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Too Old to Choose? The Effects of Age and Age Related Constructs on Consumer Decision Making

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ABSTRACT

Aging of societies is a major challenge to academic research as well as to management. The unstoppable trend of an aging society in most western societies offers opportunities and challenges at the same time. This paper sheds light on the impact of age as well as age-related constructs on relevant consumer attitudes and behavior. More precisely, the empirical study, conducted in the market for cars, examining the relationships between four distinct age constructs and assesses the impact of these age constructs on information gathering, a consumer's evoked set, and on brand loyalty.

INTRODUCTION

The populations of most developed countries are aging because of longer life expectancies and decreasing birth rates (Uncles and Lee 2006). In Germany, people over the age of 60 constitute 24.1 % of the population in 2001. According to the German Federal Statistical Office this figure is likely to increase to 36.7 % by the year 2050 (from 14.6 % in 1950) (Destatis 2007, p. 31). Similar trends can be found in the US and France (Polyak 2000, Lambert-Pandraud, Laurent and Lapersonne 2005). In general, the aging of societies is seen as a serious threat that could endanger the economic perspectives of industrialized nations, e.g. their ability to innovate. This trend does not only impose challenges for societies as a whole, it also questions the existing understanding of companies about their customers. Despite the high relevance of an appropriate understanding of the influences of age on consumer behavior and the high interest of both academia and practice, only relatively little research on age effects can be found in existing marketing literature (e.g. Lambert-Pandraud, Laurent and Lapersonne 2005, Uncles and Lee 2006, Yoon et al. 2005). We believe that there are at least two reasons that account for the relatively small prominence of age related academic work upon this point in time. First, most industries have been traditionally focused on younger segments of consumers which were perceived as more consumption-oriented. As a consequence, research funds have been predominantly spent in that direction. Second, academic research on consumer behavior has an almost natural bias toward using student samples, since it requires a lot less effort to obtain than representative household samples.

Existing research can be grouped in studies that (1) explain influences of age on information gathering (e.g. Balasubramanian and Cole 1993), processing (e.g. Johnson 1990, Jones and Mullan 2006, Phillips and Sternthal 1977, Roedder-John and Cole 1986, Sorce, P. 1995), and decision making, e.g. purchase behavior (Lambert-Pandraud, Laurant and Lapersonne 2005, Uncles and Lee 2006), and (2) describe and measure age (e.g. Barak and Schiffman 1981, Carstensen 1992, Mathur and Moschis 2005, Salthouse 1992). Aging has been found to be reflected in psychological, social, and biological changes (Grégoire 2003). However, little is known about the explanatory power of these measures in terms of consumption-related constructs (e.g. information gathering, processing and purchase behavior) relative to chronological age.

In the present paper, we contribute to the literature by (1) examining the relationships between the age constructs (biological, chronological, psychological, and sociological age), and (2) by

analyzing the impact of different conceptualizations and operationalizations of age on consumer attitudes, information seeking, and behavioral intentions.

In accordance with these research objectives, the paper is organized as follows. First, we discuss the theoretical background of the study and develop our hypotheses based on the existing literature. After describing the methodology, we present results of the empirical analysis, which is based on a fairly representative sample of 988 consumers. The paper concludes with a discussion of key findings and implications for academics and marketing practitioners.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

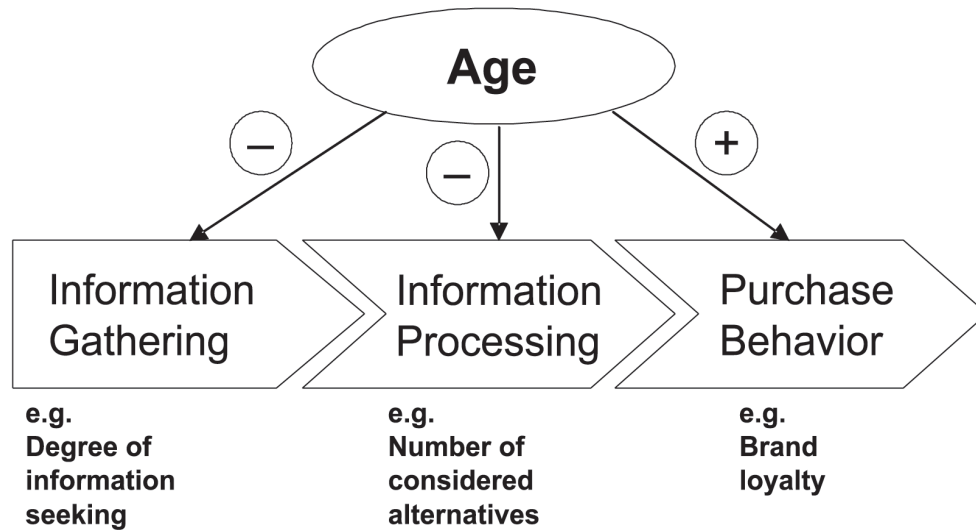
While in most of the marketing literature chronological age is used as a proxy variable to measure age, more sophisticated measures rooted in other disciplines have evolved. In existing literature, four interdependent mechanisms are seen as relevant to explain the phenomenon of aging in a consumer context: biological aging, cognitive decline, psychological aging, and sociological aging (Grégoire 2003, Lambert-Pandraud, Laurant and Lapersonne 2005). Biological aging is defined by the physical decay in terms of mobility and degeneration of sense organs. According to Moschis (1994) biological changes refer to "the changes in human functional capacity resulting from changes in cells and tissues that in turn cause deterioration of the biological system and its subsystems." Sorce (1995) claims that the average cognitive activity of a 60 year old individual is about 30 percent lower in relation to young individuals. As a consequence, the gathering and processing of new information is affected negatively with increasing age. Hence, learning requires more effort for elderly individuals. Moreover, psychological changes contribute negatively to the ability and willingness of older consumers to process new information. In line with that, older consumers have been found to be more risk-averse (Botwinick 1978).

Contrary to these aspects, older people are found to associate themselves to younger age groups in terms of their subjectively felt age (Barak and Schiffman 1981, Sherman and Schiffman 1991). Age related social changes refer to changes of roles experienced by people while aging (Grégoire 2003, Sherman 1990). Elderly individuals have fewer contacts and social interactions and attach greater importance to familiar and emotionally close contacts (Carstensen, Charles, and Fung 2003).

In sum, each of the aspects above contributes to the fact that individuals have increasing problems in terms of gathering and processing of information as they age. Age has been found to have a negative influence to the extent of information gathering about new products and services. More so, age negatively influences information processing in terms of having alternatives of products and services in one's consideration set. In all, age impacts purchase decisions (Lambert-Pandraud, Laurant and Lapersonne 2005). In the following paragraph, we build our hypotheses in line with this process (figure 1).

As reported by Phillips and Sternthal (1977), the extent of information seeking and the number of different information sources used in preparation of a purchase decision declines with age. This finding is confirmed by the results of Gronaugh et al. (1978),

FIGURE 1
Influences of Age on the Consumption-related Process



Johnson (1990) and Srinivasan and Ratchford (1991). Reasons for this change are (1) biological changes, which lead to a limited physical ability of older consumers to collect information, (2) the limited cognitive abilities of individuals which leads to a smaller degree of information seeking intensity (Balasubramanian and Cole 1993). Moreover, older consumers have made numerous experiences in almost all product categories over years. This fact in combination with their increasing risk aversion makes gathering of new information unwanted. (3) The decreasing number of social contacts leads to a decrease in the likelihood, that older consumers are confronted with new information. Older people increasingly rely on information from close family members without striving for external information (Phillips and Sternthal 1977). Therefore, we state the following hypothesis:

H₁: The age of consumers in terms of a) chronological age, b) biological age, c) cognitive age, d) risk aversion, e) sociological age (family), f) sociological age (friends), g) sociological age (work colleagues) is negatively related to their extent of information gathering.

For the reasons stated above, the extent of which new information is processed by consumers declines with their age. Existing findings in literature confirm that the number of products that consumers have in their evoked set is significantly smaller for the elderly (Lambert-Pandraud, Laurant and Lapersonne 2005, Balasubramanian and Cole 1993, Ehrenberg and Uncles 1990). Hence, we hypothesize that

H₂: The age of consumers in terms of a) chronological age, b) biological age, c) cognitive age, d) risk aversion, e) sociological age (family), f) sociological age (friends), g) sociological age (work colleagues) is negatively related to the size of their evoked set.

As a consequence of the decreasing ability to seek and process new information, older consumers can be found to be less fluctuating in their purchase behavior. This is reflected in an increasing loyalty to brands, as reported by Lambert-Pandraud, Laurant and Lapersonne (2005) in the case of automobile brands. Since strong brands are characterized by their emotional value to consumers, older people will be interested in sustaining relationships to their favorite brands, as they are interested in maintaining close relationships in general. Therefore, we propose that

H₃: The age of consumers in terms of a) chronological age, b) biological age, c) cognitive age, d) risk aversion, e) sociological age (family), f) sociological age (friends), g) sociological age (work colleagues) is positively related to their brand loyalty.

METHODOLOGY

Questionnaire Development and Pretesting

To measure both independent (age constructs) and dependent variables (information gathering, evoked set and brand loyalty), a pool of sample measures was generated based on an extensive literature review. The items were pre-tested using a sample of 30 German individuals that were randomly selected. These subjects did not participate in the following field survey. Regarding question content, wording, format and layout there were no signs of any misunderstanding reported by the respondents.

Sample and Data Collection

We chose automobiles as our subject of analysis, given the high complexity of a purchase decision is ideal to find differences between consumers, related to the age constructs (Lambert-Pandraud, Laurant and Lapersonne 2005). The survey was conducted by means of a written self-completion questionnaire. We

asked individuals with age between 18 and 70 to participate in this survey for two reasons: First, we wanted to ensure that the respondents are allowed to drive¹ (and are still driving). Second, we had to limit the age of the respondents to ensure accessibility at reasonable cost. To ensure responses for age segments that were harder to access, we continued the survey until a minimum of 10 respondents was gathered for each (one-year) age-group between 18 and 70. Moreover, we controlled for gender. A total of 988 persons completed the survey. The average age of the respondents is 38.26 (Std.-Dev. 15.85), distribution of gender is 52.6 female and 47.4 male, respectively. This is quite representative for the German population.

Measurements

On that basis a questionnaire was developed consisting of three parts. The first part consists of questions on the chronological age and the other age constructs. Biological age is measured on a 7-point Likert-type scale, with anchors of 1=strongly agree and 7=strongly disagree using three indicators that reflect increasing difficulties to (1) walk, (2) use the stairs, and (3) mobility in general (Composite reliability (CR)=.798; Average Variance Extracted (AVE)=.573). To measure the cognitive or psychological age, we use the four indicators developed by Barak and Schiffman (1981) namely the “feel”, “look”, “do”, and “interest” age. These items are measured on 7-point scale in steps of 10 years, with anchors of “in my 20s” to “in my 80s” (CR=.968; AVE=.883). As a second construct related to psychological age, we use a scale by Burton et al. (1998) to measure risk-aversion (CR=.741; AVE=.489). Sociological age is operationalized by using the scale proposed by Carstensen (1992), in which the relations to family members (CR=.823; AVE=.612), friends (CR=.818; AVE=.602) and colleagues at work (CR=.820; AVE=.605) are measured in terms of interaction frequency, emotional connectedness, and satisfaction. The items are measured on a 7-point-Likert-type scale. The global goodness-of-fit indices resulting from the confirmatory factor analysis are above the thresholds generally proposed (CFI=.955, TLI=.943, RMSEA=.064, SRMR=.042) (Hair et al. 2006). Below, the correlations of the independent variables are depicted. As can be noted, cognitive age and chronological age are closely related. Therefore, these two constructs are not analyzed in a single model in order to avoid multicollinearity.

As depicted in figure 2, the relations between the age-related constructs and chronological age show some fluctuation and can be found to increase over time.

The dependent variables are operationalized by (1) using a 7-point-Likert-type scale with items from Bearden, Netemeyer and Teel (1989) to measure the extent of information gathering related to a typical purchase decision. (2) We calculated the number of alternative brands that are taken into consideration by asking the respondents an open question about their evoked set, in which they were asked to name all relevant brands (Gruca 1989). Finally, we measure brand loyalty as action loyalty (Oliver 1999), calculating a dichotomous variable by comparing the (car) brand in use and the brand used before. To test our hypotheses, we use structural equation modeling (SEM). We compare the explanatory power of chronological age with an alternative model consisting of the age-related constructs described above.

RESULTS OF HYPOTHESES TESTING

Results of hypotheses testing are shown in table 2. As proposed in H1a-H2a, we find the expected negative influence of

chronological age on the extent of information gathering and the number of brands in the evoked set of the consumers. Moreover, age is also positively related to brand loyalty, therefore H3a can not be rejected. In model 2, we find no effects of biological age on the dependent variables, therefore H1b-H3b have to be rejected. As shown in figure 2, biological age seems to be correlated to chronological age only starting in the late 50s and above, therefore it is not surprising that the overall effect is not significant. The influence of cognitive age is as expected for all three dependent variables, hence we confirm H1c-H3c.

The influence of risk aversion on the size of the evoked set and brand loyalty is as hypothesized, providing support for H2d-H3d. However, H1d has to be rejected, because of a significant positive effect of the degree of risk aversion on the extent of information gathering. On the one hand, this is in contrast with our assumption that older more risk averse people will reduce their information gathering and stay with a known alternative. On the other hand, risk aversion in general implies the tendency to seek intensively for information that will help to justify a purchase decision.

Concerning the influence of sociological age, we find evidence that stronger relations to family members (H1e) and weaker relations to friends (H1f) are negatively related to information gathering. However, we found those respondents with weaker ties to friends having more brands in their relevant set, which is contrary to our assumptions (H2f). A possible explanation for this effect could be that people might build up relationships with brands when other relational ties are not available. Overall, the age-related constructs do not exceed the explanatory power of chronological age. In figure 3, relations of chronological age to the dependent constructs are depicted, showing the standardized means of the dependent variables for each chronological year.

IMPLICATIONS AND FUTURE RESEARCH

The above findings confirm most of the findings in literature saying that age is negatively related to information gathering and processing, and positively related to the stability of purchase behavior, i.e. brand loyalty. These results are good and bad news for marketing management at the same time. Especially strong and long established brands are likely to profit from aging of societies in the future, since they found a natural ally for defending themselves against rising competitors. Older consumers might simply not consider emerging alternatives, maybe even not noticing them at all. In consequence, the importance of age as a natural switching barrier will increase in the future. This is bad news for newly established companies for which the key challenge of the future will be, how to overcome the above mentioned obstacles to get into older consumers' minds.

Our findings offer various avenues for further investigations. At first, the effectiveness of alternative ways of communicating about new brands, products etc. should be examined. Possibly, elderly consumers can be reached better by indirect communication which targets them in their social context (e.g. through their local community). Second, further research should examine how older consumers' willingness to consider and process new information can be enhanced. It might be possible to “win” older consumers by providing them brand experience. This reduces their risk in trying new alternatives. In that sense, consumers are never too old to choose, but sometimes, marketers just don't find the right words.

As with all studies, ours suffers some limitations, the key limitation being the dataset, which only takes into account consumers aged from 18 to 70. In general, the age-related constructs examined in our study seem to add little explanatory power over the chronological age. Some of the age-related constructs like biological age seem to get increasingly important for very old people,

¹Please note that driving age in Germany is 18 years, not 16 as in the U.S.

TABLE 1
Correlations of age-related constructs

	CHRON	BIO	COG	RISK	SOCA	SOCB
Chron. Age (CHRON)	1					
Bio. Age (BIO)	.415***	1				
Cog. Age (COG)	.954***	.449***	1			
Risk Av. (RISK)	.336***	.100**	.307***	1		
Soc. Age Family (SOCA)	.115***	.026n.s.	.099***	.162***	1	
Soc. Age Friends (SOCB)	.312***	.150***	.320***	.092**	.277***	1
Soc. Age Work (SOCC)	.073**	.033n.s.	.101***	.029n.s.	.141***	.365***

***p<0.01; **p<0.05; *p<0.1, n. s.=not significant

FIGURE 2
Graphical overview of relations of age related constructs to chronological age

Mean value of construct per year

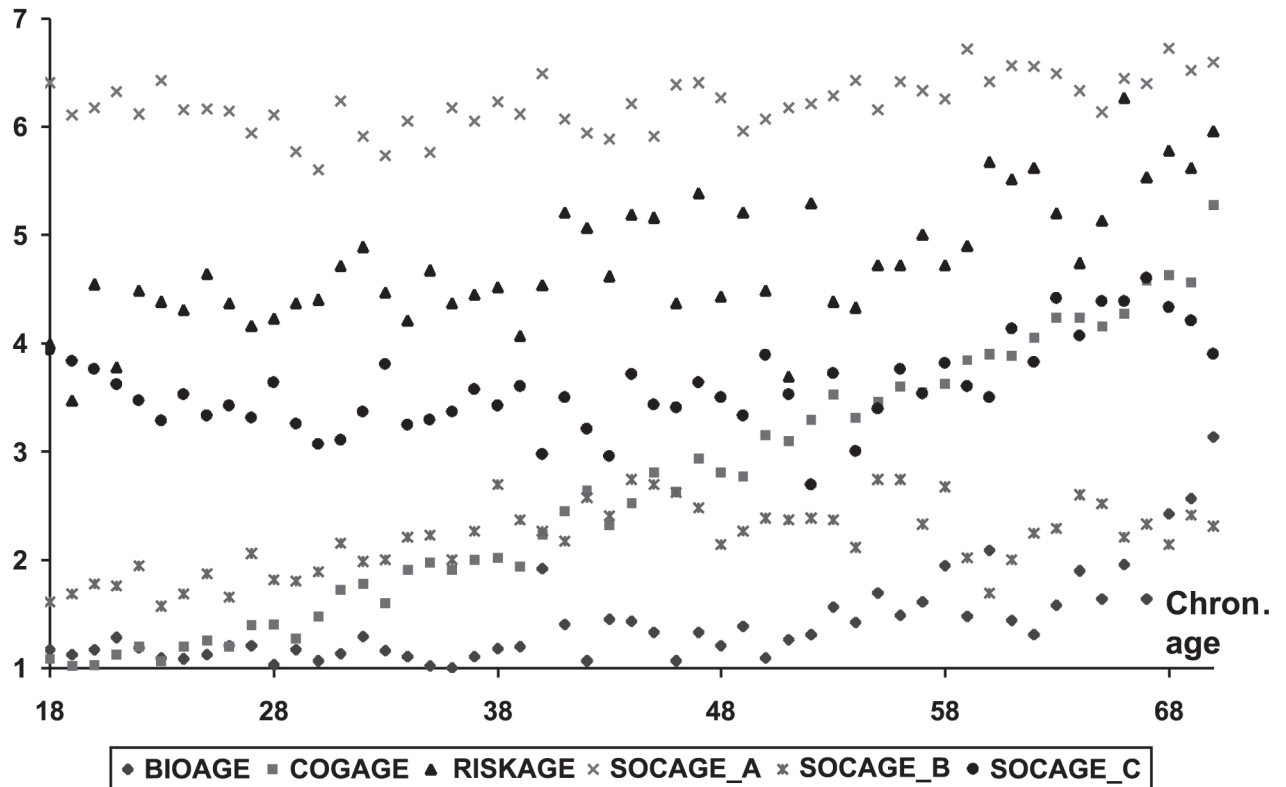
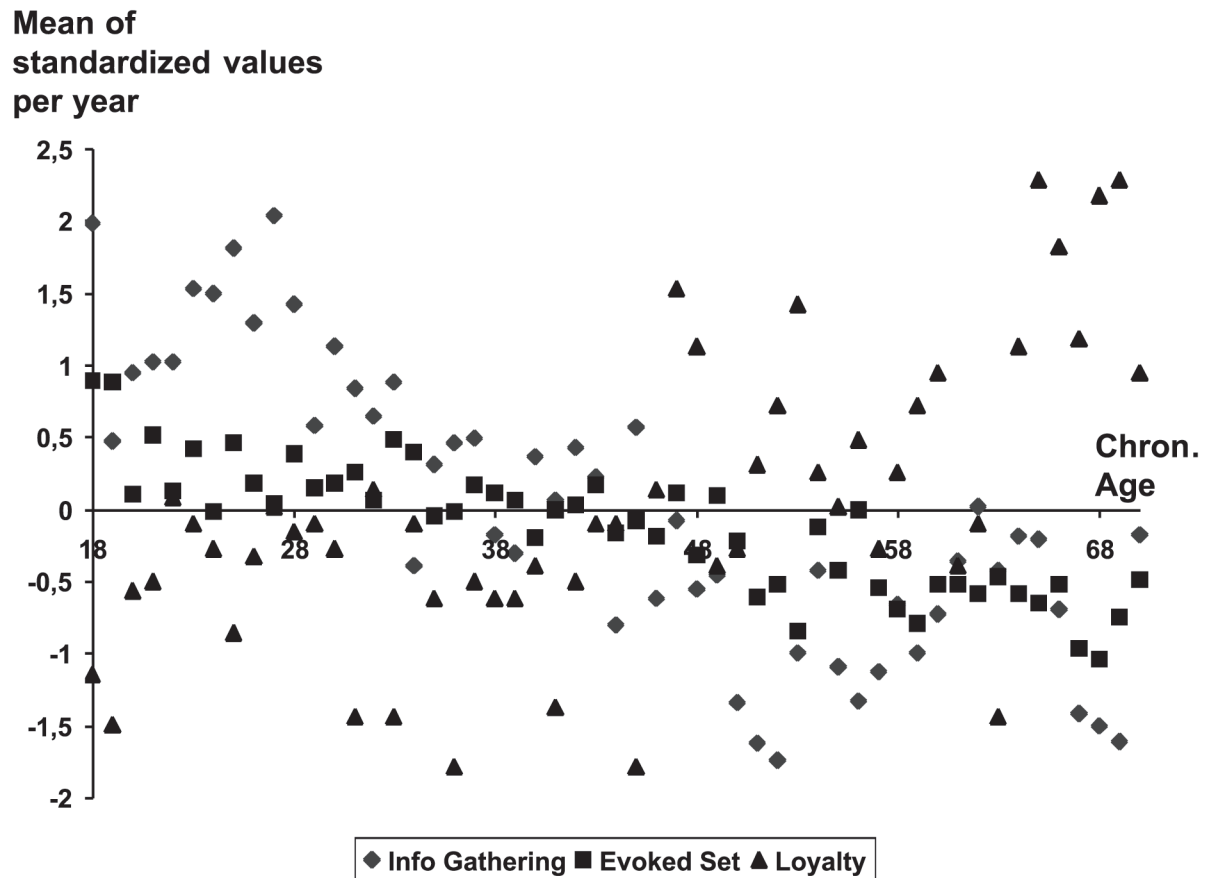


TABLE 2
Influence of age on information gathering, evoked set and brand loyalty

Hypotheses	(1) Information gathering	(2) Evoked set	(3) Brand loyalty
H ₁ a Chron. Age	-.384***	-.382***	.402***
Explained Var.	R ² =14.7 %	R ² =14.6 %	R ² =5.0 % (Nagelkerke)
CFI=.995, TLI=.989, Goodness-of-fit Indices	— RSMEA=.045, SRMR=.019	— (no measurement error)	— (no measurement error)
H ₁ b Biol. Age	.039n.s.	-.053n.s.	-.053n.s.
H ₁ c Cog. Age	-.415***	-.343***	.258***
H ₁ d Risk	.135***	-.087**	.112**
H ₁ e SOCA	-.068*	-.059n.s.	.046n.s.
H ₁ f SOCB	-.098**	.111***	.074n.s.
H ₁ g SOCC	.034n.s.	-.009n.s.	.021n.s.
Explained Var.	R ² =17.6 %	R ² =14.3 %	R ² =4.9 % (Nagelkerke)
Goodness-of-fit Indices	CFI=.951, TLI=.941, RSMEA=.055, SRMR=.040	CFI=.949, TLI=.935, RSMEA=.062, SRMR=.040	—

FIGURE 3
Graphical overview of relations of dependent constructs to chronological age



therefore our overall results do not reflect this properly. Moreover, we assumed linearity for all relationships. A look at figures 2 and 3 confirm that this might be a reasonable way to get a general picture. Further research should assess age constructs in a segment specific manner to get an understanding about when the specific phenomena get important in terms of the purchasing process.

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