

The influence of cognitive age versus chronological age on customer satisfaction in the health sector

Dr Wendy Spinks

Faculty of Arts, Business and Law

University of the Sunshine Coast, Australia

Email: wspinks@usc.edu.au

Abstract

Purpose: The purpose of this article is to identify differences between the influence of an older customer's actual age compared to their cognitive age on satisfaction with a health and well-being service. This research aims to assist service providers to better understand and communicate with existing and potential customers.

Design/Method/Approach: This paper analyses quantitative data to test two different measures of consumers' individual characteristics to determine if consumers of health and well-being services can be better segmented by the more traditional chronological age approach or through consumers' cognitive or perceived age. Exploratory factor and Reliability analysis were used to develop and test scales for Satisfaction and Cognitive age. Contingency table analysis was conducted to find any significant relationships between the consumers' cognitive age and chronological age groups and the dependent variable, consumer satisfaction.

Findings: This study found that while chronological age was not correlated to consumer satisfaction with health and well-being services, cognitive age was. This provides some evidence that providers of health and well-being services should be more concerned about engaging with their customers, based on their cognitive age, rather than just their chronological age. Cognitive age could be used as a basis to better segment the health and well-being market to enable providers to better engage in communication with their customer segments, and ultimately, provide more targeted and tailored services to customers.

Key words: Health and well-being services; customer satisfaction; market segmentation; cognitive age.

JEL Classification: M31

PsycINFO Classification: 3920

FoR Code: 1505

ERA Journal ID#: 123340

Introduction

The youngest Australian Baby boomer turns 65 in 2031. This will bring the projected proportion of Australians, aged 65 and older, to approximately 22 percent of the population. This increased proportion of mature citizens corresponds with an increased need for effective health and well-being services for the mature consumer. Because the health and well-being service industry is such an important part of the fabric of life and the economy, it is important to understand how mature age customers (Baby boomers and those older) evaluate health and well-being services so that providers can best match and market their services to the mature market. It is also important for health and well-being service providers to understand how to best segment communication and product offering to this diverse older market. Traditionally, chronological age has been used the main segmentation method, however this paper suggests that cognitive or self-perceived age would have better results for provider and consumers.

Review of Literature

The age of consumers is relatively easy to obtain and perhaps, consequently provides a traditional base for segmenting consumer markets (Catterall & Maclaran 2001). Although many marketers maintain this simplistic view when marketing to the mature consumer, it has been found that neither the simplistic age based segmentation or mass marketing approach work well with the highly diverse and relatively poorly understood mature market (Morgan & Levy 2002; Moschis, Lee & Mathur 1997).

Despite the increasing evidence that age may not be the best segmentation base, the mature market is increasingly divided into specific age segments (Caterall & Maclaran 2001). The impact of the ageing population on economic growth and increased demands for services, (particularly health and well-being services and housing) will continue to accelerate (Australian Bureau of Statistics 2013). While Baby boomers represent a well used age segment (although more empirical research is required to justify this segmentation), other mature age segments vary between authors, with Sawchuk (1995), for example, using prime lifers (those who are 50-65 years of age, the recently retired (65-75 years), and the over 75's market. The largest and most attractive segment in the early part of the twenty first century is the 50-65 year old (30% of the population Australian Bureau of Statistics, 2005), but this may change as Baby boomers age (Caterall & Maclaran, 2001). In 2012, people aged 65 years and over made up 14 percent of Australia's population, with a predicted increase to 22 percent in 2061, and to 25 percent in 2101. Additionally, the population aged 85 years and over is projected to grow rapidly to 5 percent by 2061 and to 6 percent by 2101 (Australian Bureau of Statistics, 2013).

There is inconclusive evidence of the effect of age as a factor in the formation of customer satisfaction (Moutinho & Goode, 1995). Studies in some services, such as a study of users of ATM machines show no significant differences in satisfaction between older and younger users (Goode & Moutinho, 1996). Indeed, many mature consumers simply do not perceive themselves as old. Almost half of surveyed banking customers over the age of 65, perceived themselves as young (48.1%) and modern (46%) (Mattila, Karjaluohto & Pentto, 2003). This is known as cognitive age and there is some evidence that cognitive or self-perceived age is a better indicator of older consumers' attitudes and behaviour than chronological age because it contributes more to understanding how older adults view themselves (Wilkes, 1992).

Marketers are also interested in measuring consumers' psychographics, personality, self-concept or self image (Moutinho & Goode 1995), however, the measures tend to be long, reasonably invasive and time consuming. Cognitive age, on the hand, while considered to be an element of self-concept, reflects the individual's perceptions of themselves and is closely linked to the person's overall attitudes (Caterall & Maclaran 2001; Lin 2002; Todd & Lawson 2001) and can be measured in a very reliable and simple instrument. Research has found that consumers over 30 often have cognitive ages which are 10 or more years below their chronological age and that this indeed influences their consumer behaviour (Caterall & Maclaran 2001; Goulding &

Shankar 2004; Schiffman & Sherman 1991). Therefore, while there is some doubt whether physical age is a reliable indication of mature age customer behaviour, it appears that cognitive age may be a better indicator of behaviour. Marketing strategies which do not consider cognitive or self-perceived age when segmenting and targeting mature consumers may lead to failure, due to ineffective targeting, positioning and communication strategies (Van Auken et al., 1993 in Sudbury-Riley, Kohlbacher & Hofmeister, 2015).

The cognitive age scale, and in particular, the four item scale developed by Barak and Schiffman (1981), has been well tested and is an excellent indicator of customer behaviour (Caterall & Maclaran, 2001; Sherman, Schiffman & Mathur, 2001), as shown in Table 1. A limitation of cognitive age as a measure appears to be the way in which both cognitive age and desired age are influenced by culture and social attitudes (Caterall & Maclaran, 2001), so that measures of cognitive age may vary across cultures (Barak, Mathur, Zhang, Lee and Erondur, 2003); Goulding and Shankur (2004).

Table 1:
Cognitive Age measures from previous research

Author(s) / Date	Product & Sample	Scale	Constructs and Items
Barak & Schiffman, 1981	Self confidence, social involvement & work orientation.	Respondents specify the age decade 20s to 90s which fits them best	Cognitive age (Composite reliability = (α = 0.85-0.89) 1. I feel as though I am in my... (.79) 2. I look as though I am in my... (.48)
Wilkes, 1992	Fashion interest Snowball of 60-79 year old females (n=363)		3. I do things as though I am in my... (.72) 4. My interests are mostly those of a person in their... (.65)
Clark et al., 1999	Fashion	As above	As above but plus 2, to give 6 items (α = 0.91) 5. My health is as though I were (am?) in my 6. I think as though I am in my ...

While the older four item scale above has been the most widely used cognitive age scale, there has been some concern that the “look age” item is not as strong a measure as the other three items (Barak & Schiffman, 1981; Shiffman and Sherman, 1991; Wilkes 1992). An extra two items added by Clark, Long & Shiffman (1999), improved overall construct reliability to 0.91. The six item scale, is therefore the more reliable measure of cognitive age or self-concept and was used for this research study. An eight point Likert type scale was used with [1] to indicate the respondent’s perceived age was in the twenties, through to [8] as an indicator that the respondent perception of age was equal to being their nineties. Responses indicated that participants tend to view themselves as younger than their chronological age and were more inclined to respond favourably toward advertisements, in this case, for active wear that targeted the younger cognitive age rather than the chronological age of these respondents (Wray & Hodges, 2008).

It is very important for service providers in the health and well-being industry to provide customer satisfaction. Although there are studies that measure satisfaction with a single item (Chu 2002), the majority of studies do use multiple item measures, and it is generally agreed that a single item on satisfaction levels does not give any insight into the antecedents of the customer’s satisfaction (Danaher & Haddrell 1996). Further, Oliver (1977) suggests that the satisfaction response is comprised of both a cognitive (disconfirmation of expectations and attribution) and affective substrata. It is now well accepted that satisfaction consists of both cognitive and emotional or affect evaluations. Additionally, satisfaction is a cumulative evaluation of a customer’s service experience with that provider and therefore also includes an experiential component (Auh & Johnston 2005; Spinks, Lawley & Richins 2005). Therefore, an examination of the literature indicates that satisfaction with a service needs to include experiential, affective and cognitive measures, as well as an overall evaluation, such as that used by Spinks, Lawley and Richins (2005) in the service industry. Thus, four items measuring these elements were developed for this study with the reliability results set out in Table 2 in the Results section.

Research Method

Questions for the survey were developed from the literature and refined by an expert panel of marketing academics to determine whether either the consumer's satisfaction with a health and well-being service was correlated with their cognitive age and/or chronological age. An online survey using the Australian database of Research Now was used to collect data. Research Now is widely used in the academic community and additionally, Research Now also provided statistics to show the representativeness of their database with the Australian Bureau of Statistics census.) This was further affirmed by comparing the resulting descriptive statistics with Australian Bureau of Statistics data. A questionnaire with seven-point Likert type scales used quota sampling (Neuman 2003) to collect a total of 630 completed responses from respondents who had used a health or well-being service in the last six months. The quota consisted of the first completed responses from 105 males and 105 females across each of the three age ranges (43-52; 53-62; plus 63 and older).

Results

The results were tested using SPSS and a combination of exploratory factor analysis, scale reliability analysis and contingency tables. Exploratory factor analysis (Principal axis factoring) found that the four items developed to measure Satisfaction did form one factor. Reliability analysis on the Satisfaction scale found that four items achieved an excellent scale reliability of Cronbach's alpha of 0.959, as shown in Table 2 below.

Table 2:
Factor loadings and Scale reliability for Satisfaction

Factor loading	Items / Variable	Scale alpha	Item mean	Corrected Item: Total Correlation	Squared Multiple Correlation	Alpha If item deleted
.944	Overall, I am satisfied with the service.	.959	5.957	.917	.847	.940
.937	I am pleased that I used this service.			.910	.830	.943
.924	Using this service has been a good experience.			.901	.826	.946
.895	I think that it was worthwhile.			.874	.774	.953

Age is known to influence the degree of consumer satisfaction, and it is strongly suggested by exploratory research and the media that Baby Boomers differ in consumer behaviour to those older who have experienced a less prosperous youth (Megalogenis 2009). Therefore, a one-way ANOVA with post-hoc comparisons was run to test for any differences between the three age groups overall satisfaction with Australian health and well-being services. Results are set out in Table 3.

Table 3
Comparison of means for Overall Satisfaction across age groups

Dependent Variable: Overall, I am satisfied with the service.		(Std. Error = .136)	Sig.	95% Confidence Interval	
(I) Age Segment	(J) Age Segment	Mean Difference (I-J)		Lower Bound	Upper Bound
43-52	53-62	-.129	.614	-.45	.19
	63+	-.329(*)	.043	-.65	-.01
53-62	43-52	.129	.614	-.19	.45
	63+	-.200	.308	-.52	.12
63+	43-52	.329(*)	.043	.01	.65
	53-62	.200	.308	-.12	.52

* The mean difference is significant at the .05 level.

Table 3 also shows that there is a significant difference between the satisfaction experienced by the younger half of the Baby Boomers and the older consumers (those 63 and over). However, there were no significant age differences in satisfaction evaluation between the middle group and younger group, nor the middle group and older group. This may be an indication of the differences caused by living in different times. Those living though adjacent times may share more common attitudes, expectations and perceptions of service experiences.

Cognitive age was measured using a Likert type scale with the question "Usually, in relation to age, ... (see the item choice in Table 3 below)..." with a choice of 20's, 30's, through to 90's. Principal axis factoring (EFA) found that the six items formed one factor, for both both males and females, with all items showing "excellent" loadings above 0.75 (Comrey & Lee 1992, in Tabachnick & Fidell 1996, p.677). Reliability analysis found that Cognitive age is also a very reliable construct (Cronbach's alpha = 0.910), as can be seen below in Table 4. While previous research has found that the question "I look as though I am in my..." was not a good measure, this same question worked well and contributed to the scale reliability in the six-item scale, shown below.

Table 4:
Factor loadings and Scale reliability for Cognitive age

EFA Factor loading	Items / Variable	Scale alpha	Item mean	Total Correlation	Squared Multiple Correlation	Alpha if item deleted
.862	I feel as though I am in my....	.910	3.561	.814	.676	.885
.822	I do things as though I am in my....			.779	.611	.890
.808	I look as though I am in my....			.766	.601	.893
.773	My interests are mostly those of someone in their....			.736	.575	.897
.766	My health is as though I were in my....			.724	.575	.900
.751	I think as though I am in my704	.562	.901

Van Auken, Barry and Bagozzie (2006) found that Japanese and United States females had an overall lower cognitive age than males. This study also found that Australian females had a slightly lower cognitive age than males in all six measures. However, there were only two significant differences in means between Australian females and males. The first was "I think as though I am in my ...", where females had a mean of 3.02 (equal to "I think as if I were in my 40s), while males had a slightly higher mean of 3.26 (Also equal to "I Think as if I was in my 40's"). The second significant result was in " I look as if I am in my..." (a mean of 3.67 for females and 3.88 for males). There were no other significant differences between gender.

Table 5:
Satisfaction across chronological age

		Overall, I am satisfied with the service.							Total
		1= Strong Disagree	2	3	4 Neutral	5	6	7= Strong Agree	
Chronological age	43-52	6	7	5	9	29	83	71	210
	53-62	7	6	6	9	16	77	89	210
	63+	4	2	5	10	16	74	99	210
Total		17	15	16	28	61	234	259	630

Analysis of the degrees of satisfaction across chronological age in Table 5 found that the majority (87.9%) of customers are satisfied with their health and well-being services. This high satisfaction with health services is also reflected across cognitive age.

However, Pearson's chi square was not significant for any age group in a cross tabs/contingency analysis. A contingency table analysis found that only two of the six cognitive age measures were significantly correlated with satisfaction, as set out below in Table 6.

Table 6:
Satisfaction across cognitive age

		1= Strong Disagre	2	3	4 Neutral	5	6	7= Strong Agree	Total
I look as though	30's	2	4	2	4	8	34	21	75
	40's	6	4	6	9	25	59	75	184
I am in my...	50's	6	5	2	9	14	80	97	213
	60's	2	2	6	6	9	53	53	131
	70's	0	0	0	0	4	8	11	23
	80's	0	0	0	0	0	0	2	2
	90's	1	0	0	0	1	0	0	2
Total		17	15	16	28	61	234	259	630
My health is as though I were in my...	20's	0	1	0	0	0	3	2	6
	30's	1	5	3	1	12	36	22	80
	40's	5	2	4	6	17	57	62	153
	50's	3	4	2	12	15	57	78	171
	60's	4	1	2	7	14	51	58	137
	70's	3	1	5	0	0	21	31	61
	80's	1	1	0	0	2	6	2	12
	90's	0	0	0	2	1	3	4	10
Total		17	15	16	28	61	234	259	630

It is important for health and well-being providers to understand if there is a correlation between cognitive or perceived age and client satisfaction with the service. Analysis showed that the only significant relationships between overall satisfaction and both chronological and cognitive age were with two measures of cognitive age; "*I look as though I am in my...*" (Pearson chi-square associated probability = .046) and "*My health is as though I were in my...*" (Pearson chi-square associated probability = .016). It appears that cognitive age can play a larger role in consumer satisfaction with health and well-being services than the more traditionally used chronological age. Further research is required to explore this further, however, a logical explanation may be that the actual chronological age is also a reflection of the experiences of that individual and generation, and thus a better indicator of the person's individual characteristics and purchase behaviour than simply chronological age. It would also seem that a person's physical and mental health might also influence cognitive age.

Conclusion

This paper has developed reliable scales to measure cognitive age and consumer satisfaction with Australian health and well-being services. The influence of chronological age and cognitive age on consumer satisfaction with health and well-being services was tested. There were no significant age differences in satisfaction evaluation between the middle group and younger group, nor the middle group and older group. However, two items in the factor measuring cognitive age were found to have significant correlation with consumer satisfaction with the service. These findings provide health providers with reliable scale for cognitive age as a potential new method of segmenting their consumer base. The study also sets the scene for further research in this area.

References

- Auh, S. & Johnson, M. D. (2005). Compatibility effects in evaluations of satisfaction and loyalty, *Journal of Economic Psychology*, 26 (1), 35-57.
- Australian Bureau of Statistics (2005). *Ageing Well, Queensland, 2005*, cat. No. 4409.3, ABS, Canberra.
- Australian Bureau of Statistics (2013). 3222.0 - Population Projections, Australia, 2012 (base) to 2101, ABS, Canberra.
- Barak, B. (1987). Cognitive age: a new multidimensional approach to measuring age identity, *International Journal of Aging and Development*, 25 (2), 109-127.
- Barak, B., Mathur, A., Zhang, Y., Lee, K & Erond, E. (2003). Inner-age satisfaction in Africa and Asia: a cross-cultural exploration, *Asia Pacific Journal of Marketing and Logistics*, 15 (1/2), 3-26.
- Barak, B. & Schiffman, L. (1981). Cognitive age: a non-chronological age variable, *Advances in Consumer Research*, 8 (1), 602-606.
- Catterall, M. & Maclaran, P. (2001). Body Talk: Questioning the assumptions in cognitive age, *Psychology and Marketing*, 18 (10), 1117-1133.
- Clark, S., Long, M. & Schiffman, L. (1999). The mind-body connection: the relationship among physical activity level, life satisfaction, and cognitive age among mature females, *Journal of Social Behavior and Personality*, 14 (2), 221-241.
- Chu, R. (2002). Stated-importance versus derived-importance customer satisfaction measurement, *Journal of Services Marketing*, 16 (4), 285-301.
- Danaher, P.J. & Haddrell, V. (1996). A Comparison of Question Scales for Measuring Customer Satisfaction, *International Journal of Service Industry Management*, 7 (4), 4-26.
- Goode, M. & Moutinho, L. (1996). The Effects of Consumers Age on Overall Satisfaction: An Application to Financial Services, *Journal of Professional Services Marketing*, 13 (2), 93-112.
- Goulding, C. & Shankar, A. (2002). Age is just a number. Rave culture and the cognitively young "thirty something", *European Journal of Marketing*, 38 (5/6), 641-658.
- Mattila, M., Heikki Karjalainen, H. & Tapio Penttinen, T. (2003) Internet banking adoption among mature customers: early majority or laggards?, *Journal of Services Marketing*, 17(5), 514-528,
- Megalogenis, G. (2009). When the baby boomers turn 70, *Inquirer, The Weekend Australian*, November 21-22, 1-2.
- Morgan, C. & Levy, D. (2002). 'The Boomer attitude', *American Demographics*, 24 (9), 42-45.
- Moschis, G. P., Lee, E. & Mathur, A. (1997). Targeting the mature market: opportunities and challenges, *Journal of Consumer Marketing*, 14 (4), 282-293.
- Moutinho, L. & Goode, M. (1995). Gender effects to the formation of overall product satisfaction: A multivariate approach, *Journal of International Consumer Marketing*, 8 (1), 71-91.
- Oliver, R. (1997). *Satisfaction: A Behavioral Perspective on the Consumer*. The McGraw-Hill Companies, New York.
- Sawchuk, K.A. (1995). From gloom to boom: age, identity and target marketing', in Featherstone, M. & Wernick, A. (eds), *Images of ageing: Cultural Representations of Later Life*, London: Routledge.
- Schiffman, L. & Sherman, E. (1991). Value orientations of New-Age Elderly: The coming of the ageless market', *Journal of Business Research*, 22, 87-94.
- Sudbury-Riley, L., Kohlbacher, F. & Hofmeister, A. (2015). Baby Boomers of different nations: Identifying horizontal international segments based on self-perceived age, *International Marketing Review*, 32 (3-4), 245-278.

- Lin, C. (1999), 'Understanding how customer perceptions vary by stages: An examination of the relative importance of quality dimensions in group services', paper presented to *SERVSIG Services Research Conference*, New Orleans.
- Spinks, W., Lawley, M., & Richins, H. (2005). Satisfaction with Sunshine Coast Tourist Attractions: The influence of individual visitor characteristics, *Journal of Tourism Studies*, 16, (1), 12-23.
- Tabachnick, B. & Fidell, L. (1996). *Using Multivariate Statistics*, Harper Collins New York.
- Todd, S. & Lawson, R. (2001). Lifestyle segmentation and museum/gallery visiting behaviour, *International Journal of Non-profit and Voluntary Sector Marketing*, 6 (3), 269-277.
- Van Auken, S., Barry, T.E. & Bagozzie, R.P. (2006). A cross-country construct validation of cognitive age, *Journal of the Academy of Marketing Science*, 34 (3), 439-455.
- Wilkes, R. (1992). A structural equation modeling approach to the measurement and meaning of cognitive age, *Journal of Consumer Research*, 19, 292-301.
- Wray, A. & Hodges, N. (2008) Response to activewear apparel advertisements by US baby boomers: An examination of cognitive versus chronological age factors, *Journal of Fashion Marketing and Management: An International Journal*, 12 (1), 8-23.