing daily activities (Dillon–Goldstein composite reliability index: rho value = 0.89). This more objective measure of health was significantly correlated with the subjective measure (Kendall tau b = 0.283, $p = 0.00$; Spearman correlation = 0.33, $p = 0.00$). Values of "Excitement" and "Fun and enjoyment in life" being conceptually similar in reference to physiological needs (Chéron and Muller, 1993) were combined to form a construct of "Fun and excitement" (rho = 0.75). Finally, all other seven value measures were included in the exploratory regression model as coded in the survey.

Assumptions about linearity, homoscedasticity, normality, and independence of the variables were tested and found not to be violated. A test of stability of retained variables in the stepwise approach was conducted with forward and backward procedures. The same variables were retained with the same order of importance by the two approaches than with the stepwise method. Almost no multicollinearity was left after the stepwise procedure because tolerances and variance inflation factors of the two retained variables were very close to 1 (in addition, all condition indices were also lower than 17).

Both fun and excitement and health level were retained in the final model. Multicollinearity checks indicated no severe variance inflation factors with values close to 1 (both equal to 1.03 for each of the two retained variables). As shown in Table 5, two statistically significant antecedent variables of cognitive age were retained in the multiple regression procedure after controlling for multicollinearity. In order of decreasing relative importance they are: "Fun and excitement" and "Health level". The overall model is statistically significant (F = 22.27, $p = 0.000$). The overall model is accounting for 14 per cent (Adjusted $R^2 = 0.14$) of the variance in cognitive age. Such an R^2 value is not unusual compared with previous results as "... it must be noted that in the literature, the proportion of variance explained in subjective age measures by any combination of variables is notoriously low (usually less than 15%)" (Hubley and Hultsch, 1994: p. 435).

Table 5. Independent variables retained in a stepwise multiple regression on cognitive age (N = 276)

Independent variables	Standardized coefficients	*T* values
Fun and excitement	−0.279	−4.92**
Health level	−0.209	−3.69**
Adjusted $R^2 = 0.14$	*F* value = 22.27, $p = 0.000$	
Durbin Watson = 2.01		

**Significant at level 0.00; * Significant at level 0.05

In spite of R^2 values that are relatively low, this does not reduce the value of these findings. As noted by Novak and MacEvoy (1990), even low R^2 could reflect significant differences across consumer groups. In this context, Duncan (1975: p. 65) noted that "it is a mistake to focus too much attention on the magnitude of R^2". Because the primary focus was to explore antecedent variables of cognitive age among elderly Japanese consumers, it was decided to proceed in line with approaches used in previous research (cf. e.g. Mathur *et al.*, 2003: pp. 135–136).

DISCUSSION

Cognitive age

In terms of cognitive age, the results for the silver market in Japan reveal an average difference of 8 years between self-perceived age and actual age, very similar to the overall 8.4-year difference found by Van Auken *et al.* (2006) for their Japanese sample. Thus, our first research proposition is confirmed. Overall, the results with respect to the applicability of the cognitive age concept and scale to a non-Western context seem to confirm the findings from previous research (cf. e.g. Barak, 2009) and are in line with the results achieved by Van Auken and associates (Van Auken *et al.*, 2006, Van Auken and Barry, 2009) on another Japanese sample. Therefore, the results refute criticism by those who doubt its universal applicability, such as for example Catterall and Maclaran (2001) who argued that the underpinning assumptions inherent in the concept of cognitive age reflect a Western preoccupation with youthfulness and that the situation in Japan is different.

In a similar vein, the cross-cultural research by Barak and associates suggests that the cognitive age scale is reliable and can be used in diverse cultures and that there is a universal nature of the way human beings – irrespective of culture – perceive and feel about cognitive age (Barak *et al.*, 2001, Mathur *et al.*, 2001, Barak *et al.*, 2011). However, these studies also found that the cognitive age scale exhibits only partial measurement invariance across some countries, which implies that culture may play at least some role in the perception of age (Mathur *et al.*, 2001). This is partly supported by Uotinen's (1998) study, which showed differences between residents of Finland and those in the northeastern USA in terms of cognitive age, with the former expressing a greater acceptance of their present age status. Nevertheless, despite some cultural differences in subjective age perceptions, the empirical evidence collected so far in various countries rather indicates that cognitive age is a universal characteristic, irrespective of the cultural background. In reference to our second research proposition, the magnitude of the difference between actual age and cognitive age is confirmed to be similar in this study as compared with previous

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studies. However, it might also be a social phenomenon and, in that case, the usefulness and applicability of the cognitive age concept could change along with changing social attitudes such as the one towards aging for example (cf. e.g. Catterall and Maclaran, 2001). Clearly, further research along this line is necessary.

Health and wealth

As mentioned earlier, the results indicate a statistically significant relationship between health and wealth of Japanese older respondents. Those perceiving themselves as wealthier tend to consider themselves as being in better health and vice versa. One explanation might be that more affluent people can afford better medical treatment, healthier lifestyles and so on, while healthier people can also work harder and longer and thus achieve a higher income. A substantial number of the survey respondents of the sample (39%) were categorized into the "wealthy and healthy" category. This makes sense, of course, as the data were collected among older people in the Sugamo shopping street, that is, able to shop and spend money as well as physically fit enough to take a walk outside their home. However, 13 per cent of the respondents were classified as financially poor while saying they were in good health, and those "wealthy and fair to poor health" and "poor wealth and fair to poor health" are respectively 28.5 and 19.7 per cent.

The difference between chronological and cognitive age was found to decrease with lower levels of wealth and health. The higher the level of health and wealth, the younger the respondents perceived themselves as measured by cognitive age, whereas those with lower levels in both categories did not perceive themselves quite as young. This finding is consistent with previous research on cognitive age in other countries, which tends to reveal negative correlations between health and cognitive age and wealth or income/socioeconomic status and cognitive age (e.g. Markides and Boldt, 1983, Wilkes, 1992, Gwinner and Stephens, 2001, Barrett, 2003, Mathur and Moschis, 2005). Noting that wealthy and healthy older Japanese show the highest difference (9.19), followed successively by those who feel rather poor but in good health (8.16), those feeling wealthy but in less good health (7.05) and those feeling poor and in less good health (6.66), it seems that feeling in good health has somewhat more impact on the difference between actual and cognitive age than feeling wealthy. Given that Gwinner and Stephens (2001), for example, found in the USA that health problems had a stronger impact on cognitive age than income and that health variables usually explain the greatest proportion of variance in subjective age among all the variables contributing to subjective age identities (Hubley and Hultsch, 1994), this finding is consistent with previous research and lends support to our third research proposition. In the multiple stepwise regression on cognitive age of older Japanese consumers, health was retained, whereas wealth was not. This is not surprising given that the bivariate correlation between health status and cognitive age was $-.26$, while it was $-.008$ and not significant between wealth and cognitive age.

Cognitive age and list of values differences

Our results indicate that the ranking of values of older Japanese fluctuates with cognitive age. Whereas a cross-cultural comparison with Sudbury and Simcock (2009) is difficult because equivalence of meaning and measurement is not guaranteed, a tentative interpretation of the ranking similarities and differences between older Japanese and British respondents seems to point to a strong importance of "Security" for both groups but to a substantial ranking difference of the importance of "Self-respect", ranked first by British but fifth by Japanese respondents. In addition, Japanese respondents give top ranking to "Warm relationships with others" whereas it comes third for the British. Finally, "Fun and enjoyment" as well as "Being well respected" appear on average less important for British than for Japanese respondents. Compared with Japanese respondents who ranked "Fun and enjoyment" first, second, or third, the UK respondents placed it in fifth or seventh position for people in their 50s, 60s, and 70s. The ranking for "Warm relationships" in relation to cognitive age groups tends to be lower for UK respondents in third or fourth position. The ranking pattern of Japanese and UK respondents for security are very similar. The rankings of UK respondents for "Being well respected" show an increase in ranking importance with higher perceived age. Thus, we confirm our fourth research proposition with the finding that LOV rankings for similar cognitive age groups of Japanese and UK older consumers are different.

Overall, compared with UK older persons (Sudbury and Simcock, 2009), Japanese seniors tended to put more emphasis on "Warm relationships with others" as it ranked first by Japanese versus third by UK respondents. This could be expected to be in line with the traditional importance of harmony and group relationships in the Japanese and Asian culture. Keng and Yang (1993a, 1993b), in two studies using the LOV in Singapore and Taiwan, offered similar explanations to their findings that the majority of their respondents had opted for "harmony" after collapsing "Security", "Sense of belonging", and "Warm relationships with others" into this unique category. As for age differences, these were only found in their Taiwanese sample, where the older respondents appeared to have stronger preferences for harmonious relationships, but not for the sample from Singapore (Keng and Yang, 1993a, Keng and Yang, 1993b). The much lower importance ranking of "Self-respect" for Japanese older consumers, ranked fifth in the sample as compared with first for the UK sample, may have been related to the lower individualistic culture in Japan. Furthermore, the respondents ranked "Security" second (the same as in the UK) and "Fun and enjoyment in life" third (ranked fifth in the UK). The finding that the combination of "Fun and excitement" was the only value retained in the multiple stepwise regression stresses the importance of this particular type of value and its impact on cognitive age in Japan. This is not too dissimilar from previous research employing LOV in Japan, even though comparisons between studies might be problematic because of differences in the samples employed (in relation to the age range of respondents, this study is the first to use LOV with an older sample of respondents in Japan) as well as changes over time and/or cohort effects. Further research to look at cross-cultural differences in detail is warranted.

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PRACTICAL IMPLICATIONS

Our approach of combining personal values, health condition, and financial status to better understand cognitive age of older consumers can be helpful in trying to change the traditional way of understanding the silver market. Providing such a better picture of the differences in perceived life situation yields important insights for new product development, marketing, and promotion. For example, older people feeling much younger than their chronological age may tend to avoid products associated with old-fashioned design or features that might make them appear old or reveal health problems (e.g. hearing aids). In Japan, the highly successful easy-to-use "Raku-Raku Phone" is a case in point as the company also offers very stylish and functional handsets, while focusing on usability (Kohlbacher and Hideg, 2011). It may also appeal to those older consumers who value "security" (being reachable in case of an emergency), "warm relationships with others" (staying in touch with friends and family via the mobile phone), and "fun and enjoyment in life" (Japanese mobile phones are widely used as entertainment gadgets). In a similar vein, traveler's agencies and related service providers may want to target older consumers by capitalizing on values such as "warm relationships with others" (traveling and experiencing new things together; meeting new people) and "fun and enjoyment in life" (having fun exploring new places and other countries), as well as on programs and itineraries that are attractive to people who are cognitively younger than their real age, while at the same time taking their health and wealth status into account. Popular Japanese tours and packages could be adapted and newly designed along these lines to fit these needs.

Another case in point is the video game industry. Nintendo's brain training and sports games appeal to (middle-aged and older) consumers who want to stay cognitively young – i.e. either achieve a certain ideal age younger than their biological age or maintain their level of young cognitive age – and physically healthy. Given that Van Auken and Barry (2009) found ideal age to match cognitive age, both coping strategies may amount to the same thing.

Research in advertising has shown a relationship between effectiveness and the self-congruency – i.e. the extent to which advertising expression is congruent with viewers' self-concept – of an ad (cf. e.g. Hong and Zinkhan, 1995). Indeed, the use of "cognitive-age congruent" models or spokespersons should prove fertile as a consumer's self-perceived age interacts with the perceived age of the model or spokesperson seen in an ad, and can subsequently influence the response to the advertising message (Chang, 2008, Van Auken and Barry, 2009). This may also explain why older people are often underrepresented in advertising, a fact that also holds true for TV commercials in Japan (Prieler *et al.*, 2011). Nintendo's products may also appeal to those who value "fun and enjoyment in life", and thus advertising should not only take cognitive age into account when selecting models for ads but also heed to values important to older consumers when planning ads and copies.

Finally, the fact that cognitive age and its measurement seem to possess universal applicability across nations is of great relevance for corporations' international marketing efforts, and the cognitive age scale gives marketing managers a reliable, valid, easy-to-administer, and globally usable tool. In combination with the other variables under study here, marketers can study important drivers of consumption behavior of older people and stop viewing the silver market as a monolith and open the path for breaking it into different segments that can be targeted with appropriate approaches.

CONCLUSION

Findings showed that silver shoppers in Tokyo feel an average 8 years younger than their actual age. This is in line with research from other countries, lending support to the assumption of cognitive age as a self-concept being – at least to a certain extent – culture free or universal. Specifically, it seems that the phenomenon of older people having age identities different from their chronological age as well as the direction of the differences (and the factors influencing it) may be universal, whereas the detailed characteristics of cognitive age and the magnitude of the age difference may be influenced by individual, social as well as cultural factors.

The general limitations of this type of cross-sectional survey research apply, but the results seem to indicate that combining personal values, health condition, and financial status to better understand cognitive age of older consumers is a viable approach and at least applicable in Japan. Given the strong link between cognitive age and consumer behavior (Stephens, 1991; Wilkes, 1992; Eastman and Iyer, 2005), as well as between personal values and consumption behavior (Homer and Kahle, 1988; Burroughs and Rindfleisch, 2002; Schiffman *et al.*, 2003) found in previous empirical studies underline the importance of the establishment of this approach for consumer research and marketing practice. Indeed, companies using the concepts presented in this study should be able to better cater to the individual needs of older consumers with innovative products and services, thus increasing business opportunities while at the same time contributing to the well-being of the fastest growing age group in the world. Future research directions may include specific consumption buying behavior as additional variables. Areas like Sugamo in Tokyo, where the data were collected, can be used as a retail laboratory to learn how to better serve elderly consumers in Japan and elsewhere. In addition, foreign companies can also benefit from the opportunity to test new products and services targeting older Japanese in advance of leveraging these ideas in other graying markets worldwide.

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