

ATTITUDES TOWARDS ADS AND AGE: A STUDY IN SENIORS

The Combination of Chronological and Cognitive age as an Effective Predictive Criterion of Attitudes

ABSTRACT

Older adults make up one of the markets with the greatest potential in the future. It is essential that businesses take the diversity within this group into account, and perform segmentation in order to obtain a favorable attitude towards the ad. The potential for segmentation by chronological age has been called into question in recent years, with cognitive age emerging as the main alternative. This research aims to analyse the relationship between the variables of attitude towards the ad, attitude towards the brand and purchasing intention among older adults, noting the moderating effect of the joint use of chronological age and cognitive age on these items.

Keywords: Cognitive age, Advertising, Attitude towards the ad, Older adults.

ATTITUDES EM RELAÇÃO A ANÚNCIOS E IDADE: UM ESTUDO EM IDOSOS

A Combinação da Idade Cronológica e Cognitiva como Um Critério Eficaz de Atitudes

RESUMO

Os idosos constituem um dos mercados com maior potencial no futuro. É essencial que as empresas assumir a diversidade dentro deste grupo em conta, e realizar a segmentação, a fim de obter uma atitude favorável em relação ao anúncio. O potencial para a segmentação por idade cronológica foi posta em causa nos últimos anos, com a idade cognitiva emerge como a principal alternativa. Esta pesquisa tem como objetivo analisar a relação entre as variáveis de atitude em relação ao anúncio, a atitude em relação à marca e intenção de compra entre os adultos mais velhos, observando o efeito moderador da utilização conjunta da idade cronológica e idade cognitiva sobre esses itens.

Palavras-chave: Idade cognitiva, Publicidade, atitude em relação ao anúncio, adultos mais velhos.

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1 INTRODUCTION

Older adults are the fastest growing population group in the world. The number of people aged over 60 years old in 2004 was 670 million, with a progressive increase to 2 billion anticipated by 2050 (Eurostat, 2011).

The aging population has significant demographic social and health implications, as well as for the economy and business. However, a lack of

information has often led to underestimations of older adults' higher income compared to other age groups. In the case of Spain, which has one of the oldest populations in Europe (Eurostat, 2011) (Table 1), with over 7.2 million people aged over 65 years old (17% of the total population), the statistics show that 89.7% of men and 82.3% of women own their own home, and have other types of income, pensions and property not covered by surveys and censuses (IMSERSO, 2009; INE, 2006).

Table 1- Population Age Structure by Major Age Groups

	0-14 years old		15-64 years old		65 years old or over	
	1990	2009	1990	2009	1990	2009
EU-27 ⁽¹⁾	19.5	15.6	66.7	67.1	13.7	17.2
Belgium ⁽²⁾	18.1	16.9	67.1	66.1	14.8	17.1
Bulgaria	20.5	13.4	66.5	69.2	13.0	17.4
Czech Republic	21.7	14.1	65.8	71.0	12.5	14.9
Denmark	17.1	18.3	67.3	65.8	15.6	15.9
Germany	16.0	13.6	69.2	66.0	14.9	20.4
Estonia	22.3	14.9	66.1	67.9	11.6	17.1
Ireland	27.4	20.9	61.3	68.0	11.4	11.1
Greece	19.5	14.3	66.8	67.0	13.7	18.7
Spain	20.2	14.8	66.3	68.6	13.4	16.6
France	20.1	18.3	65.9	65.0	13.9	16.7
Italy	16.8	14.1	68.5	65.8	14.7	20.1

Notes: ⁽¹⁾ Excluding French overseas departments; ⁽²⁾ 2008 instead of 2009
Source: Eurostat (2011)

Being old does not therefore inevitably imply suffering from financial difficulties. Many older people today have money, time and the desire to enjoy life, are self-sufficient and have no major limitations (Grande, 1993, 1999, 2002; Sudbury and Simcock, 2009). The older adults market will become increasingly large and account for a greater proportion of public and private resources (INE, 2001).

It is important that companies consider the particular features of this group in order to be able to formulate effective marketing and communication policies. There have been many studies examining the appeal of this market and its characteristics since the 1980s (Carrigan, Szmigin and Wright 2004). As a group, seniors are people with attitudes, financial and purchasing behavior (Dalwadi, Rathod and Patel, 2010), focus on consumption and lifestyle that are different from individuals of subsequent and preceding generations and even other people of the same age (Glover and Prideaux, 2009; Miranda and González 2010; Sudbury and Simcock, 2009). In this context, segmentation is an essential strategic tool for designing an appropriate communication strategy to

form a favorable attitude towards the ad and brand. There is a lack of research analyzing the classic relationship between attitudes towards the ad, attitudes towards the brand and purchase intentions among senior consumers.

But the role played by the cognitive age, understood as the age one feels oneself to be, which is an expression of the self-concept (Stephens, 1991) has to be taken into account. Different studies have detected the importance of cognitive age in older people, since, as against chronological age, there are seniors who have a lifestyle more becoming to a different age segment (Stephens, 1991; Chang, 2008). When watching commercials or reading advertisements, consumers may categorize the advertised product as "for-me" or "not-for-me" based on a self-categorization process (Chang, 2008). So, perceived age has repercussions on attitude towards the ad, attitude towards the brand and purchase intention.

In this paper, we will study the relationship between these variables, taking into account that given the differences among senior citizens, it is necessary

to segment them (Glover and Prideaux, 2009; Hudson, 2010). Although recent research has focused on demonstrating the usefulness of cognitive age when studying senior consumers' behavior (Reisenwitz and Iyer, 2007), in this paper we go further and propose the joint use of chronological and cognitive age as a criterion to increase the ability to predict seniors' behavior, by providing more information about their attitude towards ads.

2 LITERATURE REVIEW AND HYPOTHESES

2.1 Chronological Age and Cognitive Age

From the 1980s onwards, the literature began to take note of the heterogeneity of the older adults market in demographic, health, psychological, social

and lifestyle terms (Bennet and Kottasz, 2011; Lambert-Pandraud & Laurent, 2010; Moschis, 2012). Studies aiming to answer the question of how to segment the older adults market were published. Various criteria were used, including attitudes towards advertising and purchasing behavior (Birstwistle and Tsim, 2005), purchasing orientation (Lumpkin, 1985), motives for travel (Jang and Wu, 2006), attitudes and lifestyles (Moschis, 1996, 2012) and chronological age (Miranda and González, 2010), among others. Of all of these, possibly the most popular criterion is that of chronological age, the individual's age in terms of the time elapsed since his/her birth. However, as we can see in Table 2, there is no unanimity among the advocates of this form of segmentation as to the threshold at which a person enters the "third age", which may vary between 50 and 65 years old.

Table 2- Some Segmentations According to the Chronological Age of Older Adults

AUTHOR	YEAR	THRESHOLD	CRITERION
Bartos	1980	50 years	Socioeconomic
Merril and Weeks	1983	65 years	Patterns of conduct in retirement
Festervand and Lumpkin	1985	60 years	Attitudes towards advertising and purchasing behavior
Lazer	1985	55 years	Age of retirement
Visvabharathy and Rink	1985	65 years	Chronological age
Bone	1991	50 years	Analysis of 33 studies of segmentation of the Older Adults market
Grande	1993	65 years	Psychographic
Morgan and Levy	1993	65 years	Psychographic
Díaz Casanova	1995	50 years	Chronological age
Moschis	1996	55 years	Gerontological
Long	1998	55 years	Chronological age
Grande	1999	65 years	Purchase behavior and attitudes
Leinweber	2001	62 years	Values
Grande	2002	65 years	Choice of commercial establishment
Kim, Wei and Ruys	2003	50 years	Attributes of the choice of travel
Whippe	2004	55 years	Brand orientation
Moschis, Bellenger and Curasi	2004	55 years	Gerontological
Ramos	2005	65 years	Psychographic and cognitive age
Jang and Wu	2006	60 years	Motives for travel
Miranda	2006	55 years	Cognitive age
<i>Source:</i> Based on Miranda and González (2010) and Ramos (2007)			

Age perception is a multidimensional construct (Barak, 1987; Chang, 2008). In marketing literature, cognitive age has been shown to be an important predictor of consumer behaviors – even as important as chronological age (Stephens, 1991; Chang, 2008). Cognitive age has been defined as “the age one perceives oneself to be” (Stephens, 1991). It

has been considered to be a state of mind (Schiffman and Sherman, 1991) and an important dimension of self-concept (Stephens, 1991). Consumers' own age perceptions interact with the “for-me”/ “not-for-me” perceptions and perceived affinity between the self and the brand, and message processing (brand evaluation involvement and self-referencing), which

further influence brand evaluations (Chang, 2008). The concept of cognitive age is more inclusive than chronological age because it consists of four subdimensions: “feel-age”, “look-age”, “do-age” and “interest-age” (Barak and Schiffman, 1980). So, cognitive age is closely related to lifestyle, and therefore to the values, interests and activities held or carried out by a senior, irrespective of his/her chronological age (Barak and Gould, 1985).

Past research has revealed discrepancies between chronological and cognitive age (Chang, 2008). Although the cognitive age concept is applicable to people of all ages (Stephens, 1991), a dual tendency is perceived most clearly in those aged over 55 years. On the one hand, one segment of seniors perceive themselves as younger and identify with segments of lower chronological age, and on the other hand, another segment associates itself with a more advanced chronological age. The identification with a younger lifestyle arises from the advances that have been made in healthcare, which permit people over 55 years old to enjoy a healthy life and a long life expectancy. They can therefore undertake activities that less than a century ago were unthinkable for those ages. On the other hand, when the perceived cognitive age is older than the chronological, this is a response by older people to age-related changes, such as retirement, physical illness or loss of a spouse (Moschis, 2012; Stephens, 1991). Frequently, when a “catalytic event” occurs (retirement, illness), a valued social role is lost, and people are forced to re-examine their self-concepts and may shift to older cognitive ages (Stephens, 1991).

The main factors that determine this situation are biological age, sex, health, marital status, the number of children and grandchildren and the economic situation. Older people who are married, in good health and active, identify with younger age groups (Villanueva, 1997). A younger cognitive age implies greater self-confidence and more social activity. This is reflected in consumption and has an immediate impact on purchase attitudes and intent, as an individual acts based on his/her self-image rather than based on what he/she really is (Catterall and Maclaran, 2001; Szmigin and Carrigan, 2000, 2001).

Decisions about the market, such as a firm’s advertising strategy, can be improved by segmentation according to consumers’ chronological age and cognitive age (Stephens, 1991; Chang, 2008). For example, elderly people who think they are younger tend to be less traditional and old-fashioned (Barak and Gould, 1985), are more likely to use internet (Eastman and Iyer, 2005), and participate more frequently in social, cultural, and educational activities (Goulding and Shankar, 2004). Grande (1993) states that when studying the behavior of seniors, in addition to their chronological age, it is important to consider their biological age (which is related to health), their

social age (determined by individuals’ roles and habits), their psychological age (their self-perceived age relative to other age groups) and their cognitive age (a combination of how the person perceives themselves, their apparent age, and their activities and interests). Purchasing behavior may be influenced by an age other than the real or chronological age (Barak and Schiffman, 1980; Szmigin and Carrigan, 2000, 2001).

In this study, based on a theoretical model constructed using dual mediation and the independent influences model (MacKenzie, Lutz, and Belch, 1986), we consider how the combined use of cognitive age and chronological age can provide better information on attitudes towards ads, by highlighting the possible differences in attitudes between individuals whose chronological and cognitive ages match, and those in whom they differ.

In this study, we consider the moderator effect of the combined use of cognitive age and chronological age, individuals whose chronological and cognitive ages match, and those in whom they differ, on the attitude towards the ad as a mediating variable proposed by MacKenzie, Lutz, and Belch (1986), with the application of a multigroup approach.

2.2 Attitude toward the ad among older adults

There has been an incipient interest since the 1980s among students of the concept of attitude in studying attitudes towards advertising, analyzing attitudes towards the ad and attitudes towards the brand. At the start of this decade, no distinction was made between these two constructs, and they were studied jointly (Gardner, 1985; Lutz, MacKenzie and Belch, 1983). The contribution by Mitchell and Olson (1981) is particularly significant, as they were the first to consider the independent but related character of the attitude towards the ad and of the attitude towards the brand. The attitude concept remains an object of interest to advertising for three reasons: 1) it is easy to evaluate, 2) it has been shown that the creation of positive attitudes towards the ad is of interest in terms of advertising effectiveness, 3) it induces positive “transfers” towards the attitude towards the brand and the purchasing intention (Bermejo, 2008; MacKenzie, Lutz, and Belch, 1986; MacKenzie and Lutz, 1989).

The importance acquired by the study of the attitude towards the ad led to an upsurge in models explaining the relationship between this variable and the attitude towards the brand. The transfer of affect models, dual mediation models, reciprocal mediation models and independent influence models follow the traditional hierarchical sequence, whereby cognitions determine attitudes and the attitude towards the brand is the most important determining factor in the purchasing intention (Estrada, Moliner and Sánchez 2010; Estrada *et al.* 2010; MacKenzie, Lutz and Belch,

1986; MacKenzie and Lutz, 1989). The main differences between these models are connected with the mediating role of the attitude towards the ad. However, the existence of the relationship among these variables is present in all of them.

The attitude towards the ad gradually takes shape during the processing of the stimulus as a result of the influence of variables external and internal to the subject (Bermejo, 2008, Chowdhury, Olsen and Pracejus, 2008). The literature has studied the influence of external variables referring to the execution of the ad in depth: color, composition, graphics, etc. (Garcillan and Grande 2002; Grande, 1993, 1999; Lohse and Rosen, 2001; Ramos, 2007, Schewe, 2001). It has also studied internal variables including the changes that take place during the aging process, biological changes (problems with hearing and vision, slowdown of the central nervous system function, etc.), cognitive changes (attention difficulties, changes in learning, changes in processing ability), changes of mood (Briñol and Petty, 2006; León, 2008), an increase in the perceived level of risk (Helson and Soto, 2005; Grande, 1999, 2002), and socio-relational changes (loss of the work role, increased free time, etc.), among others. This entire backdrop forms the cognitive responses, the beliefs that appear in the mind of the older adult and which create a certain attitude towards the ad (Carrigan and Szimigin, 1999), which leads us to our first hypothesis:

H1: An older adult's cognitive responses to the ad have a direct and positive influence on their attitude toward the ad.

The dual mediation model and the independent influences model advocate the existence of a strong relationship between the attitude towards the ad and cognitive responses to the brand. Ads that create a more favorable attitude tend to be remembered for longer (Cowley and Janis, 2007; Loken, 2006) and to generate increased and more positive beliefs about the brand (Brennan and Bahn, 2006), making the brand familiar, and generating emotional ties to it that prompt purchases (Hairong, Daugherty and Biocca, 2002; Mortimer, 2002). This is especially interesting in the case of older audiences, as they usually draw on their experience and their memories to generate their attitude towards the brands and decide on their purchasing intentions. Memory-based ads that appeal to experience are more likely to be more positively valued by older people (Loken, 2006; Schindler and Holbrook, 2003; Thomson, MacInnis and Park, 2005).

Based on the above, we propose the following hypotheses:

H2: An older adult's attitude toward the ad has a direct and positive influence on their cognitive responses to the brand.

H3: An older adult's attitude toward an ad has a direct and positive influence on their attitude towards the brand.

H4: An older adult's cognitive responses to the brand have a direct and positive influence on attitude towards the brand.

Interestingly, in the relationship between the attitude towards the brand and purchase intention (Michaelidou and Hassan, 2008), the senior's experience with the brand is particularly important, followed in order of importance by the opinion of relatives, friends, salespeople and finally advertising (Large, 1993). Despite the influence of ads on attitude towards the brand and purchase intention, it is in second place compared to the variables mentioned above. However, purchase intention is undeniably significantly and positively influenced by the attitude toward the brand (Brennan and Bahn, 2006). It therefore follows that:

H5: An older adult's attitude towards the brand has a direct and positive influence on their purchasing intention.

The attitude toward the brand was not the only response for which the possible influence of attitude towards the advertisement was considered. We considered other affective variables such as purchase intention and noted the existence of a significant influence, regardless of whether a test of the brand advertised was performed, of whether the result of this test was satisfactory for the subject, or whether it took place before or after they saw the advertisement (Smith, 1993).

H6: An older adult's attitude toward the ad has a direct and positive influence on their purchasing intention.

Some previous papers consider the study of attitude towards the ad by analyzing differences according to gender (Dutta-Bergman and Youn, 1999), education, socio-economic level and age (making a distinction in this case between young people and seniors) (Walsh and Mitchell, 2005). However, as mentioned in the previous section, there are no prior studies that examine the joint moderating effect of cognitive and chronological age on the attitude towards the ad among seniors and its consequences for the other variables considered. Older adults have been characterized as easily influenced and vulnerable to persuasive communication (DeLorme, Huh and Reid, 2006). Studies have consistently demonstrated that older and younger adults process information differently and have different cognitive responses to advertising. For example, older adults are less efficient in information-

processing tasks (Moschis, 2012; Lee *et al.*, 2012); often fail to encode marketing stimuli semantically (Cole and Houston, 1987); process advertising information less (Cole, 1991); and have more difficulties remembering product, brand, or other content from ads (Ensly and Pride, 1991). For all these reasons it seems justified to consider the combination of cognitive age and chronological age as a moderator

variable conditioning the relationships among the variables of the model. This leads us to deduce the last hypothesis:

H7: The combination of cognitive age and chronological age has a moderating effect on the proposed theoretical model.

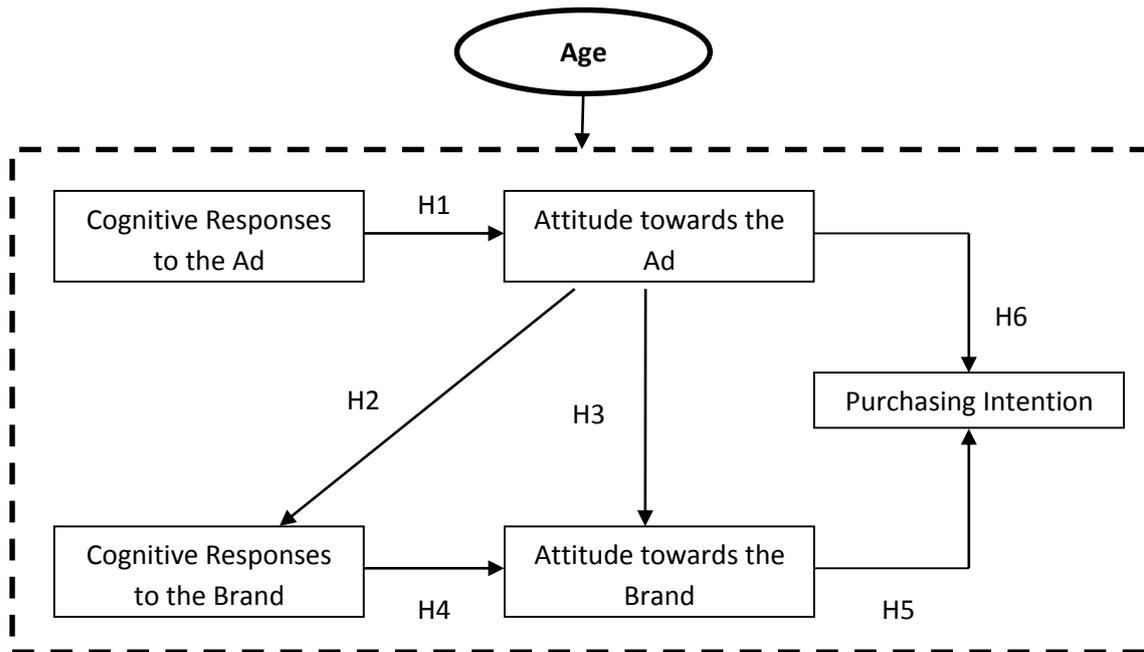


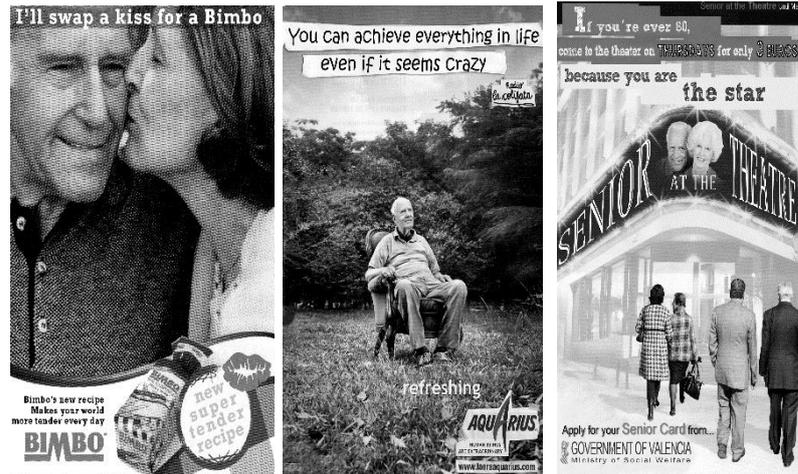
Figure 1-Theoretical Model

3 METHOD

3.1 Pretest

In order to examine the concepts studied more closely and to design a questionnaire, a qualitative study was carried out (Harrison and Reilly, 2011). In specific terms, four focus groups were organized. The 32 participants (8 in each group) were

aged between 65 and 78 years old. The main aim of the focus groups was to select, from a total of 10 printed ads, the 4 that were best understood by older adults and with which they most identified. The ads that obtained best results were those for the following products: sliced bread, a sports drink (isotonic), a discount card for older adults and a magazine (Picture 1).



Picture 1-Ads Selected for the Study

3.2 Procedure

The target population was 751,762 adults aged older than 65, resident in south-east Spain, 89,289 of which lived in the municipality of Castellón, 383,130 in Valencia and 279,343 in Alicante (INE, 2001). The current official age of retirement, 65, was taken as the point of reference for studying older adults (Ramos, 2007).

The representative sampling of the target population was stratified with proportional allocation in terms of the distribution of the population according to the variables of age, gender and habitat with over-representation in the smallest towns. The sample size was calculated for a confidence level of 95.5% with a sampling error of 4.4% ($p = q = 0.5$).

The theoretical size of the sample was originally 512, but it was reduced to 509 individuals following a cluster analysis in which outliers were eliminated.

The distribution of the sample by age, gender and municipality was based on the data of the Census of Population and Housing (INE, 2001) using a minimum of 100 personal surveys per city as distribution criteria (100 in Castellón, 150 in Valencia and 150 in Alicante), with the remaining 109 being distributed proportionately.

In order to obtain the sample, we designed a database consisting of the CEAMS (specialist centers providing services for older adults) in the Valencia Region (10 in Castellón, 16 in Valencia, 10 in Alicante) older adults' associations (98 in Castellón, 56 in Valencia and 55 in Alicante), all of which were

located in neighborhoods with various levels of education. A market research firm was hired for the field work.

As the objective of this paper is to determine the effect of age as a moderator of the attitude toward the ad, we regrouped the 4 advertisements, so that the final sample was 2036 observations (4 advertisements x 509 surveys).

3.3 Measures

The quantitative measuring instrument was designed on the basis of the bibliographical review and the qualitative study. The information was collected by means of a questionnaire structured in seven parts. The first part asked questions about the attitude towards the ad, the second about cognitive responses to the ad, the third about the attitude towards the brand, the fourth about cognitive responses to the brand, the fifth about the purchasing intention, the sixth about the chronological age, and the final part about the cognitive age. The study variables were measured with the scales most frequently used in the literature, adapting the wording to the characteristics of older adults (Table 3). For this reason, for the response alternatives, we decided on the combination of a Likert scale (of 5 points) and a Kunin scale. This type of scale is very easy to remember, requires no special knowledge, and are generally not tiring (Jayanti, McManamon and Whipple, 2004) which is an essential advantage when designing a questionnaire aimed at older adults.

Table 3-Scales Used for the Wording of the Questionnaire

VARIABLE	ITEMS	REFERENCES
Attitude toward the ad	It's very good. I liked it a lot, It's very interesting, I have a favorable opinion. It's very nice.	Beerli and Martín (1999); Cox and Cox (1988); Curlo and Ducoffe (1998); Gardner (1983); Hill (1989); Kempf and Smith (1998); MacKenzie and Lutz (1989); MacKenzie and Spreng (1992); Yi (1990); Zhang (1996).
Cognitive responses to the ad	It's very informative. It's very convincing, It's very persuasive. It has very strong arguments. It's very believable	Olney, Holbrook and Batra (1991); Celuch and Slama (1995); Lord, Lee and Sauer (1995); Zhang (1996); Kempf and Smith (1998).
Attitude toward the brand	It's very good. I like it a lot. I have a very favorable opinion. It's very nice. I consider it has high prestige	Beerli and Martín (1999); Cox and Cox (1988); Gardner (1983); Graeff (1997); Homer (1990); Kardes (1988); Kempf and Smith (1998); MacKenzie and Lutz (1989); MacKenzie and Spreng (1992); Severn, Belch and Belch (1990); Yi (1990).
Cognitive responses to the brand	It is of high quality. Has a good price. Looks good. Offers a great guarantee	Determined by a pretest performed with 20 adults older than 65 years.
Purchasing intention	Certainly not. Unlikely. Don't know. Probably will and certainly will	Homer (1990); Jin and An (1998); Keller (1991); MacKenzie and Lutz (1989); MacKenzie and Spreng (1992); Miniard, Bhatla and Rose (1990); Severn, Belch and Belch (1990); Yi (1990); Yoon et al., (1995); Zhang (1996).
Cognitive age	I feel like.... I think I look.... My interests are.... My actions are...	Barack and Schiffman (1981)
<i>Source:</i> Own preparation		

There are various scales to measure cognitive age, of which three are generally used: the single-item scale (Baum and Boxley, 1983), the semantic differential scale (George, Mutran and Pennybacker, 1980) and the age scale (Barak and Schiffman, 1980) (Table 4). Of the above scales, we decided to use the age decade scale, as it has some advantages that make its use more attractive: 1) it allows a more accurate

estimate of cognitive age than the single-item scale, and 2) it is easy to apply and simple (Ramos, 2007; Szimigin and Cardigan, 2000, 2001). It considers four aspects related to age: the age a person feels, the age they believe they look, the age that their actions reflect, and the age expressed by their interests, valued in age decades. It is calculated based on a simple arithmetic mean of the ratings for the four aspects.

Table 4-Scales of Measurement of Cognitive Age

AUTHOR	YEAR	SCALE	DESCRIPTION
Blau	1956	Single item	Studies the age group with which people identify. The responses can be: young person, middle aged and old
Guptill	1969	Semantic differential	Analyzes the most important aspects for identifying with a certain age
George, Mutran and Backer	1980	Semantic differential	The cognitive age is obtained by calculating the distance between their opinion of themselves and their opinion of the other two references
Barak and Schiffman	1980	Age decade	Calculates the mean of the age the person feels, the one they reflect and how they act
Baum and Boxley	1983	Single item	Relates how the person feels and the activities they undertake

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

4 RESULTS

When studying the data, we used structural equation models in a multigroup analysis. The models were estimated from the matrices of variances and covariances by the maximum likelihood procedure, using the EQS 6.1 program (Shah and Goldstein, 2006). A study of the dimensionality, reliability and validity of the scales used was first carried out, in order to ensure that that we were indeed measuring the construct that we intended to measure. The invariance of the measuring instrument was then verified, to compare the regression coefficients of each of the two groups considered (moderating effect). We thus

considered a first group consisting of 254 individuals whose chronological age coincided with their cognitive age (hereinafter G_1), and a second group of 255 individuals in which the cognitive age was lower than the chronological age (G_2). As we consider 4 advertisements the observations for each group were: 1016 for G_1 (4 advertisements x 254 individuals in G_1) and 1020 for G_2 (4 advertisements x 255 individuals in G_2).

ANOVA was developed to determine that there are significant differences for all the items considered in the study (Table 5), the values for group 2 are always higher than for group 1.

Table 5-Anova

	G ₁	G ₂	p
A.A. (It is very good)	3.43	3.66	0.00
A.A. (I liked it a lot)	3.37	3.59	0.00
A.A. (It's very interesting)	3.30	3.51	0.00
A.A. (I have a favorable opinion)	3.32	3.54	0.00
A.A. (It's very nice)	3.39	3.59	0.00
C.R.A. (It's very informative)	3.35	3.55	0.00
C.R.A. (It's very convincing)	3.13	3.35	0.00
C.R.A. (It's very persuasive)	3.03	3.27	0.00
C.R.A. (It has very strong arguments)	2.88	3.13	0.00
C.R.A. (It's very believable)	3.26	3.44	0.00
B.A. (It's very good)	3.52	3.78	0.00
B.A. (I like it a lot)	3.22	3.52	0.00
B.A. (I have a very favorable opinion)	3.33	3.61	0.00
B.A. (It's very nice)	3.28	3.57	0.00
B.A. (I consider it has high prestige)	3.37	3.67	0.00
C.R.B. (It is of high quality)	3.53	3.78	0.00
C.R.B. (Has a good price)	2.93	3.24	0.00
C.R.B. (Looks good)	3.35	3.63	0.00
C.R.B. (Offers a great guarantee)	3.36	3.64	0.00
P.I. (Certainly not. Unlikely. Don't know. Probably will and certainly will)	3.26	3.60	0.00
<i>Notes:</i> A.A.: attitude toward the ad; C.R.A.: cognitive responses to the ad; B.A: attitude towards the brand; C.R.B.: cognitive responses to the brand; P.I.: purchasing intention			

When studying the psychometrical properties of the scales of measurement used in this study, it was observed that in both groups analyzed, the probability associated with chi-squared reached a value higher than 0.05 (0.215), so the overall fit of the model was good (Jöreskog and Sörbom, 1996). The convergent validity was demonstrated in two ways. The first was because the factor loadings were significant and above 0.5 (Bagozzi, 1980; Bagozzi and Yi, 1988; Hair *et al.*, 2006), and the second was because the average variance extracted AVE for each of the factors was over 0.5 (Fornell and Larcker, 1981). The reliability of the scale was demonstrated because the composite

reliability indices of each of the dimensions obtained were higher than 0.6 (Bagozzi and Yi, 1988).

The discriminant validity of the constructs considered was subsequently verified by means of the average variance extracted AVE (Fornell and Larcker, 1981). For this validity to exist, a construct must share more variance with its indicators than with other constructs of the model. This occurs when the square root of the AVE between each pair of factors is higher than the correlation estimated between those factors, as was the case in this study, so the discriminant validity was ratified (Table 6).

Table 6-Discriminant Validity

	A.A	C.R.A.	B.A.	C.R.B.	P.I.
A.A.	0.93				
C.R.A.	0.65	0.91			
B.A.	0.64	0.61	0.95		
C.R.B.	0.61	0.59	0.66	0.92	
P.I.	0.65	0.62	0.67	0.68	1
AVE	0.87	0.84	0.89	0.95	1
CR	0.97	0.96	0.97	0.95	1

Notes: A.A: attitude toward the ad; C.R.A: cognitive responses to the ad;
 B.A.: attitude toward the brand; C.R.B: cognitive responses to the brand;
 PI: purchasing intention.; CR: composite reliability;
 AVE: Average Variance Extracted

Before the multigroup analysis, the invariance of the measuring instrument was confirmed and the structural part resulting from step 3 (partial) was incorporated into the model, in order to establish the causal relationships among the cognitive responses to the ad, the attitude towards the ad, cognitive responses to the brand, attitude towards the brand and purchasing intention. We also estimated the existence of significant differences in the causal relationships in order to analyse the moderating effect of age. To that

end, we added the restrictions that permitted calculation of these significant differences between the parameters estimated through comparison of the χ^2 of the restricted structural model with the χ^2 of the unrestricted structural model (Table 7). This allowed us to test the hypotheses put forward.

The analysis carried out to establish the causal relationships among the study variables was adequate, because the probability of the chi-squared was higher than 0.05 (0.133).

Table 7-Test of Causal Relationships

	G₁ (cognitive age = chronological age)		G₂ (cognitive age = chronological age)		H7	
	Parameter	t	Parameter	t	$\Delta \chi^2$	p
<i>H1</i> : C.R.A \square A.A	0.91	9.40	0.90	13.67	26.5	0.00
<i>H2</i> : A.A \square C.R.B	0.64	22.79	0.57	17.23	41,3	0.00
<i>H3</i> : A.A \square B.A	0.07	4.85	0.07	3.71	74.1	0.00
<i>H4</i> : C.R.B \square B.A	0.92	56.44	0.87	37.89	57.9	0.00
<i>H5</i> : B.A \square P.I	0.72	18.76	0.67	20.73	55.4	0.00
<i>H6</i> : A.A \square P.I	0.12	3.17	0.14	3.85	25.3	0.00

Model fit
 Chi-square = 213.82; *df* = 192; *p* = 0.13; RMSEA = 0.03; GFI = 0.98; AGFI = 0.96

Notes: C.R.A.: cognitive responses to the ad; A.A.: attitude toward the ad; C.R.B.: cognitive responses to the brand; B.A.: attitude toward the brand; P.I.: purchasing intention

The results obtained confirm the hypotheses put forward by the theoretical model. We observed that in both G₁ (cognitive age = chronological age) and G₂ (cognitive age < chronological age), the relationships between the cognitive responses to the ad and the attitude towards the ad (G₁ = 0.918; G₂ = 0.903), and between the

cognitive responses to the brand and attitude towards the brand (G₁ = 0.920; G₂ = 0.878) exerted the greatest influence. Meanwhile, the relationships between attitude towards the ad and cognitive responses to the brand (G₁ = 0.644; G₂ = 0.576), attitude towards the ad and purchasing intention (G₁ = 0.125; G₂ = 0.142), attitude towards the ad and attitude towards the brand

($G_1 = 0.076$; $G_2 = 0.079$) showed less influence. The relationship between attitude towards the brand and purchasing intention ($G_1 = 0.723$, 0.675) is particularly interesting, as it has a greater influence than that exercised by the attitude towards the ad on the purchasing intention ($G_1 = 0.125$; $G_2 = 0.142$).

If we compare the groups being studied, in all the relationships considered G_1 is observed to produce higher values than those obtained for G_2 except in two cases: the relationship between the attitude towards the ad and attitude towards the brand, and the relationship between attitude towards the ad and purchasing intention.

In all the causal relationships posited, we observed the existence of significant differences that confirm the moderating effect of age.

The testing of the hypotheses demonstrates the suitability of the model for explaining the relationships between the attitude toward the ad, attitude towards the brand and purchasing intention in the case of older adults, in both older adults whose chronological and cognitive ages coincide, and those whose cognitive age is lower than their chronological age. It also enables us to identify the significant differences in some causal relationships, explaining the moderating effects between the two groups analyzed.

5 DISCUSSION

Demographic aging is one of the most important social and economic phenomena in the world today. Seniors form heterogeneous market, which is different from young people and also from other individuals in the same group. In recent years, the biggest market has been segmented based on various criteria. The criterion of cognitive age has been gaining ground on the traditional criterion of chronological age as it has some degree of superiority when predicting behavior. In this paper, we used chronological age and cognitive age as criteria for segmentation to show the effects on the relations arising from the model, and found that the combined use of the two ages provides more information on the pattern of behavior of seniors than when chronological age and cognitive age are used separately.

The results obtained show the differences in the values in the relations between seniors whose chronological age matches their cognitive age, and seniors whose cognitive age is less than their chronological age. As mentioned in the literature (Stephens, 1991; Grande, 1993, 1999; Chang, 2008), this confirms the need to take the combination of both segmentation criteria into account if companies and advertising agencies are to improve their predictive ability as regards the influence of attitude toward the ad, attitude towards the brand and

purchase intention. Otherwise, a less effective advertising strategy may be designed, as the attitude toward the ad and subsequent purchase intention may differ between seniors who feel those older people who feel their actual age and those who feel younger.

The study also shows the superiority of the values obtained in relationships with a predominantly cognitive dimension compared to those with a predominantly affective dimension. This generally shows the tendency among senior citizens towards rationality in their attitudes and behaviors. This is consistent with research that suggests that senior consumers are more skeptical of advertising and trademarks, have greater trust in their own judgment, search for information more extensively, and draw on their own experience and knowledge (Bódalo, 2000; Grande, 1993; Ramos, 2007). If we compare the results for each group, it is apparent that in general, in the group consisting of seniors with similar chronological and cognitive ages, the values in the more cognitive relationships are superior to those obtained by the group whose cognitive age is less than their chronological age. It follows that seniors whose chronological age and cognitive match tend to rationalize their actions to a greater extent, while seniors who feel younger have a slight tendency toward less rationality.

From a professional standpoint, companies should consider both chronological and cognitive age. This will segment seniors more effectively and their preferences will be ascertained to a greater extent. Furthermore, when designing an advertising strategy it is essential to take into account the trend towards rationalization among seniors; this trend appears to decline, albeit minimally, among seniors who feel younger than they actually are. Advertisements aimed at seniors should be informative, emphasize the benefit of the product, be simple (easy to understand and remember) and appeal to experience. This recommendation is more important for seniors whose chronological age and cognitive age match.

5.1 Limitations and future research

Finally, it is important to note that these conclusions should be considered with some degree of caution due to the limitations of the study. In order to minimize these, in further research we propose the creation of a new group consisting of seniors whose cognitive age is older than their chronological age. Furthermore, we will expand this study to other geographical areas and other countries in which the characteristics of older people and their idiosyncrasies are different to those of the sample studied herein.

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