

**Age-Induced Decision Shrinkage,
Another Avenue to Repeat Purchase:
The Example of New Automobiles**

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The literature from psychology and gerontology suggests that older persons have reduced cognitive abilities, and an increased risk aversion. On this basis, we predict that their decision process will be shrunk, in three manners: a smaller consideration set, a focus on the previous brand (leading to repeat purchases), a privileged status given to other ancient brands. In a survey approach, we test these predictions on a large sample of recent buyers of new automobiles. The results confirm the prediction: A shrinkage of the decision process appears after sixty, and is markedly stronger after seventy-five, two limits suggested by the literature.

INTRODUCTION

When buying a new car, older consumers repurchase the same brand much more often than younger ones: 67% of buyers aged sixty or above repeat purchase the same brand, vs. 48% of buyers below sixty.

This article attempts to better understand the reasons for the higher repeat purchase rate of older consumers. Given the dearth of consumer behavior studies on the topic, we proceeded in four steps:

- (i) we identified, in the consumer behavior literature, psychological determinants of repeat purchase that can be modified by age, mainly cognitive factors linked to memory and reasoning abilities, risk aversion, and socio-affective antecedents;
- (ii) we analyzed the impact of age on these determinants, using the literature in gerontology and in cognitive and social psychology; we identified well documented effects of age: cautiousness in decision (Botwinick 1978), which would lead older persons not to change, even if the present situation is far from ideal, and consequences of age-related cognitive decline;
- (iii) this led to a series of hypotheses, included in a conceptual framework (Figure 1); some of the relationships in the framework (marked (1) in the Figure) are clearly supported by the gerontology and psychology literature, and require no further testing; but other predictions (marked with H's), bearing more precisely on consumer behavior, need to be tested empirically;
- (iv) we performed the needed empirical tests, using a large secondary data set, a survey of recent buyers of new cars.

This approach offers a reliable basis for defining what an “older” consumer is. The literature on gerontology and psychology studies elderly persons, typically above 65 (Heslop and Marshall 1990). This is far beyond the age of 50, often used by practitioners (Treguer 1994). For example, Lesser and Kunkel (1991) explain that, between 40 and 59, people are at their peak in terms of problem solving abilities and social maturity. Gerontology research based on social psychology relies on retirement age, around 60. Research based on cognitive psychology studies persons above 60 or 65, with a cognitive decline visible in daily life above 75 or so. Subjects aged 60 to 74 are considered separately from subjects above 75. We shall follow this approach, comparing these two groups to mature consumers, aged 40 to 59.

Note that two important types of consumer characteristics do not appear in our framework: personality and expertise. There is no consensus on the impact of age on personality in the psychosocial gerontology literature (Gall, Evans and Howard 1997), and it would have been difficult therefore to build hypotheses. Expertise can in general increase with age, and lead to changes in consumer behavior (Alba and Hutchinson 1987). However, automobiles constitute a special case, as purchases occur at large intervals, typically several years, during which the models offered on the market change. As a consequence, the added experience of older consumers, aged 60 and above, compared to that of mature consumers aged 40 to 59, consists of a few more purchases (likely 5 to 10) that took place 20 to 50 years ago, and bring no additional expertise on the cars currently available. This, we believe, makes it difficult to assume that old age, by itself, brings greater expertise to car buyers.

The first part of the article presents the literature review supporting our framework. We consider successively the consumer behavior literature on repeat purchase and brand loyalty among older consumers, the impact of cognitive decline, the effect of increased cautiousness, and the consequences of socio-affective adaptation (or mis-adaptation). In the second section, we present our hypotheses. The next section describes the large secondary data set used to test them. Section four presents our empirical results. The article ends with a discussion, stressing possible extensions to related domains.

LITERATURE REVIEW

Consumer Behavior Research on Repeat Buying and Brand Loyalty

As indicated above, older consumers, when buying a new car, repurchase the same brand much more often than younger ones: 67% of buyers aged sixty or above repeat purchase the same brand, vs. 48% of buyers below sixty. More generally, practitioners often report higher repeat purchase by older consumers (e.g. Secodip 1998 for “60 markets and 600 brands”). However, almost no research study has tried to investigate this phenomenon, for cars or for any other product (Phillips and Sternthal 1977, Tongren 1988), in spite of the managerial importance of brand loyalty (Uncles and Laurent 1997).

Of course, repeat purchase is not identical to brand loyalty. The classical definition by Jacoby and Kyner (1973) identifies two components of brand loyalty, a behavioral one (repeat purchase) and a psychological one. The psychological element may result from brand commitment (Bloemer and Kasper 1999) or from involvement in the product category (Assael 1995). McWilliam (1995) indeed finds that perceived product importance increases after 65. Kapferer and Laurent (1983) report that older consumers “give greater weight to the brand in their decision process”. But a greater weight does not necessarily imply brand loyalty. Tongren (1988) reports that older consumers rely more on their relation to the salesperson, but are no more brand loyal. Burt and Gabbot (1995) show that store loyalty is only the fifth self-reported reason for store choice among older consumers (the second for men). These few results are hard to interpret in the absence of conceptual arguments explaining why older consumers would repurchase the same brand.

On a methodological level, the study of other aspects of older consumer behavior poses several problems. Tongren (1988) notes that three quarters of the studies make no comparison of the older consumers with younger ones. Besides, age limits vary across studies. Also, it is always difficult to compare the impact of age on persons belonging to different cohorts (Schaie, 1965, quoted by Whitbourne 1996).

As indicated earlier, this scarcity of studies in the field of consumer behavior has led us to rely on other disciplines, gerontology and psychology, where studies have identified an evolution of psychological processes, attributable to aging, similar in different countries and at different periods of the 20th century (Salthouse 1991).

The Impact of Cognitive Decline on Repeat Purchase

Consumer behavior research, when explaining repeat purchase, considers explanatory variables such as memory, information search strategy, or problem-solving ability.

Cognitive Antecedents of Repeat Purchase. Jacoby and Chestnut (1978) rely on an information processing approach to explain brand loyalty: the brand summarizes large chunks of information. To be chosen, a brand must first be considered, then positively evaluated. For a durable good like a car, the consumer has to think about the purchase while the alternative choices are not physically present, he or she has to decide which dealers to visit. All this makes very plausible the existence of a consideration phase (Nedungadi 1990), leading to a consideration set. An unfamiliar brand, poorly memorized, has a smaller chance of being considered. A consumer has a higher chance

of repurchasing the previous brand if he or she memorizes it better than another brand, known only through an ad (Nedungadi 1990).

Dick and Basu (1994) also consider the strength of brand associations, such as accessible attitude components, keenness of discrimination, and possible differences with other brands. Plain brand awareness is not enough. Precise and positive brand associations are also needed. Jacoby et al. (1978) find nevertheless that 20% of subjects make a choice on the sole basis of the brand name, with no detailed evaluation of the competing items. The consumer uses the brand as a decision rule making the choice easier. But it has to be the previous brand or another known brand.

Repeat purchase can therefore be analyzed from the point of view of the consumer's cognitive capacities. A consumer could make a repurchase by default, because his or her memory limits the consideration set to the previous brand, or to the previous brand plus another known brand, or because he or she is no longer able to evaluate several options in minute detail.

The Impact of Age on Cognitive Abilities. Research in cognitive psychology offers reliable lessons on that aspect of aging. Numerous psychometric tests, in different countries, at different dates, using cross-sections or longitudinal designs, have shown a decline of cognitive capacities with age. This is a continuous decline. However, depending on the task's difficulty, it appears at performance thresholds. There is a general slowing around 65, which becomes visible in everyday life around 75 (Chasseigne et al. 1997). Detailed experience results show that age has an influence on the main cognitive antecedents of brand loyalty and repeat purchase.

Age *reduces* explicit memory, starting at about 60. This is the form of memory that makes it possible to retrieve consciously pieces of information, and their sources (e.g. remembering an ad for a car manufacturer, as well as when and where it was seen). The free recall of a series of words, or of a text, declines significantly with age (Zelinsky and Burnight 1997). Due to this age-related memory deficit, we predict that it will be harder for an older consumer to consider a new brand, compared to familiar brands. For example, there will be a memory bias in favor of his or her usual brand, he or she will be more likely to consider national brands that have been known forever rather than foreign brands that appeared more recently.

Age is also negatively correlated with fluid intelligence, the intelligence of new problems and situations, while crystallized intelligence, based on past experience and learning, remains intact (Salthouse 1991). The decline of fluid intelligence is continuous, but it passes through performance thresholds. Chasseigne et al. (1997) observe that after 65, subjects have difficulty identifying an inverse relationship between indicators and a consequence¹, e.g. a price that goes down when a rebate goes up, and that after 75, they are unable to use this inverse relationship, even with a visual aid. An older person may therefore have problems getting information on an *offer* that changes between two consecutive purchases, and he or she will prefer to repeat the same brand choice or to ask someone else for advice. Older consumers should find it more difficult to explore new options, and would rather stick to long known options.

Cole and Balasubramian (1993) find that older persons consider fewer brands before a purchase. Equally, Uncles and Ehrenberg (1990) observe that older households buy on average fewer brands (this being due in part to a smaller purchase rate). Johnson (1990)

¹ Salthouse (1991) quotes the following example « R and S do the opposite, Q and R do the same. If Q increases, what happens to S ? »

observe that older subjects search for less information before choice. Lapersonne et al. (1995) mention the link between this reduced evoked set and more frequent repeat purchases. Being 60 and above increases significantly the probability of having an evoked set of size one before the purchase of a new car, which leads in 4 cases out of 5 to a repeat purchase.

Other studies suggest that older people avoid cognitive efforts such as recall, or a comparison of alternative choices, by relying on facilitation heuristics. Yoon (1997) shows how a heuristic inference is used to facilitate the recognition of TV programs. Her theoretical analysis relies on a heuristic of schematic information processing, which consists of relying on known schemas rather than on a detailed analysis. This schematic treatment takes a contextual form when the subject looks for a schema in the environment, such as asking a neighbor for advice, or an experiential form when the subject repeats a previous schema, such as repeating a previous choice. For example, in a recognition task of assertions included in a fake but familiarly looking TV show (Nightline in Canada), she finds that, compared to younger subjects, older subjects, in the second phase of the experiment, have a higher tendency to classify as “already seen in phase one” a new assertion congruent with the nightline program, and do not recognize well an assertion they had really seen in phase one, but which was not congruent with Nightline.

Johnson (1990) measures the use of a non-compensatory intra-attribute heuristic to facilitate the evaluation of different brands. Cole and Balasubramanian (1993) measure a more frequent choice of the first satisfying option when the problem is made more complex. Sorce (1995) suggests that older people rely on a store loyalty heuristic, or on an advice-seeking heuristic who, according to Yoon (1997) would be classified as

respectively as an experiential heuristic and a contextual heuristic. Javalgi et al. (1992) find that older people buy more travel packages rather than organizing trips themselves by combining separate elements.

Age has therefore an impact on the consumer's cognitive abilities, and therefore should have one on the repeat purchase of the previous brand. The decline in memory and fluid intelligence should decrease the size of the evoked set, and increase the tendency to consider familiar brands, which induces repeat purchases. Older people should rely more on decision heuristics, which orient brand choice at the consideration stage, with no intensive search and evaluation. These effects of age appear for subjects aged 60 and above, and more strongly for persons 75 and above. Cognitive aging should lead to repeat purchase through a lack of information search and analysis.

The Impact of Cautiousness on Repeat Purchase

Another possible explanation of repeat purchases by older consumers relies on risk aversion. Aversion to risks linked to changes, even if the present solution is far from ideal, is a well documented phenomenon in gerontology.

Repeat Purchase Through Risk Aversion. Consumers differ in their perception of risks, in their propensity to take risks, in the strategies they use to reduce risks. Theoretically, a higher perceived risk should lead to more repeat purchases (Cunningham 1967).

However, this is unclear. Jacoby et al. (1978) do not validate the relationship, contrary to Derbaix (1983). When a consumer is not brand sensitive, perceived risk is not significantly linked to repeat purchase. Repeat purchase would then be due to inertia (Odin et al. 1996). Lapersonne et al. (1995) show that, among two facets of importance

at stake and error probability, only the latter reduces significantly the probability of an evoked set of size one, and thus of a repeat purchase. A high level of perceived risk does not imply systematically more repeat purchases. For a given level of perceived risk, consumers also differ through their strategies of risk reduction. Berlyne (1965) writes that risk can be reduced by a specific exploratory behavior, namely considering fewer options and examining each of them in more depth. Roselius (1971) states that the first strategy of risk reduction is to repeat purchase, but that an alternate strategy is to buy another known brand, which of course prevents a repeat purchase. Finally, consumers have different perceptions and attitudes towards risk. Muller (1985) shows that a strong differentiation capacity, and a strong desire for clarification, reduce perceived risk. Weber and Milliman (1997) suggest that risk propensity is a stable individual trait in different risky situations. Massad and Reardon (1996) measure that young women have a higher risk propensity than young men. Besides, risk propensity is negatively related to brand loyalty. Young women indeed are less brand loyal than young men (Massad and Reardon 1996).

On these three aspects of risk, gerontology provides answers. Older persons are more cautious in decision-making, which should lead them to a preferred risk-reducing strategy, repeat purchasing. A higher level of perceived risk does not seem an interesting lead to explain their cautiousness. Older persons may be less able, due to their cognitive decline, to perceive differences across options, and this should limit the perceived risk (Muller 1985). McWilliam, however, measures no significant reduction of perceived risk with age.

Older Persons' Cautiousness in Decision. Wallach and Kogan (1961) and Botwinick (1966) ask subjects to choose between two options. The first option is to stay in a sure but mediocre occupation, e.g. an electrical engineer with limited prospects of pay increase. The second option is to change for an occupation leading, with probability p , to a high salary increase, and, with probability $1-p$, to a financial disaster. Subjects must indicate for which probability p they would pick the second option. They may elect to stay with the first option, whatever the value of p . Subjects are deemed more risk averse if they choose higher p 's. Older subjects were markedly more likely to choose not to change, whatever the probability p of a success following the change (Botwinick 1978).

Botwinick proposes three hypotheses to explain this resistance to change. First hypothesis: due to intellectual decline, older people avoid making decisions. This seems a solid argument, as it is supported by numerous studies from social psychology: global slow-down (Salthouse 1991), reduction in working memory (Cole and Balasubramanian 1993), reduced learning flexibility (Chasseigne et al. 1997). Second hypothesis: older people avoid the risk associated with a bad decision, specially for decisions leading to a financial risk. Risk aversion is higher when subjects have had more than 16 years of education. Women are more reluctant to change spouse and to take part in a game, while men are more sensitive to professional failure or to a risk of death. However, Botwinick (1978) notes that, when the option not to change is not available, or when the more risky option has a higher probability of success (Okun and Elias 1977), older subjects have a utility function similar to that of younger ones. According to both hypotheses, the cautiousness of older persons would be the consequence of decision aversion, or of more selective and rational risk taking. The third hypothesis is that a fear of changing would result from a lack of self-confidence, and from decreased social interaction created by role changes. This results from disengagement theory (Phillips

and Sternthal 1977). However, the relationship between anxiety and behavior towards risk is not obvious. Kogan and Wallach (1961) have shown that subjects who are more aware of their aging take more risks than more anxious subjects. Accordingly, Botwinick (1978) relies less on this factor to explain cautiousness in decision.

The more frequent repeat purchasing by older consumers could be due to their cautiousness in decision, to the impact of cognitive decline, or to risk aversion. The extension to repurchase seems logical, because the psychological trait has been observed for choices made in daily life. It is due to two individual components which influence information search and repurchase, namely the ability to make a decision, and the propensity to take risks. According to our hypothesis, the more frequent repeat purchases by older consumers are a consequence of their cautiousness, a trait that has other consequences on consumer behavior. Zeithaml and Gilly (1987) rely on this to analyze older consumers' propensity to adopt innovations. Guiot (1997) shows that age is negatively correlated to the propensity to take risks when buying new fashion clothes. Tongren (1988) reports that older people are more reluctant to replace a good that works, even if it is worn and obsolete. This is evidence that the cautiousness of older persons, well documented in gerontology, leads to differences in consumer behavior.

The Impact of Socio-Affective Adaptation on Repeat Purchase

A third antecedent of repeat purchase can be influenced by age: psycho-social adaptation. Contrary to the two preceding factors, gerontology and psychology do not offer unanimous and usable answers. However, the research tradition based on social aging is active, and it seems normal to present certain results.

Social Antecedents of Repeat Purchase. Another approach to repeat purchase studies qualitatively the relationship between a consumer and a brand, analyzing the expected benefits, the nature of the link, how the relationship evolves over time. Fournier (1998) shows how the benefits expected from the relationship depend on the adaptation of individuals to their socio-affective environment, which includes family networks, culture, life cycles and gender. Olsen (1993) shows that an affective rejection of the past leads to reject the brands used by parents, while fidelity to a family history leads to keep the same brands. This holds for products as diverse as toothpaste, mayonnaise or cars.

According to social gerontology, age generates life stages and role changes, which alter the psychological adaptation to the environment. Research on life stages is different from consumer behavior on life cycles, as the former focuses on transitions (before, during, and after the transition), while the latter describes and compares different states (Wells and Gubar 1966, Murphy and Staple 1979, Gilly and Enis 1982, quoted in Wilkes 1995). The life stage most often studied is when persons retire.

The Psychological Adjustment of Older Persons at Different Life Stages. Role changes have been the object of several theories. The best known is that of disengagement. It says that the role change following retirement generates a narcissistic wound and more dependence in relationships with relatives and neighbors. Other theories such as identity theory (Whitbourne 1996) argue that a life stage is not destiny: self-perception depends more on a successful life history (Erikson's theory), or on an ability to adjust to life stages. Gerontologists oriented towards social psychology have not yet reached a consensus on how personality evolves with age, and with life stages.

Changes in personality are measured by the subject's psychological adjustment to changes due to life stages, to environmental events that create psychological aggressions, and to his or her own aging. Typically, psychological adjustment is measured by a four-faceted construct: anxiety, locus of control, satisfaction, physical health.

Anxiety is measured by scales from psychopathology, subject coping, mental health as perceived by the subject, or depression (the Radloff LESDscale 1977 in Midanik et al. 1995). The locus of control expresses the subject's belief in his control of the environment. When the locus of control is internal, subjects feel they control the environment through their actions. A failure is attributed to a factor they could control such as a lack of competence or lack of effort. Subjects will more readily underestimate themselves in cases of failure (Fiske and Taylor 1991). When the locus of control is external, subjects feel that the environment controls their acts, and they will be less mortified after a failure (Fiske and Taylor 1991). Satisfaction is measured for each important activity domain, such as work, financial situation, health, interpersonal relations (retirement descriptive scale of Smith et al. 1969, see Gall et al. 1997). Satisfaction has a second facet: satisfaction with present life. Subjects are asked to evaluate on a three point scale "how satisfying do they find the way they're spending their life to-day" (Gall et al. 1997). Actual health is evaluated through a battery of criteria related to chronic diseases, drugs taken, number of doctor visits (Kaiser sickness scale). Perceived health is evaluated on the basis of subjects' appreciation of their health, of treatments, of handicaps, of the energy level.

Psychological changes in personality would not be due to age itself, but to age-related events or risks. Roberts et al. (1997) show that the increased occurrence of depression

with age is not an effect of age, but a consequence of illness and isolation. Besides, the impact of age-related events is very variable. Midanik et al. (1995) find that retired persons reported more stress than non-retired ones, but that they exercise more and have as good a mental state as active persons. Gall et al. (1997) find that the first year after retirement improves psychological health, but that this is no longer true six years later. However, they see a regular increase of the internal locus of control.

Authors in this stream of research recognize the variety of conceptions linked to role changes: some think that retirement creates anguish and depression, while for others it has a rather positive impact. Still others think it has no impact. There has been no longitudinal study measuring a significant change in the four facets of psychological adjustment as a function of age, or of life stages linked to age. It would therefore be difficult to build on results that are not completely established in gerontology. One cannot assert that older persons have a different personality, compared to younger ones. The few consumer research studies on the link between a personality-linked determinant and a change in behavior reach no consensus. For example, Phillips and Sternthal (1977) hypothesize that, the more internal the locus of control, the more the consumer will resist innovation and changes, while Zeithaml and Gilly (1987) find the opposite. However, researchers in social and cognitive psychology agree that older persons have to stand more psychological aggressions due to illness or spouse death. Affective shocks create depression and anxiety, which are associated with fewer performing cognitive activities (Lichtenberg et al. 1995). Gentry and Goodwin (1998), as well as Kropp and Rose (1998) mention indecision following the death of a loved one: "After my wife died, everything was confusing. I didn't want to make decisions."

This review of the psychological characteristics of older persons shows that the impact of age on cognitive abilities and on attitudes towards risk are well established. These two effects can be used to explain older consumers' repeat purchase behavior. The impact of age on personality is debated, and we won't use it. However, certain external events such as the death of the spouse appear with age and reinforce its impact on cognitive activities.

HYPOTHESES

In this section, we develop formal hypotheses on the basis of the preceding literature review. Age is hypothesized to have an impact on repeat purchase because it influences its cognitive antecedents, as well as consumers' risk aversion. This leads to three groups of hypotheses, relating to a narrower comparison process, to a focus on the previous brand, and to a privileged status given to ancient brands.

Age reduces cognitive abilities, and specially fluid intelligence, which would enable consumers to carry new, complex analyses on the basis of new data. Cars represent high-stake purchases, and can be defined along a great number of characteristics. In addition, different brands of new cars are sold by different dealers. Comparing alternative options, before a purchase, is a complex task. It requires memorizing and processing a large amount of data. Consequently, we hypothesize that older consumers, since they have reduced cognitive abilities, will adopt a simplified, reduced, shrunk decision process. This simplification can take several forms. One avenue to simplify the choice process is to limit the pre-purchase comparison to a smaller set of brands and cars. We concentrate on this avenue in the first group of hypotheses. Another obvious avenue is to include in the set a very well-known brand, the brand of the car being replaced. This leads to the second group of hypotheses. A third avenue, handled in the third group of hypotheses, is to consider other brands that have been well-known for a long time, which is a way to reduce the required amount of learning.

Risk aversion increases with age, and this also provides a complementary justification to the three groups of hypotheses. Considering fewer brands is a way to reduce the risks associated with acquiring relatively less known brands and models. The previous brand,

especially, is known by daily usage of the car, and frequent contacts with the dealer, and therefore implies very little uncertainty. Prior knowledge has also been accumulated over the years about ancient brands, that have been on the market for a long time, and this reduces the risks potentially associated with them.

First Form of Shrinkage: A Smaller Consideration Set

A first obvious strategy to reduce the complexity of pre-purchase decision processes is to limit the number of possible choices being considered. Consumers can choose from dozens of car brands and hundreds of models. Even if they limit themselves to one of the four traditional car market levels, the choice remains large. All consumers certainly reduce their choice to a much smaller set than the "universal" set available on the market, but we hypothesize that older consumers reduce it more. Whatever the number of criteria that a consumer wishes to take into account, whatever the rules, algorithms or heuristics through which these criteria are combined, the comparison is clearly simpler when fewer choice options are being compared.

Our hypothesis could be stated, in general terms, as "Older consumers are more likely to have a narrower consideration set." Given the particular structure of the automobile industry (long-lasting brands, many models per brand, a single brand of new cars per dealer), this leads to four specific hypotheses (H1-H4), which can be considered as complementary ways to operationalize the concept of a "narrower" comparison process in the car market.

H1: Older consumers (60 and above) are more likely to consider fewer brands. The effect is stronger for very old consumers (75 and above).

- H2:** Older consumers (60 and above) are more likely to consider only one brand. The effect is stronger for very old consumers (75 and above).
- H3:** Older consumers (60 and above) are more likely to consider only one dealer. The effect is stronger for very old consumers (75 and above).
- H4:** Older consumers (60 and above) are more likely to consider fewer models. The effect is stronger for very old consumers (75 and above).

Hypothesis 1 is a straight consequence of our arguments above. Hypothesis 2 follows directly, as an extreme manner of reducing the set. Note that it was supported by Lapersonne et al. (1995), in their study of "consideration sets of size one," although they used a slightly more simple definition of "older" (60 and above). Hypothesis 3 corresponds to another way to narrow the field: While consumers may in principle review several dealers of the same brand before deciding where to buy a car of the brand, they also have the option of considering only one dealer. Also, this restriction to a single dealer can be based on a long term knowledge of different dealers, which has led to perceive one of them as superior. We shall come back to this point when discussing the possible role of consumer expertise. Given the peculiarities of the automobile industry, hypothesis 4 is yet another manner of narrowing the consideration set.

Second Form of Shrinkage: A Focus on The Previous Brand

The main conclusions of our literature review (changes in cognitive abilities, increased risk aversion) both lead to give a prominent role to the previous brand, i.e. to the brand of the car currently driven at purchase time. The consumer already knows a lot about that brand. Including it in the consideration set implies collecting much less new information than for another brand. Moreover, the information already known about it has been collected over several years, perhaps many years. A reduction in fluid intelligence is not a problem here, as most of the relevant information on the previous brand has become crystallized. As for risk aversion, we can use the classical argument by Schmalensee (1982). Consumers know first-hand many things about their current brands. There is little uncertainty. In contrast, the other brands inherently generate uncertainty. Both factors should lead older consumers to give a prominent role to the previous brand. Here again, given the characteristics of the car industry, this leads to three specific hypotheses.

H5: Older consumers (60 and above) are more likely to consider their previous brand. The effect is stronger for very old consumers (75 and above).

H6: Older consumers (60 and above) are more likely to consider nothing but their previous brand. The effect is stronger for very old consumers (75 and above).

H7: Older consumers (60 and above) are more likely to repurchase their previous brand. The effect is stronger for very old consumers (75 and above).

Hypothesis 5 is the obvious consequence of our argument. Hypothesis 6 follows directly, as a narrow restriction to the previous brand provides two immediate benefits, in terms of the two underlying factors: Consumers need not collect information on

unknown brands, and they have to bear no uncertainty about them. Hypothesis 7 is the logical final consequence of a narrower process: If older consumers are more likely to give a privileged role to the previous brand, this is bound to increase the likelihood of purchasing it.

The same series of arguments applies to the previous dealer. Given that a consumer repurchases the previous brand, both factors (reduced cognitive abilities, increased risk aversion) should lead her or him to stay with the same dealer, rather than switching to another one. This leads to a simple hypothesis.

H8: Older consumers (60 and above) are more likely to purchase from the previous dealer. The effect is stronger for very old consumers (75 and above).

Third Form of Shrinkage: A Privileged Status for Other Ancient Brands

What about the brands other than the previous one? The two factors we consider (reduced cognitive abilities, increased risk aversion) suggest that not all such brands are equal. Older consumers should be more likely to consider brands they already know about, which require less new cognitive effort, and create less perceived risks. Of course, it would be difficult to identify, at the level of each individual consumer, which brands are well-known or entail fewer risks. However, it is possible to formulate an aggregate hypothesis, due to a typical feature observed in France as well as in many other countries. In most countries where there are national car manufacturers, they have typically lost market share over the last 40 years. It used to be that national manufacturers had a prominent position on their own market (e.g. 95% in 1960 in France), but today this is in general much reduced (37% in 1998 in France, e.g.). The

three remaining important French car manufacturers (Citroën, Peugeot, Renault) already had leading market positions when those consumers who are now 75 were born. This brand longevity is typical of the car market. As a consequence, older consumers, who first learned about the car market when national manufacturers were predominant, should have on average a much better knowledge of these national brands (beyond their own previous brand, which is in addition more likely to be a national brand) than younger consumers, who became active in the market when national brands and foreign brands had more balanced positions. And we can hypothesize, at the aggregate level, that older consumers feel that more risks are associated with relatively less known foreign brands than with the national brands they have known forever.

H9: Older consumers (60 and above) are more likely to consider ancient national brands, even when those were not their previous brand. The effect is stronger for very old consumers (75 and above).

H10: Older consumers (60 and above), when they switch out of their previous brand, are more likely to switch to ancient national brands. The effect is stronger for very old consumers (75 and above).

Hypothesis 9 follows directly from our argument. Hypothesis 10 is a direct consequence: More frequent consideration should lead directly to more frequent purchase, and it is a tougher test of our argument, as it excludes cases where a consumer repurchases the same brand.

The Special Expertise of Older People: Biased or "Frozen" Expertise

Several classical contributions have shown the role of expertise in consumer decision processes (Alba and Hutchinson 1987, Hoyer et al. 1999). This has a direct link with our argument. These articles are based on two connected arguments. First, accumulated experience in a product category (an accumulation of purchases and usage) leads to a better knowledge of the products offered in the category, and to a quicker decision process (in contrast with neophytes who have everything to learn, and spend much more time collecting information and processing it). Second, consumers accumulate experience with age. Older persons have purchased, over their lifetime, more cars than younger consumers. An argument could then be developed, according to which it is the increased expertise of these consumers that would allow them to collect less information before they buy a car.

An important counter-argument, albeit specific to the case we investigate, comes from several very specific characteristics of the car market, compared with most consumer markets (and specially with the products studied in the classical references on expertise quoted above). First, purchases are made in a very intermittent manner, at intervals of a few years. Second, while brands tend to be very ancient (the three leading French manufacturers have been around under the same brand names since the early years of the 20th century), the models offered by these brands change markedly from one purchase occasion to the next, and almost entirely over a ten year period. Thus, the expertise on models acquired during the purchase process of one car is of limited usefulness for the purchase of the next car, since the models available on the market will then be largely different, and is of no use for the purchase of the second next car. As a consequence, persons who have bought, over the years, a number of cars have accumulated a peculiar form of "frozen expertise," relating to what the models were in those past periods. This is in marked contrast with most FPCG, for which purchases are

made every few months, every few weeks, sometimes every week, for which the accumulated expertise relates to what is currently available on the market.

To take a sports metaphor, assume someone follows Track and Field only for the Olympics, every fourth year. A person aged 40 may have an excellent memory of FloJo, who won in 1984, a person above 60 may well remember Wilma Rudolph, who won in 1960, a person aged 80 may have a vivid memory of the feats performed by Jesse Owens at the Berlin Olympics in 1936. All this may be very clear in long term memory, the fan may be able to narrate in detail the memorable long jump contest between Owens and his German opponent Lutz Long, or to describe the fluid style of Wilma Rudolph. No doubt considerable expertise has been accumulated, and is still present. But it is a "frozen expertise," relating to what things were long ago, similar to the frozen memory of ancient climatic situations kept by deep layers of ice in the North Pole. It is of practically no use to predict what the Track and Field results will be at the 2004 Olympics, because the athletes known by the fan are no longer competing. Except perhaps for some general predictions such as "The American and the German will do well in Track and Field" or "The 10,000 meter will be won by an African," which refer to some general characteristics of the athletes (their nationalities or location), but not to their individual abilities. This is in contrast with, say, a baseball fan who follows day after day what his favorite team is doing this season, and may be able to predict precisely what a given player will do on the next play (bunt, try to steal a base, go for a home run). For baseball, five games ago brings us back to last week. For the Olympics, five games ago brings us back to President Carter's boycott of the Moscow Games.

We therefore argue that, in the car market, the expertise accumulated by older consumers is biased, and orients them towards their current brand, and towards ancient

brands. New brands are available on the market, but an older consumer needs to collect and process new information about them, and cannot rely on the expertise acquired during most of their previous purchases. In contrast, the knowledge of the previous brand and of ancient brands is crystallized and remains largely available. (Of course, this does not mean that expertise is not important on this market. Very likely, persons buying a new car for the first time will behave differently from those who have already bought new cars, because they have less expertise. But this is another story, about car purchasing by novice buyers.)

METHODOLOGY AND DATA

A Survey Methodology

We test these hypotheses using a survey methodology, rather than experiments. Our goal is not to establish the existence of psychological consequences of aging (changes in cognitive abilities, increased risk aversion, and resulting cautiousness), since previous studies reviewed earlier describe them. Rather, we wish to test their predicted consequences on purchase processes. We study real life decisions, and we feel that the external validity of the data is essential. Apart from the difficulty of finding a large enough sample of older subjects for laboratory experiments, we feel that there would be a major drawback in using artificial brands to test the hypotheses. The very heart of our hypotheses is that there is a major difference between the cognitive efforts required by, and the perceived risk associated with, car brands, depending on whether a respondent has known them for a long period (typically several dozen years) or hardly knows them. Older consumers have a well-established, crystallized knowledge of old brands, in contrast to newer brands that require the acquisition and processing of new information,

a task rendered difficult by the decline of fluid intelligence. The two conditions seem impossible to recreate in a lab experiment. It would certainly be easy to introduce new, unknown brands, and to assess subjects' reactions and behavior towards those brands. However, it would appear difficult to establish, in an experiment, a body of crystallized long-term knowledge for artificial. If, on the other hand, we were to use existing car brands (national and foreign, old and new) in laboratory experiments, the validity of the hypothetical responses would be doubtful. What would be the validity of answers to hypothetical questions, such as "Assume you have to buy a new car, which brand and model would you choose?", compared to the validity of a survey of recent buyers who indicate which brand they really bought, incurring a large expense of their own money?

Furthermore, the car industry provides a specially pertinent basis for survey research. The purchases are important and visible, and brand and model choice can be checked through the official registration documents of the car. The collection and processing of information about new cars is very cumbersome, due to the characteristics of the dealer system. In real life, choosing to collect information about multiple brands or multiple models entails an important cost, in terms of time, transportation, energy, and mental manipulations. An easier, experimental availability of information, say in a computer-based experimental setting, could have produced results biased towards an artificially high information collection. Besides, an hypothetical choice would have involved very little risk, compared with the real risks associated with the actual purchase of an expensive car, to be used daily for several years. And this could bias respondents towards artificially risky choices. The steps in the purchase process can be checked precisely, as they take place in a framework where each dealer only sells one brand of new cars, and where therefore information gathering can be monitored more easily than

for FPCG, where the different brands are offered on the same shelf, making it very difficult to monitor which brands are being surveyed before the final choice is made.

Our hypothesis testing is mostly based on a secondary analysis of a survey of recent buyers of a new car. This survey, done over a one year period (July 1997 to June 1998), was performed over a sample of 31,497 recent buyers of a new car who were also the main users of the car. The sampling frame, based on respecting quotas relating to the brands chosen, while using only names drawn at random from the official register of car buyers, which ensures that the sample is representative of the population of car buyers. A total of 193 questions were asked on many aspects of the car purchase process, of the car chosen, of the respondent's previous history with cars, on perception of and satisfaction with the new car, on demographics, etc. We use only a few of these questions for our analysis.

General descriptors of the respondents comprised not only their age, but also a complete set of demographics: Education, income, gender, location, occupation, whether they are retired, marital status. All these variables were re-coded as categorical variables. As for purchase variables, we have data on the car recently purchased (brand and model), on the previous car, on the other brands considered, on the models considered, on the dealers visited, on the level of satisfaction with the previous car. These are the variables needed to test our hypotheses.

Other Explanatory Variables

Age is the main explanatory variable in which we are interested. We know the exact age of each respondent, and we could therefore have used age as a ratio-scaled explanatory

variable. However, the literature reviewed above indicates clearly that its impact is not linear, with changes in cognitive abilities and risk aversion occurring at certain stages. We have therefore re-coded age as a categorical variable, choosing the limits between successive categories on the basis of the psychological literature. Accordingly, we have defined two groups of old (60 to 74) and very old (75 and above) consumers. The remaining respondents were broken in two subgroups: a middle-aged group (40 to 59), which serves as the reference group against which the old consumers and very old consumers can be compared. The younger group (39 and below) is not really of interest for our analysis, but its indicator variable needs to be included in the analysis.

Of course, it would not be appropriate to test the hypotheses by simply using age as the sole explanatory variable for each of the dependent variables under investigation. We need to control for other factors that could have an impact. Fortunately, as indicated above, the survey provides a complete set of categorical demographic variables. In practice, for each variable, one category serves as the reference, and dummies are created for the other categories: Education (primary; higher; high school as the reference), income (lower third; upper third; medium third as the reference), occupation (workers, employees; managers, executives, professionals; "intermediary" occupations as the reference category), city size (small towns; Paris and suburbs; medium-sized towns as the reference), marital status (living alone; living as a couple as the reference), gender (female; male serving as the reference), retired or not (retired; non-retired serving as reference; this is only defined for people aged 55 to 65).

In addition, the survey provides additional variables, describing the context of the car purchase: the degree of satisfaction with the previous car; the degree of satisfaction with the previous car's dealer (when there was such a dealer taking care of the previous car);

these two variables are ratings from 1 to 10; the absence of such a dealer (a binary variable); whether the previous car had been bought second hand; how long the consumer had owned the previous car. These variables are considered because previous research indicated they had an impact on repurchase(Lapersonne et al. 1995).

Thus, each dependent variable is analyzed with the same complete set of explanatory variables: Age, the other demographic variables, the context variables.

The statistical technique used depends on the nature of the dependent variable. Most of our dependent variables are binary, such as whether the previous brand is repurchased. These are analyzed through logistic regression, using the GENMOD procedure from SAS, since most of the explanatory variables were categorical. The procedure computes a parameter for each category and tests the significance of the difference from the reference category. Quantitative dependent variables, the number of brands or models considered, are treated by Analysis of Variance, using the GLM procedure from SAS. For both procedures, we maximize the Type 3 Sum of Squares

Given the large number of hypotheses, and the large number of explanatory variables under study beyond age, we present the results in three complementary forms. Table 1 describes the impact (chi-square) of the explanatory variables (age, demographics, context) on each of the dependent variables. As indicated below, age is always one of the most significant variables, often the most significant one. Table 2 provides, for age, the estimated parameters corresponding to the young (39 and below), the old (60 to 74), and the very old (75 and above), the middle-aged (40 to 59) being used as the reference group. Finally, we illustrate, for each hypothesis, the impact of age in graphical form,

showing how the percentage of answers (for binary variables) or the average value (for quantitative variables) varies across the four age groups.

RESULTS

A Smaller Consideration Set

Insert table 1 and table 2 about here

In conformity with hypothesis 1, age has a very significant impact on the number of brands considered ($F(3,\infty) = 18.91$, table 1). The direction of the effect is as expected: The average number of brands considered is 2.24 for young buyers, 2.16 for the middle-aged, 1.92 for the old buyers, and drops to 1.77 for the very old. (To avoid tedious repetitions of age limits, we shall use in this section the words "young" to denote 39 years and below, "middle-aged" for those between 40 and 59, "old" for buyers between 60 and 74, and "very old" for those 75 and above.) This appears very strongly on figure 2(a). Older buyers of new cars are much less likely to consider three or more brands (7% among the very old, 14% among the old, versus as many as 22% for the middle-aged, and 24% for the young).

Insert figure 2 about here

Figure 2(a) also illustrates how hypothesis 2 is supported by the data ($\chi^2(3) = 41.79$, table 1). The percentage of car buyers who consider a single brand strongly increases with age (11% for the young, 15% for the middle-aged, versus as many as 26% among the old, and 33% among the very old).

These results provide a first strong indication of the strong *shrinkage* of the decision process associated with age: Older buyers make their purchase decision in a reduced framework, where the number of alternative considered is smaller. The very peculiar phenomenon of an evoked set of size one (only one brand being considered, Lapersonne et al., 1995) applies to one fourth of old car buyers, and to one third of the very old.

The distribution channel is very peculiar for new cars, since each dealer sells only one brand. Another way of simplifying the purchase process is, of course, to consider a single dealer, even though a given brand is offered by multiple dealers, and different prices could be negotiated by visiting more than one dealer. The data support hypothesis 3, as we find a strong effect of age on the probability of considering a single dealer ($\chi^2(3) = 128.60$, table 1). The direction of the effect is displayed on figure 2(b). It is as hypothesized: The percentage of new car buyers who consider a single dealer strongly increases with age (79% among the very old, 66% among the old, versus as few as 53% for the middle-aged, and 47% for the young). Here again, the picture is one of a simplified, considerably shrunk, purchase process, with information being more rarely collected from additional dealers.

Of course, one could argue that we have only considered in hypotheses 1 to 3 the setting of the decision, the brand and dealer, not the specific options between which the choice is to be made, namely the car models. A given brand offers many models, and a consumer could potentially go through a very complex decision process, if she or he considered all the possible models offered by a single brand and dealer. This is why hypothesis 4 considers how many models have been considered by the new car buyer. Here again, the impact of age is very significant ($F(3,\infty) = 31.83$, table 1). The effect goes in the hypothesized direction. The average number of models considered is 2.37

for young buyers, 2.26 for the middle-aged, 2.00 for the old buyers, and drops to 1.83 for the very old, as illustrated by figure 2(c). The consideration of a single model increases markedly with age (6% of the young buyers, 11% of the middle-aged, 20% of the old, 28% of the very old). Conversely, the percentage of buyers considering three models or more before making a purchase drops sharply with age (30%, 26%, 16%, 8%).

This first group of results leads to clear conclusions. Older consumers typically have a reduced choice span before the purchase of a new car. They consider fewer brands, quite often a single brand (one fourth of old purchasers, one third of very old purchasers do so). They more often consider a single dealer, a single model.

Moreover, this shrinkage in the sheer number of options considered is accompanied by more qualitative approaches to simplifying choice. We describe them in the next two sections.

A Focus on The Previous Brand

We now consider the results, which are also reported in tables 1 and 2, and illustrated by the graphs in figure 3. In conformity with hypothesis 5, older consumers are indeed more likely than middle-aged or young buyers to consider their previous brand ($\chi^2(3) = 42.65$). However, the effect is significant only for very old buyers, contrary to what we hypothesized. Figure 3(a) illustrates the relationship.

Insert figure 3 about here

An even stronger focus on the previous brand occurs when future buyers consider nothing but that brand, the case considered by hypothesis 6. Empirical data marginally supports ($p=.06$) the hypothesis that very old buyers are more likely to do so ($\chi^2(3) = 50.11$, table 1). Figure 3(b) illustrates the relationship.

The ultimate, most reliable, most valid, indicator of a focus on the previous brand is, of course, a repurchase of that brand. In conformity with hypothesis 7, we find an extremely strong impact of age on the probability of repurchasing the previous brand ($\chi^2(3) = 77.69$, table 1). Figure 3(c) illustrates the strength of the relationship: 42% of the young buyers repurchase the previous brand, versus 54% of the middle-aged, 66% of the old and 72% of the very old.

The results regarding hypotheses 5 to 7 show clearly that, as hypothesized, older consumers indeed focus their purchase process on the previous brand. They consider it more often, they consider it alone more often, and, most importantly, they purchase it more often.

The results reported in tables 1 and 2 allow us to state that this is not due to the spurious effect of important context variables, namely satisfaction with the previous car, satisfaction with the previous dealer, the absence of a regular dealer handling the previous car, the fact that the previous car had been bought second hand, or had been bought long ago. All these variables, as well as several demographic variables, indeed significantly impact the focus on the previous brand. But the impact of age remains very strong, even when each and every of these other variables have been taken into account.

We illustrate this through the three graphs presented in figure 4. In each case, we plot separately two curves, for consumers below 60, and for consumers 60 and above. The plots show how the predicted probability varies as a function of the satisfaction with the previous car. Figure 4(a) shows that, for a given satisfaction level, older buyers are more likely to consider the previous brand. Figure 4(b) shows that, for a given satisfaction level, older buyers are more likely to consider nothing but the previous brand. Figure 4(c) shows that, for a given satisfaction level, older buyers are more likely to repurchase the previous brand. The three results converge. While satisfaction with the previous car is a powerful driver of the consideration and repurchase of the previous brand, there is nevertheless a strong specific effect of age.

Insert figure 4 about here

Finally, another manner of reducing the required cognitive activity, and of avoiding risk, is to purchase the new car from the previous dealer. Hypothesis 8 predicted that older buyers would be more likely to do so, and the empirical data supports this hypothesis ($\chi^2(3) = 101.95$, table 1). Figure 3(d) illustrates the relationship: Older buyers are more likely to purchase their new car from the previous dealer, and the effect is stronger for very old consumers (21% for the young, 34% for the middle-aged, 44% for the old, 49% for the very old).

Here again, one can observe that this is not due to older consumers being more satisfied with the dealers. For a given satisfaction level with the previous brand, older consumers (60 and above) are more likely to purchase from the previous dealer. The effect is stronger for very old consumers (75 and above).

Overall, this section has confirmed that older consumers simplify their purchase process by following a second major avenue, in conformity with hypotheses derived from the psychology literature. Older consumers do so by giving a more privileged role to the existing, familiar option of the previous brand and dealer, in comparison with the alternative brands, which are available "outside," and which would require to gather new information and to take more risks. The next and final section of the results describes yet another avenue to simplification.

A Privileged Status for Other Ancient Brands

As indicated above, the last three hypotheses relate to ancient brands, brands that have been around for a long period, and have had more opportunities to become known by older consumers, whose expertise is largely an expertise of what the market used to be, rather than of the market as it is now. In the French automobile market, an easy and reliable distinction can be made between two natural groups of brands: The three leading national brands (Renault, Peugeot, Citroën), which have been around for close to a century, and the foreign brands, which are typically much more recent on the French market. Our hypotheses, once more, argue that older consumers have developed an expertise on the market as it was at the time of their previous purchases, when French brands had a leading position. This has allowed older consumers to accumulate more long term knowledge on these brands than on recently entered foreign brands. And this should lead to perceive less risk associated with these national brands. Note that the argument can be strengthened by taking account of the dealers. For the historical reasons given above, the French car manufacturers have more dealers, and the dealerships have been established for much longer periods. One may encounter a third-generation dealer of a French brand, while a foreign brand will not have had such a

long-term presence. Thus, older consumers are likely to have a better knowledge of the dealers of French brands, and to perceive less risk associated with them.

In conformity with this argument, hypothesis 9 states that older consumers should be more likely to consider ancient national brands, even when those were not their previous brand. To test this hypothesis, we consider only buyers who did not repurchase their previous brand. Empirical data support the hypothesis that, among respondents who change brands, older buyers are more likely to consider national brands ($\chi^2(3) = 34.00$, table 1). The direction of the effect is as expected, as evidenced in figure 5(a) and table 2.

Insert figure 5 about here

Of course, the acid test of such a bias in favor of ancient brands is their actual purchase. Once again, for obvious reasons, we consider only buyers who did not repurchase their previous brand. In conformity with hypothesis 10, we indeed find that older consumers are more likely, if they change brands, to switch to a national brand. The results are very significant ($\chi^2(3) = 11.30$, table 1). The direction of the effect is as expected, as clearly indicated in figure 5(b) and table 2. Among buyers who owned previously a national car, the percentage of switches to another national brand regularly increases with age (40% for the young, 45% for the middle-aged, 59% for the old, 66% for the very old). Equally, among buyers who owned previously an imported car, the percentage of switches to a national brand also increases with age, though less markedly (43% for the young and the middle-aged, 48% for the old, 49% for the very old).

Overall, these results confirm that older buyers of new cars also follow a third avenue to a simplified decision process. In addition to their bias towards their previous brand, they

have a bias towards well-known brands, brands that have been around for a long time. In the automobile market, this can be operationalized as national brands (other than the previous brand), since these brands have typically been around for a longer time.

Note that this bias towards ancient national brands, when switching, combined with the tendency to repurchase the previous brand (hypothesis 7), leads to an overall tendency to purchase ancient national brands, which is evidenced in figure 5(c).

DISCUSSION

Main Findings

This article bases its conceptual framework on well-established theoretical results from psychology and gerontology. On that basis, we derive hypotheses about the purchase process of older consumers. We test these hypotheses using a large representative sample of new car buyers. The dependent measures used to state and test the hypotheses constitute a very small set of variables, all describing precise characteristics of the purchase process: which brands, dealers and models are considered, which brand and dealer is chosen.

As indicated in the "Results" section, our hypotheses were mostly supported by the data. The general conclusion is as predicted: a "shrinkage" of the decision process among older consumers. This takes three forms:

- (i) The process is, in general, of a smaller amplitude for old buyers (and specially for very old buyers): They consider fewer brands, fewer dealers, fewer models.
- (ii) The process is more often focused on the previous brand for old buyers (and specially for very old buyers): They are more likely to consider it, to consider nothing but it, to repurchase it. Also, they are more likely to repurchase from the same dealer.
- (iii) When there is a switch to another brand, old buyers (and specially very old buyers) are more likely to switch to the national brands which have been in the market for a long time than to switch to the relatively new imported brands.

Additional Self-Reported Insights on Changes in the Choice Process

We stated our hypotheses strictly in behavioral terms, with variables describing precise, quantifiable characteristics of the purchase process (consideration or purchase). In this section, however, we now shed more light on this process by presenting answers to a few additional questions from the same survey, in which buyers self-report their attitudes or behavior. This helps illuminate the link between age and the observed steps in the purchase process.

The first main conceptual basis of our reasoning is the reduced cognitive abilities of older people, which should lead them to use simpler decision processes. This of course was amply evidenced by results above. This is reinforced by five sets of self-reports:

- (i) Older buyers state themselves that they are less systematic in comparing possible options.

"Before buying a car, I try several models of different makes"

(% agree) Young: 48% Middle-aged: 41% Old: 38% Very old: 31%

- (ii) They self-report themselves as less knowledgeable about cars.

"I read car magazines on a regular basis"

(% agree) Young: 33% Middle-aged: 30% Old: 28% Very old: 23%

"My friends often ask me for advice before buying a new car"

(% agree) Young: 42 % Middle-aged: 39 % Old: 38 % Very old: 32 %

- (iii) Older buyers indicate they rely on several simplifying heuristics to make a choice, rather than on a systematic analysis of the available options.

"I mainly choose a car on its reputation of quality"

(% agree) Young: 82% Middle-aged: 85% Old: 92% Very old: 96%

(iv) This includes a clearly self-reported loyalty heuristic.

"When I buy a new car, I tend to trust the same brand"

(% agree) Young: 60% Middle-aged: 69% Old: 77% Very old: 83%

"I keep being loyal to the same brand of car"

(% agree) Young: 43% Middle-aged: 50% Old: 60% Very old: 70%

(v) This also includes delegating the decision to other people, family members, or even a dealer.

"To avoid a mistake when I buy a car, I trust my dealer whom I know personally"

(%agree) Young: 32% Middle-aged: 42% Old: 56% Very old: 66%

Our second main conceptual underpinning is the increased risk aversion of older people.

This is confirmed by an increased aversion to other risks associated with automobiles.

"I like to drive fast"

(% agree) Young: 74% Middle-aged: 65% Old: 58% Very old: 52%

"I like cars with a new style"

(% agree) Young: 48% Middle-aged: 33% Old: 22% Very old: 19%

"I like to have a car one does not see everywhere"

(% agree) Young: 41% Middle-aged: 28% Old: 19% Very old: 19%

Of course, risk avoidance should not be confused with a fear of innovation as such. The new types of equipment constantly introduced in modern cars are welcome.

"It's important that I have a model with the latest equipment"

(% agree) Young: 69% Middle-aged: 73% Old: 80% Very old: 81%

These additional self-reported attitude components confirm the reduced cognitive activities, and the increased risk aversion, of older car buyers.

Implications for Other Products

Can we extrapolate these results to other product or service categories? Two central components of our reasoning are the reduced cognitive abilities of older respondents, because cars are complex products, and the number of brands and models are enormous, and their increased risk aversion, because automobile purchases are very risky, financially, physically, socially. We would argue our findings are likely to be replicated in other high-complexity, high-stakes categories. However, this may be different in categories where the risk involved, and the information to process, are limited, such as for, say, a new yogurt flavor.

Another crucial characteristic of the car market is the slow changes in brands and brand shares. As indicated above, the three leading national brands have been around for a century, with dealers that remain in the same locations for decades, sometimes with several generations of the same family holding the dealership. This makes it possible for the very long term acquisition of brand knowledge and preferences, in contrast with markets where the available options change quickly over time. This leads to predicting two effects, which are currently the object of further research.

First, in a number of product categories, one finds the co-existence of both ancient brands, which have been active for several decades, and relative newcomers. On the basis of the results obtained in the present article about cars, we hypothesize that, in such markets, the preferences and actual choices of older consumers would be biased

towards older brands, while the preferences and choices of younger consumers would lean towards more recent brands.

Second, similar phenomena may occur for hedonic preferences. Subjects may acquire preferences when they discover a domain for the first time, and keep them for life. An interesting example is provided by Holbrook et Schindler's finding (1994) that "consumers tend to form enduring preferences for cultural products [e.g. movie stars] during a sensitive period," namely late adolescence. This is replicated by a survey of the preferences of the French population about movie stars (Figaro Magazine, 1999). Respondents aged 25 and below had, as their preferred actresses, Sophie Marceau (born 1966), Julia Roberts (1967) and Sharon Stone (1958) while respondents aged 65 and above preferred Michèle Morgan (1920), Romy Schneider (1938) and Grace Kelly (1929), Sophie Marceau being ranked only tenth.

We introduced earlier a metaphor derived from the study of ice layers in the North of South poles. Since the temperature never raises above 32°F, ice never melts, and layers of ice accumulate one above the other, over the years. This allows scientists to dig these successive layers, and to derive useful information about ancient years from the analysis of the ice layers corresponding to those years. We would argue that, similarly, the minds of older consumers keep active layers of preferences that had been established when these consumers were discovering cinema.

As indicated above, we currently investigate the existence and consequences of such "frozen" preferences, both for artistic preferences, and more broadly for a number of product categories.

Public Policy Implications

Our results have implications for public policy.

Giving their reduced cognitive abilities, and increased risk aversion, older consumers should be given specific support to help them in the purchase process. They should be given new information in easy to acquire form, in order to reduce perceived risk, and convey reassurance. Typical actions would be to pay special attention to the simplicity of the message (simple sentences, slow speak, large fonts, direct messages, easily accessible web sites, easy to grasp quality grading systems), and to rely on testimonials by spokespersons who are well-known, appreciated and trusted by the target audience (such as newscasters, sport personalities, older entertainers, actors, etc.).

Another implication is to include in the product or services themselves well-known features or characteristics, that help identify the brand or model within well-known frameworks. Radical frame changes should be avoided. In this vein, one has to wonder about recent trends towards re-naming well established companies, products, or public services, thus removing the support provided by well-ensconced references, and suddenly putting older consumers in what may appear as totally new categories. Besides brands, easily recognizable patterns can be preserved for packages, model names, variety names. For example, Peugeot has used for a century the same pattern for identifying car models: a three-digit number with a zero in the middle (e.g., 305, 607). The first digit identifies the size of the car (1 for very small cars, 6 for the largest cars, 9 being used very exceptionally for a prototype entered at Le Mans). The last digit describes successive generations, increasing ever so slowly (3 in the 50's, 4 in the 60's, up to 7 in the late 90's and early 00's). This allows consumers to instantly understand the

positioning of, say, a newly appearing 207, in a perfectly mastered, crystallized framework. Equally, the "New Beetle" instantly benefits from ancient attractiveness.

Since many older consumers prefer to delegate the choice to another person, to rely on advice, such help could be made available in different forms: 800 telephone numbers, web sites, purchase guides, etc. The relationship with a potential advisor could be established on a long term basis, well before the product search is to take place. This may require regular contacts, a memory of honest advice on previous occasions, the long term presence of the same advisor.

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TABLE 1
IMPACT OF AGE, OTHER DEMOGRAPHIC VARIABLES AND CONTEXT VARIABLES
ON CHARACTERISTICS OF THE PURCHASE PROCESS
 χ^2 (df)

Dependent Variable	Age Satisfied with the of previous car	Education No dealer	Income Previous car was	Occupation Length of use	City Size (if 55-65)	Marital status previous car	Gender previous car's dealer	Retired car	Satisfied with the for previous second hand				
Degrees of freedom	3	2	2	3	2	1	1	1	1	1	1	1	1
Number of Brands Considered (F)	18,91	51,17	48,15	5,02	21,19	3,16	57,14	2,36	2,23	216,05	34,36	0,80	111,02
Considering Only (ns) One Brand	41,79	38,37	125,13	5,92 (ns)	5,84	0,52 (ns)	10,42	1,51(ns)	7,07	66,87	42,07	1, 74	
Considering Only One Dealer	128,60	75,58	11,61	13,74	43,93	32,55	48,84	6,87	15,68	157,62	18,80	10,40	74,41
Number of Models Considered (F)	31,83	62,80	46,96	4,68	30,12	5,04	81,98 (ns)	1,38 (ns)	0,22	195,70	21,74	10,89	118,45
Considering the Previous Brand	42,65	0,11 (ns)	15,22	35,23	28,07	14,05	18,49	0,37 (ns)	235,36	231,10	207,18	48,04	20,99
Considering Only (ns) The Previous Brand	50,11	27,22	78,06	0,63 (ns)	4,77 (ns)	3,27 (p=0,07)	3,96	1,58 (ns)	52,88	126,71	80,93	0,22	
Repurchasing the Previous Brand	77,69	8,73	0,82 (ns)	6,84 (p=0,07)	25,74	10,42	3,69	1,10 (ns)	58,89	522,23	352,21	45,05	

Repurchasing from Previous Dealer	101,95	15,69	7,98	12,48	66,31	6,60	3,39(0,06)	6,04	18,32	559,08	296,09	561,43	596,35
Considering Ancient National Brands	34 4,39	30,80	3,43(ns)	18,95	35,32	0,02 (ns)		7,32	8,08	0,28 (ns)	0		2,90 (ns)
Switching to Ancient National Brands when Changing brand	11,30 17,52	4,15 (ns)		1,54 (ns)	7,02 (p=0,07)		29,75	4,59	0	0,22 (ns)	3,58 (p=0,06)	5,46	31,51

All results are significant, except if marked (ns).

TABLE 2
IMPACT OF AGE AND OTHER DEMOGRAPHIC VARIABLES
ON CHARACTERISTICS OF THE PURCHASE PROCESS

Parameter estimates

Dependent	Age categories		
	18-39	60-74	75 and above
Number of Brands Considered	0,07*****	-0,08***	-0,19*****
Considering Only One Brand	-0.34*****	0,16 (p=0,06)	0,31 **
Considering Only One Dealer	-0.22*****	0,34*****	1,04*****
Number of Models Considered	0,08****	-0,11*****	-0,27*****
Considering the Previous Brand	-0,26*****	0,13 (ns)	0,25*
Considering Only The Previous Brand	-0,47*****	0,15 (ns)	0,24 (p=0,06)
Repurchasing the Previous Brand	-0,28*****	0,29*****	0,58*****
Repurchasing from Previous Dealer	-0.42*****	0.20**	0,32**
Considering Ancient National Brands when changing brand	-0,19*****	0,18 *	0,45 ***
Switching to Ancient National Brands when changing brand	-0,07 (ns)	0,32**	0,43*

FIGURE 1

The Influence of Age on Psychological Antecedents of Brand Repurchase

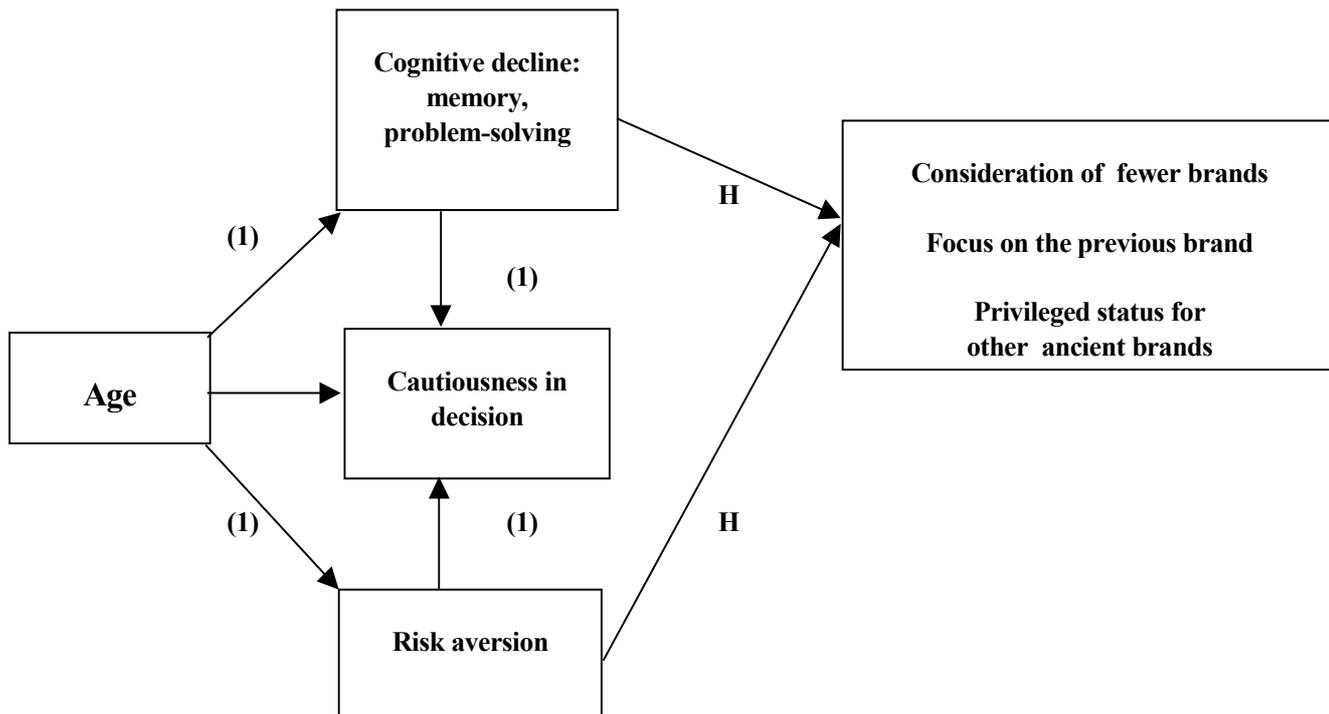


FIGURE 2

Older consumers have a smaller consideration set

FIGURE 2(a)

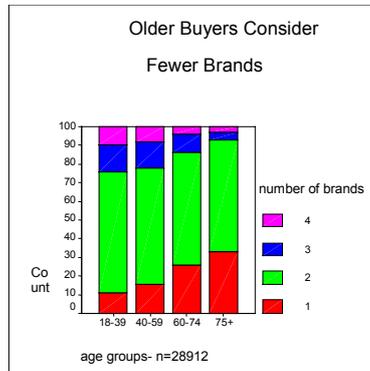


FIGURE 2(b)

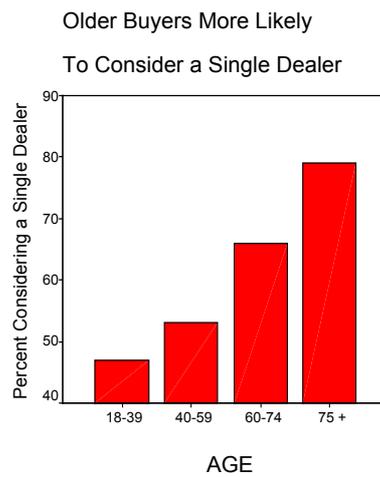


FIGURE 2(c)

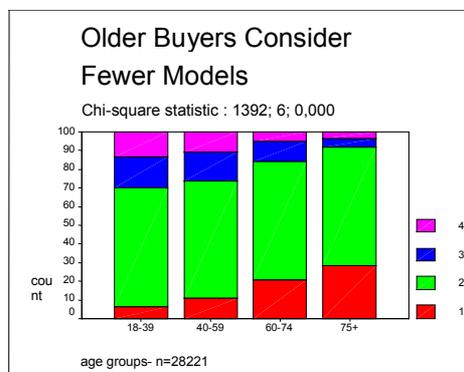


FIGURE 3

Older buyers focus more on the previous brand

FIGURE 3(a)

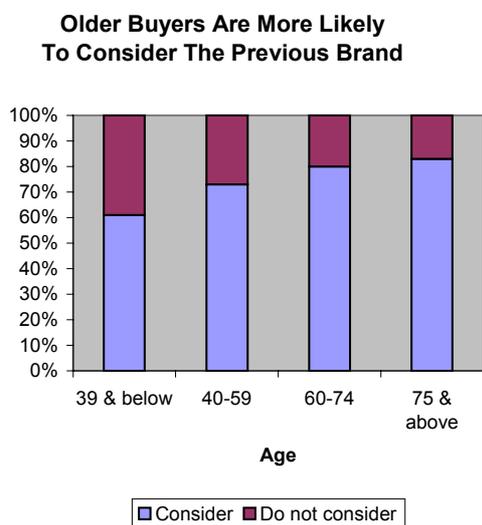


FIGURE 3 (b)

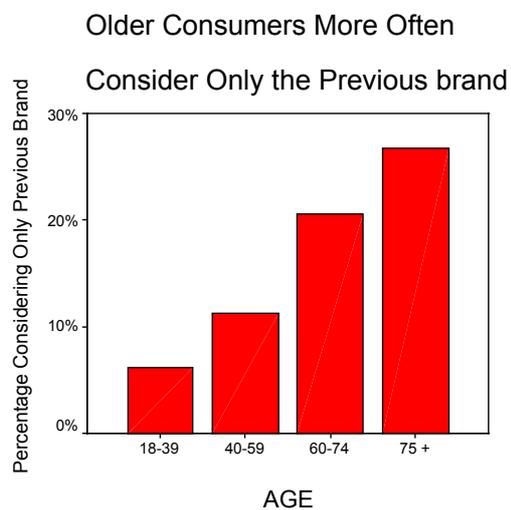


FIGURE 3(c)

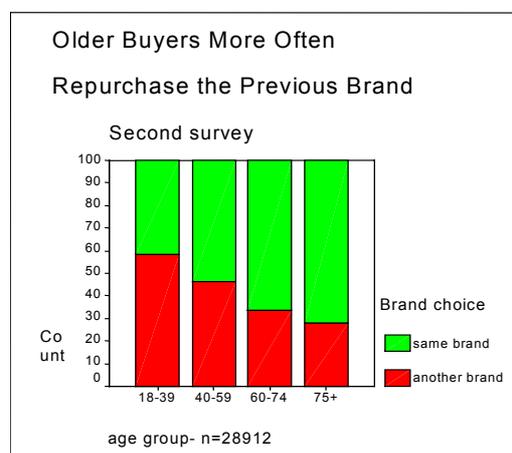


FIGURE 3 (d)



FIGURE 4

For a given satisfaction level, older buyers focus more on the previous brand

FIGURE 4(a)

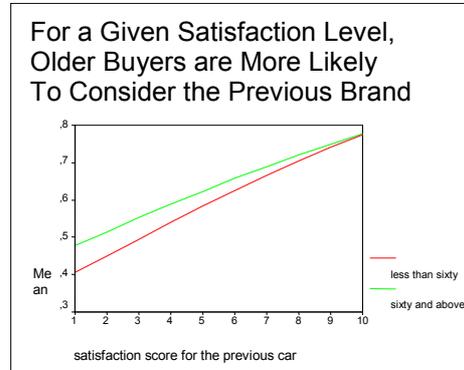


FIGURE 4(b)



FIGURE 4(c)



FIGURE 5

Older consumers give a privileged status to other ancient brands

FIGURE 5(a)

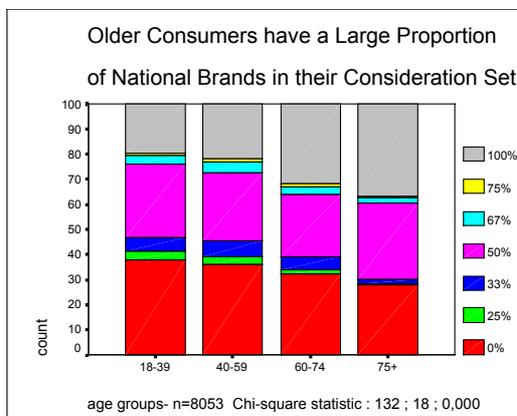


FIGURE 5(b)

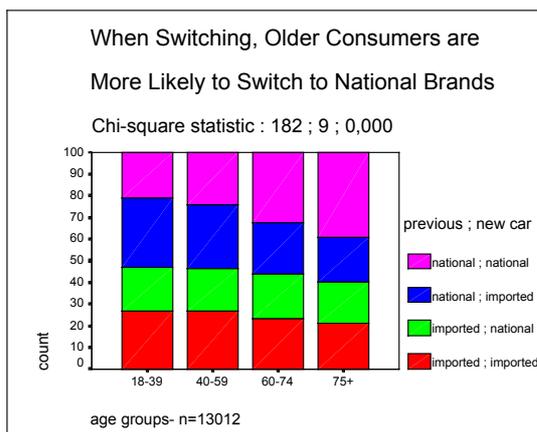


FIGURE 5 (c)

