SELF- PERCEPTION OF AGE AS A CRITERION FOR SEGMENTATION OF OLDER ADULTS' INVOLVEMENT

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Material original autorizado para su primera publicación en la revista académica REDMARKA. Revista Digital de Marketing Aplicado.

https://doi.org/10.17979/redma.2013.01.011.4812

Recibido: 9 Julio 2013

Aceptado 12 Noviembre 2013

Abstract

An important search in the field of aging has shown that there is a generalized tendency for older adults to maintain identities of cognitive age that correspond to younger people. In agreement with the popular view that "one is as old as one really feels" there is evidence that these self-conceptions of age can be better predictors of involvement, attitude and behavior towards products than the chronological age. Although self-perceptions of age in older adults have been widely studied, little is known about how this may affect their degree of

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REDMARKA UIMA-Universidad de A Coruña - CIECID
Año VI, Número 11, (2013), v2 pp. 163-184
http://www.redmarka.org/
ISSN 1852-2300

involvement with advertised products. In this study we demonstrate, using structural equations models (SEM) and a sample of 1018 observations, that cognitive age is a segmentation criterion superior to chronological age in the study of older adults' degree of involvement with the product.

Key words: Cognitive age, Chronological age, Involvement, Older adults

1. INTRODUCTION

Older adults are the fastest growing population group in the world. The number of people aged over 60 years in 2004 was 670 million, and a progressive increase to 2 billion by 2050 is expected. Today, Spain is one of the most aging countries in Europe (Ramos & Pinto, 2005). Spain 's 2004 census registered 7,200,000 people aged over 65 years (17% of the total population) . This number will continue to increase to 8 500 000 older adults (approximately 23.1% of the total population of Spain) by the year 2025 (INE, 2006). Some forecasts even indicate that Spain will have the second largest number of older adults in the world in 2050 (Ramos & Pinto, 2005). Demographic aging will not only have important demographic, social and healthcare effects, but also economic and business impacts.

Although it is true that households whose main members are older adults are affected by a worse economic situation, it is necessary to bear in mind certain general details that may go unnoticed: their homes are smaller in size, lack of considerable set expenses (having children in their care, credit or mortgage payments, etc.), benefitting from pensions, properties, incomes and savings acquired earlier in life, etc. (Bódalo, 2002; Ramos, 2007, 2008). According to the Spanish National Consumer Institute (2001), the homes of people aged over 65 have less purchasing power, although their consumer capacity is increasing. This tendency is interpreted, and emphasized, by the Institute as: "older adults' consumer patterns have more to do with income than with their age. They also display a distinctive way of distinguishing necessary expense from an expense

they consider superfluous or not essential". This institute's study concludes that "the older adults market will become bigger and will move a larger proportion of public and private resources. Besides, offer will have to cover a wide-ranging, specialized repertoire of products and services". It is important that firms study older adults' special characteristics to cover their needs and to be able to understand their diversity by developing efficacious segmentation strategies (Glover & Prideaux, 2009; Miranda & González, 2010; Jang et. al. 2009). The present study shows how chronological age must not be used as a single segmentation criterion to explain the involvement of older adults with a given product. Segmentation based on cognitive age leads to a broader vision and a better understanding of older adults' interests and attitudes and the importance they give to products.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

2.1.Segmentation of older adults

Old age takes many forms and has many typologies. There are elderly people of different ages who have various attitudes to life which are more or less healthy and/or dependent, with more or less social ties, and different social, cultural and economic levels, etc. It is hard to stick to a single defining concept of old age, and considering older adults as a homogeneous group is a frequent mistake (Bódalo, 2002; Ramos, 2007, 2008). However, it was not until the 1980s that the literature began to talk about the heterogeneity of the older adults market in demographic, health, and psychological aspects, and in social and lifestyle terms (Hudson, 2010; Miranda & González, 2010). From this time onwards, some studies appeared which attempted to respond to the question of how to divide the older adults market into segments. Of all these studies, the most popular criterion is chronological age (Table 1).

Table 1: Some segmentations according to older adults' chronological age

Author	Year	Threshold	Criterion
Bartos	1980	50 years	Socio-economic
Lazer	1985	55 years	Retirement age
Visvabharathy & Rink	1985	65 years	Chronological age

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Año VI, Número 11, (2013), v2 pp. 163-184
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ISSN 1852-2300

Grande	1993	65 years	Psychographic
Díaz Casanova	1995	50 years	Chronological age
Moschis	1996	55 years	Gerontological
Grande	1999	65 years	Purchasing behavior and attitudes
Grande	2002	65 years	Choice of commercial establishment
Kim, Wei & Ruys	2003	50 years	Characteristics when deciding on a journey
Whippe	2004	55 years	Focussing on a brand name
Ramos	2005	65 years	Psychographic and cognitive age
Jang & Wu	2006	60 years	Reasons to travel
Miranda	2006	55 years	Cognitive age

Source: Based on Miranda & González (2010) and Ramos (2007)

Use of this segmentation method has its detractors, who maintain that people can show behavior that is influenced by an age that differs from one's real age (Barak & Schiffman, 1981; Miranda & González, 2010; Szmigin & Carrigan, 2001). So it is necessary to distinguish between chronological or real age (that which appears on people's national ID cards) and self-perceived or cognitive age (that which people identify themselves with).

Different authors agree that older adults feel between 10 and 15 years younger than they actually are (Grande, 1993, 1999, 2000; Ramos, 2007, 2008). So it is that there are different reasons why chronological age is no longer the sole factor used to predict older adults' behavior: 1) health may deteriorate at different ages, 2) psychological age has an even greater impact on self-esteem, wisdom and confidence than chronological age, 3) intergenerational experiences are a differentiating factor among older adults, and 4) convictions and values are possibly the most influential factors in attitudes and behaviors (Leinweber, 2001).

Therefore, knowledge regarding cognitive age is necessary in studies of older adults. In line with this, the literature highlights three scales to measure it: the one-item scale (Baum & Boxley, 1983), the semantic differential scale (George, Mutran & Pennybacker, 1980) and the age scale (Barak & Schiffman, 1981). Of all these scales, the last one has been more readily received in the literature for two reasons: 1) it allows a more accurate estimate of cognitive age than the one-item scale, 2) it is easy to apply and is simple (Catterall & Maclaran, 2001; Ramos, 2007; Szimigin & Cardigan, 1999, 2000, 2001). The scales of that

decade consider four dimensions: the age that people feel they are, the age that people think they look, the age that reflects people's actions, and the age corresponding to people's interests Calculation is based on the arithmetic mean of the assessments made on the four dimensions.

2.2. The involvement concept

Most research studies attribute the origin and analysis of involvement within marketing to Krugman (1965). From the time of this study, researchers in the consumer behavior field have paid attention to involvement (Bigné & Sánchez, 2001; Ortigueira & Vázquez, 2005). When we talk about involvement, we generally refer to the level of personal relevance and individual motivation to make an effort and show commitment in the process (Batra & Stayman, 1990).

Studying involvement can involve centering on the product (Kim, Damhorst & Lee, 2002), the brand name (Aurifeille, et. al, 2002; Zaichkowsky, 1985), the purchase (Charters & Pettigreus, 2006), the advertisement (Olson & Thjømøe, 2003), the customer (Lagrosen, 2005), etc. The range of perspectives from which this concept has been covered has sometimes led to certain confusion as the object of involvement has not been distinguished (Batra & Ray, 1983).

The aim of this research is to study involvement with an advertised product. In this sense, it is noteworthy that most of the literature postulates that those people involved with the product are most likely to pay attention to ads for these products (Wu, 2001).

Involvement with the product is firstly determined by the consumer's individual characteristics. In line with this, it is important to stress that certain biological, psychological and social changes may come about with age (Bódalo, 2002), and that they all affect older adults' social perception and, therefore, their involvement with the product. Besides, involvement is determined by the product's features: perceived functionality, its complexity, the degree of risk perceived, purchasing cycle duration, and its symbolic and hedonic value. Older adults feel more involved with the product's functional elements than with its

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Año VI, Número 11, (2013), v2 pp. 163-184
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ISSN 1852-2300

symbolic or hedonic elements (Bódalo, 2000; Grande, 1993; Ramos, 2007). The capacity to assume risk is reduced and this conditions people's level of involvement (Grande, 2002; Reisenwitz, et. al., 2007). Furthermore, involvement is the direct result of the purchasing circumstances and product usage context (physical market conditions, purchase and usage conditions, social norms) (Ortigueira & Vázquez, 2005). Hence it is interesting to underline the market's lack of sensitivity to this public (Grande, 2002), which sometimes implies no incentive to motivate this population group about a given product. Finally, it is important to stress that involvement with the advertised product is determined by its design, the ad's content (optimum selection of witnesses, color, typography, number of arguments, illustrations, etc.), the means of communication employed (press is particularly interesting for older adults because it helps them to better control and remember information), and how the ad is positioned and placed, etc. (Estrada, et. al., 2010).

At this stage, it is important to point out that, as the previous section reflects, not all older adults are the same (they age differently, at different times and under varying conditions), they are not all of the same age (they belong to different generations and periods), and they do not feel and act in the same way. Thus, the determining factors of involvement will have a different influence. By using this consideration as a starting point, the empirical part of this study puts forward three working hypotheses (Table 2).

Table 2: Hypotheses

H_1	There are significant differences in the level of involvement with the product in terms of older adults' chronological age
H_2	There are significant differences in the level of involvement with the product in terms of older adults' cognitive age
H_3	Cognitive age offers better properties as a segmentation variable than chronological age as regards involvement with the product

3. RESEARCH METHODOLOGY AND DATA ANALYSIS

First of all, qualitative research was carried out using four focus groups to select the two out of ten printed ads that are best understood and with which older

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Año VI, Número 11, (2013), v2 pp. 163-184
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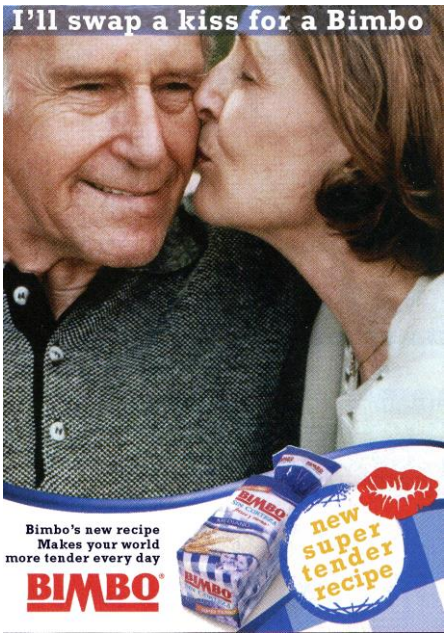
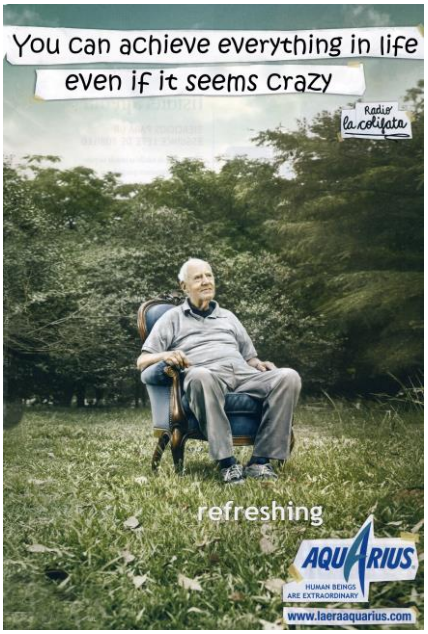
adults identify themselves more. The ads that obtained the best results were: sliced bread and a sport (isotonic) drink (Figure 1).

Figure 1: Ads





During the data collection tasks, the study population included a total of 751,762 older adults who are residents in the Valencian Community (E. Spain) aged over 65. The study sample was pseudo randomly selected by detecting the associations and specialized centers for the elderly, which was later reduced to 509 cases after performing a cluster analysis with a sampling error of 4.4%, a 95.5% confidence interval and p=q=0.5.

To measure the study variables, we designed a questionnaire in accordance with the scales most widely used in the literature. For involvement, the 10-item scale by Zaichkowsky (1986) was followed. For cognitive age, the scale of Barak and Schiffman (1981) was used. Finally, chronological age was segmented into three age groups: 65-74 years, 75-84 years, and 85 years and over. In terms of the alternative responses regarding the involvement variable, we combined a (5-point) Likert scale and a Kunin scale.

The data analysis determined the quality of the measurement scales for involvement with the product. A confirmatory factor analysis was done using

structural equations models (SEM). For generalization purposes, the dimensionality, reliability and validity studies of the scales were performed together for the two products considered. This analysis gave an overall model adjustment because the likelihood value of the associated chi-square obtained was above 0.05 (Jöreskog & Sörbom, 1996). Convergent validity was demonstrated as the factorial loads were significant and over 0.6 (Bagozzi, 1980; Bagozzi & Yi, 1988; Hair, et. al., 2006) and the average AVE variance obtained for each factor was over 0.5 (Fornell & Larcker, 1981). Finally, scale reliability was demonstrated because the indices of all the obtained dimensions were over 0.6 (Bagozzi & Yi, 1988) (Table 3).

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Table 3: Dimensionality, Reliability and Validity of the Involvement with the Product Scale (a Completely Standardized Solution)

Items	Facto Loading *
I'm very interested in it	0.91 (26.12)
I love product x	0.95 (31.26)
I find it very appealing	0.96 (fixed)
I'm fascinated by product x	0.96 (33.56)
I'm concerned about it	0.91 (26.35)
It is most important	0.90 (25.22)
It has a lot to do with me	0.90 (25.40)
It means a lot to me	0.96 (fixed)
I find it highly valuable	0.96 (35.44)
I need it very much	0.96 (34.08)
MODEL ADJUSTMENT Chi-squared=34.12; gl=25; P= 0.105. RMSEA=0.043; GFI=0.97. AGFI= 0.93	
EMOTIONAL INVOLVEMENT WITH THE PRODUCT COMPOSITE RELIABILITY: 0.98 CONVERGENT VALIDITY: AVE= 0.90	
COGNITIVE INVOLVEMENT WITH THE PRODUCT COMPOSTE RELIABILITY: 0.97 CONVERGENT VALIDITY: AVE= 0.89	

*t-statistics in brackets.

Divergent validity was demonstrated by average extracted AVE variance (Fornell & Larcker, 1981) (Table 4).

Table 4: Divergent validity of the Involvement with the Product Scale*

	EMOTIONAL INVOLVEMENT WITH THE PRODUCT	COGNITIVE INVOLVEMENT WITH THE PRODUCT
EMOTIONAL INVOLVEMENT	0.951	0.77
COGNITIVE INVOLVEMENT	0.77	0.941

*Below and above the diagonal: correlation estimated between factors.
Diagonal: square root of extracted variance.

Having studied the psychometric properties of the involvement scale, we went on to verify if the working hypotheses were supported. When considering the working hypotheses, we observe that people's age is taken from two different views: chronological and cognitive. An ANOVA variance study showed there are significant differences among age groups regarding the assessments made for involvement by those surveyed. In this way, if the variable taken as a factor is able to generate differences among age groups' assessments, we can consider

it a good segmentation variable. Using chronological age to assess the level of involvement with the sliced bread product (Table 5), we can see that the differences among the age groups generated are not statistically significant in all cases when likelihood is above 0.05. Therefore, we cannot state, at least in this case, that chronological age is a good segmentation factor for the study sample.

Table 5: Means and Significant Differences according to Chronological Age for Involvement with the Sliced Bread Product

Item	Chronological Age	N	Mean	Signif.
I'm very interested in it	65-74	303	2.64	0.920
	75-84	178	2.64	
	Over 85	28	2.54	
I love it	65-74	303	2.38	0.625
	75-84	178	2.33	
	Over 85	28	2.57	
I find it very appealing	65-74	303	2.38	0.622
	75-84	178	2.30	
	Over 85	28	2.54	
I'm fascinated by it	65-74	303	2.30	0.209
	75-84	178	2.10	
	Over 85	28	2.39	
I'm concerned about it	65-74	303	2.29	0.239
	75-84	178	2.08	
	Over 85	28	2.36	
It is most important	65-74	303	2.61	0.825
	75-84	178	2.58	
	Over 85	28	2.75	
It has a lot to do with me	65-74	303	2.49	0.624
	75-84	178	2.37	
	Over 85	28	2.50	
It means a lot to me	65-74	303	2.35	0.327
	75-84	178	2.20	
	Over 85	28	2.54	
I find it highly valuable	65-74	303	2.30	0.655
	75-84	178	2.19	
	Over 85	28	2.32	
I need it very much	65-74	303	2.34	0.364
	75-84	178	2.18	
	Over 85	28	2.46	

* Significant differences for p<0.05.

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Similarly, Table 6 presents the results for older adults' level of involvement with the sport (isotonic) drink product. We can see that only four of the ten items show significant differences between the mean assessments made by the individuals in the different age groups.

Table 6: Means and Significant Differences according to Chronological Age for Involvement with the Sport Drink Product

Item	Chronological Age	N	Mean	Signif.
I'm very interested in it	65-74	303	2.72	0.163
	75-84	178	2.49	
	Over 85	28	2.57	
I love it	65-74	303	2.54	0.128
	75-84	178	2.29	
	Over 85	28	2.46	
I find it very appealing	65-74	303	2.52	0.103
	75-84	178	2.25	
	Over 85	28	2.50	
I'm fascinated by it	65-74	303	2.40	0.045*
	75-84	178	2.09	
	Over 85	28	2.43	
I'm concerned about it	65-74	303	2.37	0.065
	75-84	178	2.07	
	Over 85	28	2.18	
It is very important	65-74	303	2.77	0.219
	75-84	178	2.56	
	Over 85	28	2.61	
It has a lot to do with me	65-74	303	2.73	0.279
	75-84	178	2.52	
	Over 85	28	2.57	
It means a lot to me	65-74	303	2.53	0.045*
	75-84	178	2.21	
	Over 85	28	2.39	
I find it highly valuable	65 a 74	303	2.47	0.031*
	75 a 84	178	2.12	
	Over 85	28	2.39	
I need it very much	65-74	303	2.44	0.038*
	75-84	178	2.11	

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	Over 85	28	2.39	

* Significant differences for p<0.05.

From these results we can firstly state that homogeneous groups are distinguished in the second case (older adults' involvement with the isotonic drink) in four of the ten questions, which does not occur in the first case. Therefore, we cannot state that chronological age is a good segmentation variable in the case of involvement with the product. This means that hypothesis H_1, which proposes significant differences in older adults' level of involvement with the product in terms of chronological age, is not supported.

Secondly, the same process was carried out, but using the subjects' cognitive age as the grouping factor to assess the level of involvement with the sliced bread product (Table 7). Here we see there are significant differences among the age groups for five of the ten items. In this case, although the results are not conclusive, there was no difference in terms of chronological age and involvement with the sliced bread product which, in principle, demonstrates that cognitive age better demonstrates segmentation capacity than chronological age.

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Table 7: Means and Significant Differences according to Cognitive Age for Involvement with the Sliced Bread Product

Item	Cognitive Age	N	Mean	Signif.
I'm interested in it	Adolescent	1	5.00	0.039*
	20s	13	3.08	
	30s	22	3.14	
	40s	58	2.91	
	50s	113	2.69	
	60s	142	2.54	
	70s	124	2.48	
	80s	36	2.36	
I love it	Adolescent	1	4.00	0.068
	20s	13	2.92	
	30s	22	2.73	
	40s	58	2.62	
	50s	113	2.47	
	60s	142	2.27	
	70s	124	2.19	
	80s	36	2.19	
I find it very appealing	Adolescent	1	5.00	0.012*
	20s	13	2.85	
	30s	22	2.95	
	40s	58	2.59	
	50s	113	2.43	
	60s	142	2.30	
	70s	124	2.15	
	80s	36	2.08	
I'm fascinated by it	Adolescent	1	4.00	0.018*
	20s	13	2.69	
	30s	22	2.82	
	40s	58	2.45	
	50s	113	2.35	
	60s	142	2.20	
	70s	124	1.98	
	80s	36	1.92	
I'm concerned about it	Adolescent	1	5.00	0.004*
	20s	13	2.31	
	30s	22	2.82	
	40s	58	2.48	
	50s	113	2.41	
	60s	142	2.18	
	70s	124	1.93	
	80s	36	1.92	

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It is very important	Adolescent	1	5.00	0.381
	20s	13	2.92	
	30s	22	2.95	
	40s	58	2.67	
	50s	113	2.67	
	60s	142	2.58	
	70s	124	2.48	
	80s	36	2.47	
It has a lot to do with me	Adolescent	1	4.00	0.103
	20s	13	3.08	
	30s	22	2.86	
	40s	58	2.62	
	50s	113	2.53	
	60s	142	2.40	
	70s	124	2.26	
	80s	36	2.17	
It means a lot to me	Adolescent	1	4.00	0.076
	20s	13	2.77	
	30s	22	2.86	
	40s	58	2.41	
	50s	113	2.39	
	60s	142	2.32	
	70s	124	2.06	
	80s	36	2.06	
I find it highly valuable	Adolescent	1	5.00	0.018*
	20s	13	2.62	
	30s	22	2.77	
	40s	58	2.45	
	50s	113	2.34	
	60s	142	2.30	
	70s	124	1.98	
	80s	36	2.03	
I need it very much	Adolescent	1	5.00	0.102
	20s	13	2.54	
	30s	22	2.68	
	40s	58	2.45	
	50s	113	2.37	
	60s	142	2.30	
	70s	124	2.06	
	80s	36	2.08	

* Significant differences for p<0.05.

Below we find the ANOVA variance analysis results for involvement with the sport drink by once again taking cognitive age as the factor (Table 8). In this

case, we can state that significant differences between the mean assessments made by the individuals in each age group are found in all cases. Hence, we can state that cognitive age is an excellent segmentation variable which is capable of creating both homogeneous and heterogeneous groups. This statement enables us to accept hypothesis H_2, which defends the existence of significant differences in the older adults' level of involvement in terms of their cognitive age.

Table 8: Means and Significant Differences according to Cognitive Age for Older adults' Involvement with the Sport Drink Product

Item	Cognitive Age	N	Mean	Signif.
I'm very interested in it	Adolescent	1	5.00	0.001*
	20s	13	2.69	
	30s	22	2.27	
	40s	58	2.43	
	50s	113	3.01	
	60s	142	2.73	
	70s	124	2.46	
	80s	36	2.11	
I love it	Adolescent	1	4.00	0.001*
	20s	13	2.85	
	30s	22	2.14	
	40s	58	2.29	
	50s	113	2.83	
	60s	142	2.52	
	70s	124	2.26	
	80s	36	1.83	
I find it very appealing	Adolescent	1	5.00	0.001*
	20s	13	2.69	
	30s	22	2.05	
	40s	58	2.24	
	50s	113	2.83	
	60s	142	2.53	
	70s	124	2.19	
	80s	36	1.97	
I'm fascinated by it	Adolescent	1	4.00	0.002*

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	20s	13	2.54	
	30s	22	1.95	
	40s	58	2.14	
	50s	113	2.67	
	60s	142	2.40	
	70s	124	2.07	
	80s	36	1.78	
It is very important	Adolescent	1	5.00	0.002*
	20s	13	2.54	
	30s	22	2.55	
	40s	58	2.38	
	50s	113	3.08	
	60s	142	2.77	
	70s	124	2.53	
	80s	36	2.22	
It has a lot to do with me	Adolescent	1	4.00	0.017*
	20s	13	2.69	
	30s	22	2.05	
	40s	58	2.45	
	50s	113	2.90	
	60s	142	2.79	
	70s	124	2.60	
	80s	36	2.11	
It means a lot to me	Adolescent	1	5.00	0.001*
	20s	13	2.62	
	30s	22	2.00	
	40s	58	2.16	
	50s	113	2.76	
	60s	142	2.57	
	70s	124	2.19	
	80s	36	1.94	
I find it highly valuable	Adolescent	1	4.00	0.001*
	20s	13	2.62	
	30s	22	1.95	
	40s	58	2.14	
	50s	113	2.71	
	60s	142	2.52	
	70s	124	2.06	
	80s	36	1.89	

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I need it very much	Adolescent	1	4.00	0.001*
	20s	13	2.62	
	30s	22	2.00	
	40s	58	2.07	
	50s	113	2.65	
	60s	142	2.52	
	70s	124	2.09	
	80s	36	1.78	

* Significant differences for p<0.05.

Following this line of argument and by making a comparison, we can accept hypothesis H_3, which proposes that cognitive age offers better properties as a group segmentation variable than chronological age. We have seen that chronological age only generates significant differences when aggregated in four items relating to older adults' level of involvement with the sport drink, while cognitive age generates larger differences among the age groups. Specifically, significant differences appear for five of the ten items relating to involvement with the sliced bread product and for all ten items relating to the sport drink for this population group. Therefore, we may conclude that cognitive age at the exploratory level indeed appears as a segmentation factor with better properties than chronological age.

4. CONCLUSIONS

Demographic aging is currently one of the most important social and economic phenomena in Spain. Traditional segmentation based on chronological age and, more specifically, using retirement age as a segmentation criterion, is well-discussed in the literature (Bódalo, 2002; Miranda & González, 2010; Ramos, 2007, 2008). In this study, which stems from a previous one, we follow the research line that discusses the validity of segmentation by considering chronological criteria. We demonstrate that involvement with the advertised product does not depend on chronological age, but more on the cognitive age

REDMARKA UIMA-Universidad de A Coruña - CIECID
Año VI, Número 11, (2013), v2 pp. 163-184
http://www.redmarka.org/
ISSN 1852-2300

with which elderly people identify themselves. Finally, we validate Zaichkowsky's involvement scale in the specific case of older adults.

The results obtained in this study are important from the business viewpoint as they evidence the possibility that involvement can be assessed by taking certain stereotyped profiles relating to elderly consumers. According to chronological criteria, segmentation can lead to false clues about' the involvement patterns of older adults, who may act unexpectedly if we consider their real age. Therefore, it is necessary that firms bear in mind the age that people feel they are, the age that people think they look, the age that reflects people's actions, and the age that people show their interests to learn the importance they give to the products offered. If firms do not consider this recommendation, they may be offering and advertising products that are neither of much interest nor of special relevance for elderly consumers.

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