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Research Dialogue

Consumer decision making and aging: Current knowledge and future directions

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Abstract

We review existing knowledge about older consumers and decision making. We develop a conceptual framework that incorporates the notion of fit between individual characteristics, task demands and the contextual environment. When the fit is high, older consumers use their considerable knowledge and experience to compensate for the impact of any age-related changes in abilities and resources. When the fit is relatively low, older consumers feel increased need to adapt their decision making processes. We discuss these consumer adaptations and propose a number of research questions related to the processes underlying them in order to contribute to a better understanding of how they can lead to more effective consumer decision making for older adults. We further consider some pragmatic implications of the adaptations for marketing management and public policy.

Until recently, most businesses and marketing researchers have virtually ignored the older consumers in the marketplace. Increasingly, businesses, governmental agencies and researchers are recognizing that older consumers comprise a segment that is generally substantial, identifiable and accessible — key requirements for selecting target segments.

The number of Americans aged 65 and over is expected to increase from 35 million in 2000 to 40 million in 2010. By 2030, there will be over 70 million older persons, with one out of every five Americans being 65 or older (Department of Health and Human Services, 2007). Because of increasing life expectancies and decreasing birth rates, the proportions of the U.S. adult population in each of the four different age groups (under 20, 20–44, 45–64, over 65) is becoming more evenly distributed. The past decade has seen an improvement in the economic status of Americans aged 50 and over, where status is measured as median inflation-adjusted income and household financial assets (AARP, 2005).

Despite the growing size of the elderly population in the U.S. and their share of personal wealth, there are still relatively few reviews published in major marketing journals about the effects of an aging population on consumer decision making, public policy and marketing practice (for notable exceptions, see Goldstein, 1968, Phillips and Sternthal, 1977, and Roedder John and Cole, 1986). In this article, we seek to bridge the gap between academic research and the everyday practice of marketers and public policy makers by considering extant findings about how aging affects consumer decision making. We adopt a broad definition of consumer decision making that includes the processes and outcomes related to everyday problem solving in consumer domains.

The present paper proposes a general framework and reviews the literature to generate a better understanding of the role of aging in consumer decision making. In particular, we explore the conditions under which older adults need to adapt their consumer decision making in order to enhance the likelihood that they generate decisions with satisfactory outcomes. We also identify areas in which further research is needed and suggest specific questions aimed at providing insights and tools to address the needs of older consumers.

Conceptual framework

Our framework adopts the perspective that in order to understand the multidimensional and multidirectional effects of aging on decision making, we need to understand how individual, task, and contextual characteristics influence the fit between a person and task. This person–context fit falls along a

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continuum from low to high (Finucane, Mertz, Slovic, and Schmidt, 2005; National Research Council, 2000; Hess, 2005), and is expected to be high to the extent that requirements imposed by the task and context do not exceed an individual's decision making resources and abilities (e.g., working memory capacity). In these high fit consumer situations, the likelihood of effective decision making is relatively greater, in that the elderly do not feel compelled to adapt their decision processes, and special accommodations by marketers or regulatory bodies are not necessary. By contrast, when task and contextual demands exceed the resources available, fit decreases and older consumers may feel the need to adapt their decision making processes. In some instances, they might do so by drawing on their knowledge and experience, allowing them to successfully compensate for decrements in resources. In other situations where this is not possible, it would be of practical importance for marketers to provide tools to accommodate decision making — e.g., they could adjust the context of the decision by presenting the product information in a more meaningful or user-friendly way. Government agencies may further address low fit situations via interventions that buttress individual resources through consumer education and/or regulate deceptive marketing practices. In the absence of sufficient consumer adaptations, marketer accommodations, or government interventions, the quality of decision making may be so low that elderly individuals fail to obtain satisfaction from their choices, or worse yet, they may become the victims of scams that exploit their reduced resource capacity. For instance, the AARP (1996) estimates that more than half of telemarketing fraud victims are over the age of 50 and the National Center on Elder Abuse reported over 20,000 substantiated cases in 1998 of financial or material exploitation of elderly persons (Johnson, 2004). Common tactics employed by these perpetrators have been said to involve emotional manipulation or overwhelming elderly with complex information, particularly in the case of financial transactions. While the elderly are direct victims of such incidents of fraud, relatives, caregivers and society at large oftentimes also have to deal with the undesirable consequences of their decisions. (See Fig. 1 for the framework).

Several points are worth noting. First, although the framework can be generalized to consumers of all ages, it is particularly useful for studying older consumers, many of whom continue to maintain high levels of performance on decision making tasks despite declines in some cognitive abilities. Second, unlike prior research on aging and decision making that focuses on information processing and seeks to discover links between cognition and decision making, the current model emphasizes how individuals can adapt their decision making to different contexts and tasks. In so doing, we do not attempt to address the issue of what constitutes good or

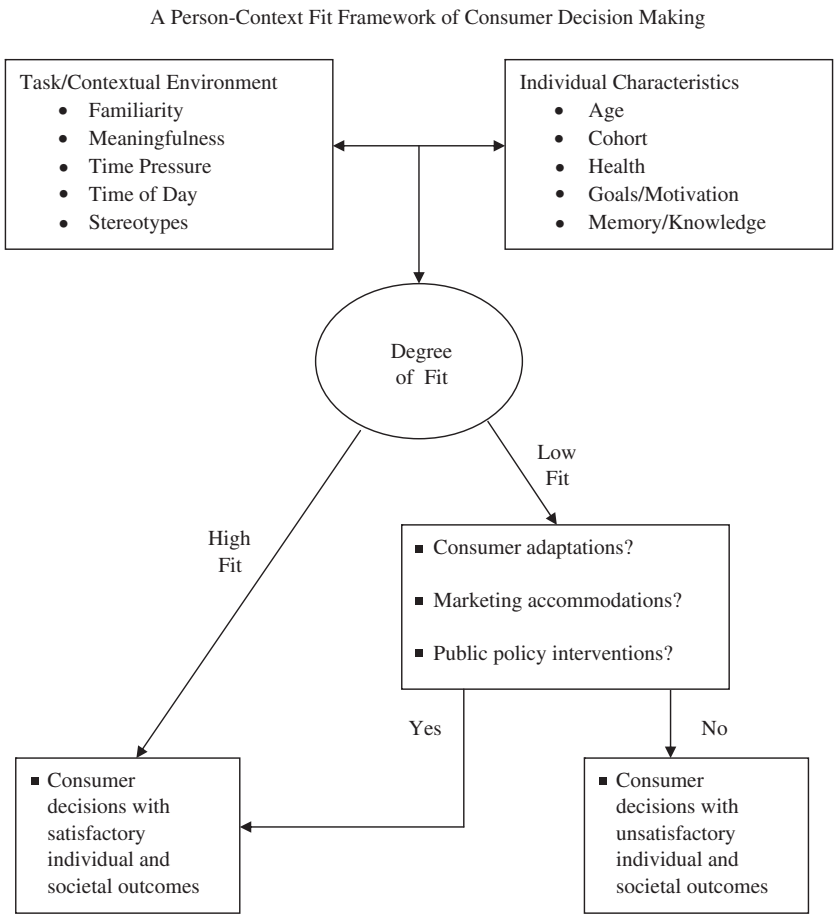

Fig. 1. A person–context fit framework of consumer decision making.

poor decision outcomes in an absolute sense. Rather, our discussion is organized around elucidating how the congruence between the individual and decision environment can be a source of more or less desirable decisions, and how the framework, in the latter case, can be used to identify ways to achieve greater levels of fit. We take the position that, in general, improvements along the fit continuum increase the likelihood of effective decision making and more satisfactory outcomes for consumers.

We first briefly review the relevant findings with respect to individual characteristics. Next, we provide a discussion of task and contextual environment, and focus on how these factors, along with individual characteristics, can jointly influence the degree of person–context fit. Space does not allow us to be exhaustive in our discussion of the interplay; thus we explore a limited set of situations and potential interactions representing varying levels of fit. We then consider the consequences of fit (or the lack thereof) for older consumers.

Individual characteristics

Individual characteristics interact with the decision making context and task to affect the person–context fit. We consider the following individual characteristics: age, cohort, health, goals, memory and general knowledge.

Age

There is no set agreement regarding the age at which a person is considered "old". In the consumer domain, an older person has been most commonly defined as someone over 65 years old (when one traditionally retired), although more recently, those over 60, and even those over 50 have begun to be considered senior consumers. Complicating the notion of what constitutes old are the findings that compared to one's actual chronological age, one's functional age can be ten to fifteen years younger (Tréguer, 2002) and that one's self-assessed cognitive age can be eight or nine years younger (Mathur and Moschis, 2005).

Another age-based approach divides the heterogeneous older market into more homogeneous subgroups or stages: 50–59 (youngest olds), 60–74 (younger olds), 75–84 (older olds), and 85 and over (oldest olds). This classification scheme offers the potential for generating insights about consumer behavior that are useful to marketers. For example, Davidson (2005) suggests that financial planners can help consumers prepare for retirement by thinking about how their activities will change across age stages. However, even within each age stage, there can be considerable differences in decision making abilities due to cohort effects or health history.

Cohort

Cohorts, which are groups of consumers who are born within close time periods, are linked by similar world views because they share common life-shaping experiences during their late teens and early twenties (Schewe and Meredith, 2004). For example, Holbrook and Schindler (1989) report that consumers throughout their lives prefer music that was popular during their late adolescence or early adulthood. Not surprisingly, music from the 1960's and 70's is currently being used in television advertising targeting the over 60 market. "When I'm Sixty-Four", a popular love song released in 1967 by The Beatles, was recently licensed for use in an Allstate Insurance commercial targeted to baby boomers (McManis, 2005). Table 1 draws together descriptive data about the different older cohorts.

Table 1
Characteristics of different age cohorts in the U.S. older market

	Cohorts			
	Youngest olds Leading-edge baby boomers	Younger olds Post-war	Older olds World War II	Oldest olds
Ages	50–59	60–74	75–84	85 and over
Defining events	Assassinations of John and Robert Kennedy, and Martin Luther King; Vietnam War; First man on the moon	Korean conflict, McCarthyism, schools dress codes, moving to the suburbs	World War II	Economic struggle, high unemployment
Population	36 million, 12.3% (51% female)	31 million, 10.6% (54% female)	13 million, 4.4% (60% female)	4.8 million, 1.6% (68% female)
Finances	High discretionary income; Period of wealth accumulation	High discretionary income; Emphasis on fulfilling lifelong dreams instead of creating wealth	Weaker spending power	Reduced financial security (especially among widows)
Core values	Idealistic, demanding, nonconformist, seek immediate gratification	Status quo, respect authority, tolerance, value experiences over goods, want security	Thrifty, patriotic, sacrificing, defer gratification, respect authority, team-oriented	Dependency, solitude, value conscious, financial security
Health	Most in good health; Some physiological declines; Menopause	Most in good health, but some deterioration in sight and hearing	Many still doing well; Medical issues more significant part of daily life	Deterioration in health more common
Time	Some free time	Actively fill time with second careers, family, travel and social activities	Less time to vacation, more to social events, charities, or family; More unstructured time	Much free time but limited mobility
Popular song	1974: Can't Get enough of Your Love Babe (Barry White)	1964: I want to Hold your Hand 1967: When I'm Sixty-Four (The Beatles)	1954: Mister Sandman (Pat Ballard)	1944: Ill be Seeing You (Sammy Fain)

Sources: Davidson 2005; Morgan and Levy 2002; Schewe and Meredith 2004; Tréguer 2002; Yntema 2001.

Because generational cohorts affect lifestyles, health and attitudes, they are useful for understanding decision making across age groups. Unfortunately, the typical survey and experiment using cross-sectional data comparing consumer decision making in different age groups confound age and cohort. This confound limits our ability to generalize the results from a cross-sectional study to future cohorts of elderly consumers. To a certain extent, cohort analysis, a statistical procedure, allows the researcher to untangle the effects of cohort, aging and time period (Palmore, 1978). Such studies can shed light on the differential influences of these factors on changes in behavior. For example, soft drinks usage has been found to be influenced more by consumers' birth cohort than age (Rentz and Reynolds, 1991), as has liquor consumption (Kerr, Greenfield, Bond, Ye, and Rehm, 2004). However, cohort analysis requires the availability of relatively large data sets, and its usage has been limited. Thus, issues related to inter-cohort or intra-cohort differences and how they might interact with age (Schwarz, 2003) have not been adequately addressed using cohort analysis.

Baby boomer cohort

The maturing of the 78 million people comprising the baby boom cohort (those born in the U.S. between 1946 and 1964), has vast social and economic implications. Baby boomers came of age in a time of great social change and upheaval, and their lives have been marked by a near constant stream of new product introductions. Greene (2005) suggests that the aging boomers will increase demand for a variety of products and services such as alternative health products (e.g. nutraceuticals, which are natural foods with health benefits), communal living arrangements, transportation, and late life work coaches to help find meaningful work that offers flexible schedules. Regarding transportation, Coughlin, the director of the AgeLab at MIT states, "We do a very good job of getting older adults around for trips they need. We do a terrible job with trips they want….the boomers are a generation of wants. They are going to make sure transportation is as seamless for them to get ice cream as it is to get a prescription renewed" (Greene, 2005, R1). Recently, there have been reports of problems caused by generation gaps at retirement communities; while the 60-year-old baby boomers want upgraded facilities to suit their active lifestyles, the long-time 80-plus year-old residents do not see the need for the improved amenities and are increasingly feeling overlooked (Nevius, 2007). A report by Packaged Facts (2006) documents some of the major consumer trends in attitudes and behavior among the baby boomers as they transition into their retirement years; it suggests that, as this individualistic and youth-oriented generation ages, marketers need to revise their assumptions about older consumers.

Health

Aging is generally accompanied by changes in health (Waldstein, 2000). Although both sensory and physiological functions (vision, hearing, taste, smell, touch and motor ability) may change markedly with advancing age (Fozard and Gordon-Salant, 2001), the rates of change depend on factors such as chronic medical conditions (e.g. diabetes, arthritis), lifestyle factors (e.g. smoking, excessive alcohol consumption, physical inactivity) and medical treatments for disease (e.g. prescription drugs). Over 80% of those aged 65 or more have at least one chronic medical condition (Centers for Disease Control, 1999); and about the same proportion of those over 65 take prescription drugs regularly (Rogowski, Lillard, and Kington, 1997).

Using cross-sectional data on 368 adults aged 61 to 95, Wahlin, Macdonald, deFrias, Nilsson, and Dixon, (2006) report that health status mediates (on average) 30% of the variance in cognitive abilities. Colcombe and Kramer (2003) conducted a meta-analysis of 18 cross-sectional and longitudinal studies and found that aerobic fitness improves cognitive function in older adults. Thus far, academic studies investigating the effects of aging on consumer decision making have tended either to control for health status across individuals or to ignore it altogether. Future research is needed to identify how age and health status jointly affect consumer decision making.

Goals and motivation

According to Carstensen's influential socioemotional selectivity theory, people as they age, place greater emphasis on achieving emotionally meaningful goals (i.e., those related to feelings, balancing emotional states, avoiding regret or maximizing satisfaction) than on knowledge-related goals (i.e., related to new information acquisition) (Carstensen, Fung, and Charles, 2003). Compared to young adults, older adults pay greater attention to and have superior memory for emotional than non-emotional material. They also have stronger preferences for persuasive messages with emotional rather than rational (Williams and Drolet, 2005) or knowledge-related appeals (Fung and Carstensen, 2003).

Several possible explanations account for increased attention to emotions with aging. When young consumers are placed under high cognitive load conditions, they rely more on affect than information to make choices (Shiv and Nowlis, 2004). Age-associated reductions in working memory capacity may increase reliance on emotional reactions (Hasher and Zacks, 1988). Another explanation is that perceived limitations of time lead to motivational shifts, which direct attention to emotionally meaningful goals (Carstensen et al., 2003; Williams and Drolet, 2005). Finally, a third explanation is that being able to understand and integrate emotional information is an adaptive skill that improves with age (Labouvie-Vief, 1998). As a result, older adults appear better able to acknowledge their emotions, solve emotionally charged problems, and endure the tension of mixed emotional experiences (Labouvie-Vief, 1998).

This shift in goals from information acquisition to more emotion regulation could influence decision making by affecting the information and strategies that consumers prefer to use for problem solving. For example, older consumers, placing greater emphasis on emotional goals, may use emotional markers instead of more effortful decision rules to make a choice. Damasio's (1994) somatic-marker hypothesis suggests that feelings become associated with different

alternatives. During choice decisions, positive or negative markers may activate pleasant or unpleasant feelings towards different options. Older adults can thus use these markers to quickly eliminate options that could lead to negative outcomes.

Memory and general knowledge

Aging affects memory performance, but not in the same way for everyone. In fact, some older adults perform nearly as well as their younger counterparts on a variety of memory tasks (Hedden and Park, 2003). These "successful agers" are characterized by high performance on neuropsychological tasks thought to measure frontal functions (i.e., those associated closely with working memory; Glisky, Rubin, and Davidson, 2001). High performing older adults have been found to engage the prefrontal cortex regions bilaterally (compared to young adults who, depending on the task, activate either the left or right region); and this has led to suggestions that high-performing older adults may counteract age-related neural decline by recruiting more resources through a plastic reorganization of neurocognitive networks (Cabeza, McIntosh, Tulving, Nyberg, and Grady, 1997).

However, evidence of age-related declines in processing capacity (most often assessed via standard working memory and neuropsychological measures) is robust, with gradual declines occurring in adults from their mid-20s on, and steeper declines in their 70s (e.g., Park, Lautenschlager, Hedden, Davidson, Smith et al., 2002). Evidence also indicates that aging does not affect all forms of memory in the same way (Hess, 2005). We discuss working memory and explicit memory, which have been found to be largely age-sensitive, and note a couple of exceptions to general findings. We also discuss implicit memory, for which the extant literature reports age-invariance.

Working memory

Older adults tend to encounter problems on tasks that draw heavily on working memory, i.e., the ability to process small amounts of information for short periods of time when engaging in ongoing cognitive activities such as reading, listening, problem solving, or thinking (Moscovitch and Winocur, 1995). In addition to a substantial slowdown in processing speed (Salthouse, 1996), working memory resources may be increasingly taxed by age-associated impairments in executive functioning (West, 1996). Executive functions of cognition include abilities such as shifting between different task goals, updating the contents of working memory, and inhibiting inappropriate responses (Hedden and Yoon, 2006).

A number of studies report that older adults may have impaired inhibitory processing ability, which has both direct and indirect consequences for cognition (for a review, see Hasher, Zacks, and May, 1999). For instance, older adults who are poor inhibitors are more susceptible to interference from distracting and irrelevant information than younger adults (Lustig, May, and Hasher, 2001). The distractions may arise from external sources (e.g., from background noise) or from internal sources (e.g., personal concerns), and the inability to inhibit them might interfere with the ability to recall brand names. This compromised efficiency in retrieving information may in turn lead to a tendency to rely on information provided in the external environment, other more easily accessible information such as brand reputation, or simple cues that trigger heuristic processing.

Explicit memory

Explicit memory is memory for information that is accompanied by the conscious intent to recollect and is often measured using tests such as free recall, cued recall and recognition, where participants are instructed to recollect information previously presented (Graf and Schacter, 1985). Age-related decrements in explicit memory performance are reported to be robust in the extant literature (e.g. Fleischmann, Wilson, Garbrieli, Bienias, and Bennett, 2004). We restrict our discussion in this section to explicit memory for a particular type of information, that of source, because of the elderly's particular susceptibility to source memory failures (Spencer and Raz, 1995).

Older consumers may correctly remember a fact from a past experience (e.g. high fiber diets prevent heart disease), but may misremember the source as the evening news, not as an advertisement. Skurnik, Yoon, Park, and Schwarz (2005) found that telling people that a consumer claim is false (e.g. "aspirin destroys tooth enamel") makes them more likely to misremember it as true. Older adults (aged 71–86) were more susceptible to this "illusion of truth" effect than younger adults (aged 18–25). In their study, repeatedly identifying a claim as false helped older adults remember it as false in the short term, but made them more likely to remember it as true after a three-day delay. This unintended effect was due to increased familiarity with the claim itself, but decreased recollection of the claim's original context, a form of source memory. These findings have implications for consumer education and in particular, suggest that warnings intended to correct older consumers' perceptions about the truth of a product claim could potentially backfire. Merely telling consumers that a claim is false is not likely to be good enough and any measures aimed at preventing older consumers from being misled ought to help them strengthen the link between a fact and its truth value. Unfortunately, this is difficult to achieve as it is not sufficient that the correct information is compelling and highly memorable (see Schwarz, Sanna, Skurnik, and Yoon, 2007, for further discussion). Memorable slogans that link a claim with its false status may provide a promising avenue. Enhancing the meaningfulness of the truth value may also be effective in helping the elderly remember information as will be seen in a later section.

While explicit memory for information does, as a general rule, decline with age, there are notable exceptions to this. For example, pictures that are complex can be remembered equivalently by younger and older adults. Park, Royal, Dudley, and Morrell (1988) presented younger (mean age 18) and older consumers (mean age 68) with complex pictures to study and then tested for picture recognition immediately or after delays of 48 h, or one, two or four weeks. They found no age differences in corrected picture recognition across these time intervals. These findings suggest that pictorial cues may aid decision making for older consumers.

General knowledge, or memory for information that is not tied to an episodic event, seems to be largely preserved with age as well. Cognitive psychologists refer to this type of memory as semantic memory and on semantic memory tests, age differences in performance have been found to be small to nonexistent, especially when such tests are self-paced (Wahlin et al., 2006).

The more elaborate and differentiated an individual's semantic knowledge about a domain, the more expertise he or she has. One major theoretical approach on how age affects decision making emphasizes the ways in which expertise can compensate for declines in primary abilities (such as working memory) (Thornton and Dumke, 2005). Studies comparing experts of different ages find that differences can emerge, but that experts also develop domain-specific compensatory mechanisms that allow them to maintain performance well into old age. For example, Morrow, Ridolfo, Menard, Sanborn, and Stine-Morrow (2003) found that allowing older pilots (aged 60–80) to take notes while performing an Air Traffic Control task led to maintenance of their performance despite typical age-related declines in cognitive abilities in comparison to younger pilots (aged 23–40, and 50–59). However, age differences among experts did emerge when older adults were unable to take notes. In the consumer arena, Kirmani and Campbell (2004) conducted in-depth interviews with consumers aged 18 to 74, and found that experienced older adults have a larger repertoire of strategies by which to resist persuasion attempts than younger adults who are inexperienced. Although this research did not test how well the increased knowledge base compensates for any age-related changes in cognitive abilities, it suggests that even as some older adults are more susceptible to fraudulent scams, others may be able to rely on their considerable prior knowledge and experience when making consumer decisions.

Implicit memory

Implicit memory is distinguished from explicit memory by the absence of conscious intent to recollect information and is reflected in a greater ease of processing information previously encountered or a stronger tendency to respond with such information (Graf and Schacter, 1985). Thus, for instance, if one were to see a magazine comprising a variety of ads and after some delay correctly recall the brand "Reebok" when asked for athletic shoe brands featured in the magazine, it would be evidence of explicit memory. On the other hand, if one were to respond with "Reebok" when asked to generate athletic shoe brands but without reference to the magazine ads viewed earlier, there would be implicit memory for "Reebok" to the extent that there is an increased tendency to respond with the brand compared to others who were not exposed to the magazine ads.

With respect to aging, the weight of evidence suggests that implicit memory is preserved in older adults (Fleischmann, et al., 2004; Mitchell and Bruss, 2003; Light, Singh, and Capps, 1986). The implications of this can be both positive and negative depending on how implicit memory is applied to decision making by the elderly. In the case of implicit memory that is experienced as ease of processing previously encountered information (also referred to as processing fluency; Jacoby and Dallas, 1981), for example, people often attribute the fluency to some source but are not always accurate in making that attribution (Jacoby, Kelley, and Dywan, 1989). Suppose an elderly consumer encounters a certain brand in Consumer Reports, one that is given a particularly bad review. On a subsequent encounter with the brand in a store, the consumer might experience fluency or a sense of familiarity with the brand. To the extent that he or she recognizes it as that particular one reviewed in Consumer Reports (an instance of explicit memory performance), skepticism would naturally follow. On the other hand, if that fluency is misattributed to the brand being a popular or a well-established one, as is likely to be the case, it would lead the consumer astray. The case of the "illusion of truth" effect discussed earlier is, in fact, an instance of mistakenly attributing fluency from a previous encounter with the statements to the truth status of those statements.

Summary

In our framework, age interacts with other characteristics such as health, cohort effects, and goals to affect the person–context fit and subsequent decision making. For example, consumer goals may moderate age effects such that there is greater fit for older adults when decisions require manipulating, managing and integrating emotional information, but lower fit when they involve acquiring and processing factual information. We further expect that in higher fit situations, older consumers' intact general knowledge and experience will buffer them against declines in working and source memory. In lower fit situations, however, task and context demands may override the benefits of their knowledge and experience. In general, it is not until around age 70 that the declines in basic mental abilities begin to compromise everyday problem solving.

Task and contextual environment

In this section, we consider several task and contextual factors and discuss how these factors interact with age and other individual characteristics to affect the degree of person–context fit. When the demands of the task and contextual environment exceed the abilities and resources of the decision maker (as a function of age and other individual characteristics), the fit is expected to be low. This creates pressure on older consumers to adapt their decision making or risk decisions with poorer outcomes. We explore these consumer adaptations in a later section.

Familiarity

Performing tasks in everyday life can become so automatic through practice and repetition (e.g., reading, driving a car, using a coffee maker at home) that we execute them without a lot of conscious effort. Our ability to perform these automatic processes remains largely stable across adulthood (Park, 1999). Through repetition of familiar tasks, consumers often develop scripts such as how to order a meal at a restaurant. Other types

of schemas are generally used to refer to consumers' organized knowledge of a particular set of material (e.g., products). These schemas underlie abilities to categorize, comprehend, and generalize, and they also guide memory retrieval (Reyna and Brainerd, 1995).

Older adults may benefit from the sheer numbers of their elaborate and extensive schema networks in two ways. First, they may easily access the affective tags attached to schemas to make decisions (Myles-Worsley, Johnston, and Simons, 1988; Reyna, 2004). Second, the schemas may improve recall of information when the information is presented in a schema consistent manner. One study found that providing medication information in a schema consistent manner, as opposed in a randomly ordered manner, improved information recall for all adults, but more so for older than younger adults (Morrow, Leirer, Andrassy, Tanke, and Stine-Morrow, 1996).

However, schema-based processing also sometimes contributes to distorted recollections of the past because people may remember the semantic or perceptual gist of an experience but not the specific details. Older adults may be more prone than younger adults to falsely remember information that is inaccurate or incorrect, but otherwise consistent with their schemas (Norman and Schacter, 1997).

In contrast to familiar tasks, relatively novel tasks, such as learning how to use a digital video recorder for the first time or navigating one's way through a foreign city, require controlled processes reflecting intentional and conscious effort. In such situations, prior knowledge cannot be used to adequately compensate for age-related difficulties, and the older consumer's ability to adapt becomes more important.

Meaningfulness

The meaningfulness of information can be instantiated in a number of ways, including increasing its personal relevance, making it realistic and making the context in which it is presented more conceptual or value-laden. All of these share the feature of facilitating the integration of information into associative networks in memory, allowing for relational links to be established with other concepts. This in turn facilitates the retrieval of that information from memory. Extant findings suggest that age differences in memory performance are minimized when the context makes to-be-remembered information meaningful. Castel (2005), for instance, found that when prices of grocery items were arbitrary and bore little semblance to realistic market prices, accurate price recall was poorer for older adults than for younger adults. On the other hand, when prices were realistic, recall performance was no different between the two groups.

While Castel examined meaningfulness in the sense of information being realistic instead of arbitrary, Rahhal, May, and Hasher (2002) studied meaningfulness in the sense of the source context being distinguished conceptually rather than perceptually at source. Participants heard statements read by one of two voices and were told that all statements read by one voice were true and all statements read by the other voice false. At time of test, they were presented with the same statements and asked which voice each statement was spoken by, or asked if it was true or false. Older adults were found to exhibit typical source memory impairments on the former test, but were as accurate as younger adults in identifying the truth of the statements, suggesting that memory for the meaningful or conceptual context of information may be preserved with age.

Thus we suggest that information that is meaningful to older consumers can increase the person–context fit, leading to better memory and potentially better decision outcomes.

Time pressure

Time pressure exerts a negative influence on decision making for consumers of all ages, but particularly so for the elderly (Earles, Kersten, Mas, and Miccio, 2004; Park, Iyer, and Smith, 1989). In a study by Park et al. (1989), consumers under time pressure and in unfamiliar stores were more likely than other consumers to fail to make their intended purchases and to substitute other brands because of the inability to locate their preferred brands. When time pressure decreased, however, consumers were able to search for and select their intended purchase. Earles et al. (2004) found that for recall of tasks, differences between older (62–87) and younger (18–22) adults were smaller without than with time pressure. They speculate that time pressure activates negative stereotypes and increases anxiety so that older adults devote less attention to cognitive tasks. Thus, we expect that time pressure induces lower person–context fit for older adults such that individual adaptations become potentially important for making consumer decisions.

Time of day

A number of studies found that individual variation in circadian arousal patterns moderate age differences in memory and decision making performance (e.g., May, Hasher, and Stoltzfus, 1993; Yoon, 1997). Specifically, performance tends to peak at a certain level of circadian arousal when greater cognitive resources are presumably available, and this peak occurs, more or less regularly, at a specific point in the day. Hence individual variation in circadian arousal patterns can significantly alter performance across the day.

Interestingly, performance patterns across time of day differ for younger and older adults: younger adults' performance tends to improve as the day progresses, whereas older adults' performance peaks in the morning (during their optimal time of day) and then declines through the afternoon and evening (May et al., 1993). Normative data collected on over 2200 college students (18–23) and 1200 older adults (60–75) indicate that roughly 40% of younger adults show eveningness tendencies, with less than 10% showing morningness tendencies. By contrast, less than 2% of older adults show eveningness tendencies, and the majority (~79%) are morning-types (Yoon, May, Goldstein, and Hasher, in press). Insofar as cognition and decision making follow circadian arousal patterns, the norms suggest that performance of many younger adults will improve across the day, while that of most older adults will deteriorate as the day progresses. This time-dependent ability to cope with

complex information for older adults suggests that it would be adaptive for them to tackle more complex tasks or make difficult decisions early in the day. Advertisers would also be well-advised to reach older consumers in the morning if more involved processing of message arguments is necessary for the success of the campaign. In contrast, given the greater reliance on heuristics and stereotypes at non-optimal time of day (Bodenhausen, 1990), brands with high brand equity are likely to benefit from reaching older consumers in the evening.

Stereotypes

Age differences in decision making may emerge in part because of stereotypes about old age (Hess, 2005; Wheeler and Petty, 2001). In general, images of older adults are underrepresented in advertising and media. Studies have found that younger models are dominantly featured in advertisements, even for products aimed at older people (e.g., Roberts and Zhou, 1997); and when older people do appear in advertisements, they are portrayed in ways that offend elderly consumers and may also contribute to negative stereotypes of old age (e.g., Carrigan and Szmigin, 2000). In marketing settings, service personnel might inadvertently use "elderspeak" which involves slow rates of speaking, simplified syntax, vocabulary restrictions, and exaggerated prosody (see Kemper and Kemtes, (2000) for a review). Depending on the specific speech accommodation made, no communication benefits might be conferred to older adults. Instead, such elderspeak comes at the cost of reinforcing negative stereotypes about aging, leading the elderly themselves to assess their own communicative competence in a negative way (Kemper and Harden, 1999).

The activation of such stereotypes appears to have implications for older adults' ability to recollect information. Hess (2005) summarizes several studies which find that implicit (i.e. without awareness) activation of positive stereotypes relating to aging improved older adults' memory performance, whereas the activation of negative stereotypes worsened their performance. Levy and Langer (1994) investigated the relationship between age stereotypes and memory performance in Chinese and American cultures and found that older Chinese performed significantly better than older Americans on memory tasks, a difference that the authors attributed to the predominantly positive views about aging in East Asian cultures (but see Yoon, Hasher, Feinberg, Rahhal and Winocur, 2000).

The extent to which stereotypes of aging affect older consumers' decisions is a topic that deserves greater research attention, particularly given that prior research has yielded rather mixed results. For example, Tepper (1994) examined if negative evaluations associated with stereotypes of the elderly might be triggered by age-related discounts, resulting in low redemption rates for such discounts. Contrary to this expectation, older adults 65 and over were reported to readily accept and use senior discounts. Baby boomers, on the other hand, have been reported to be more sensitive to stereotypical images of age and are more reluctant in marketing settings to acknowledge their senior status (McKuen, 2001). We expect that when typical stereotypes about aging (e.g., passive, slow) are activated, especially in western cultures, it will tend to have a negative effect on decision making by older consumers; but there may also be benefits afforded by the more positive stereotypes of aging (e.g., adventurous, grandparent) that Chasteen, Schwarz, and Park (2002) have found.

Summary

To summarize, we suggest that the person–context fit will be higher for older consumers when tasks are familiar or meaningful, occur without time pressure or at optimal times of day, and in environments that do not activate negative age stereotypes. While the effects of some of these factors, namely time pressure and time of day, are not specific to older adults, they have a larger impact on older adults relative to their younger counterparts. However, when tasks are unfamiliar or not meaningful, occur under time pressure or at non-optimal times of day, or in environments that activate negative age stereotypes, then the fit will be low and older consumers will need to adapt their decision making in order to enhance the likelihood of decisions with satisfactory outcomes (Jopp and Smith, 2006). We next turn to a discussion of these consumer adaptations.

Consumer adaptations

In this section, we consider five strategies that may be useful to older adults in terms of enabling them to adapt to decision making situations of low fit (each suitable depending on the factors contributing to the low fit): heuristic processing, selective search, use of decision aids, delegation of decision, and training. For each adaptation, we discuss possible avenues of research that would better illuminate how older consumers' decision making can result in satisfactory individual and societal outcomes. In addition, based on what is thus far known, we address some pragmatic implications of the consumer adaptations for marketing managers and public policy makers (see Table 2 for a summary of consumer adaptations, research questions, and pragmatic implications).

Heuristic processing

In general, people are more likely to rely on heuristic processing when there is low ability, opportunity, or motivation to engage in more effortful systematic processing. Older adults, faced with working memory constraints, less effective inhibition of distractions and/or a compromised ability to recollect information, are therefore more likely to rely on heuristic processing compared to younger adults (Johnson, 1990; Price, Arnould, and Curasi, 2000; Riggle and Johnson, 1996). For example, Johnson (1990) used a processing tracing technique and asked older (65+) and younger (18–21) consumers to search for information about six different cars. She found that older adults used non-compensatory decision rules more frequently and compensatory decision rules less frequently than younger adults. Riggle and Johnson (1996) also found that decision making styles differed markedly between age groups;

Table 2
Consumer adaptations, research questions, and pragmatic implications

Consumer adaptations		Research questions	Pragmatic implications	
			Management	Public policy
Heuristic processing	▪ Compared to younger consumers, older consumers rely: ● more on heuristic processing ● less on systematic processing	▪ What factors affect older consumers' use of systematic vs. heuristic processing? ▪ When does heuristic processing lead to a) more effective decision making, and b) better outcomes? ▪ What information preferences do older consumers have when using heuristic processing?	▪ Match persuasion cues to processing preferences ▪ Make information more usable to heuristic processors with visual cues, summary measures, and narratives/stories	▪ Provide information in a form useful for heuristic processors ▪ Evaluate deceptiveness from the perspective of heuristic processors ▪ Develop designs and educational programs for heuristic processors
Selective search	▪ Compared to younger consumers, older consumers ● use more selective search ● exhibit increased brand loyalty	▪ When does selective search lead to a) more efficient decision making, and b) better outcomes? ▪ How do age and cohort effects influence selective search and brand loyalty?	▪ Use technology to reduce consumer search effort ▪ Link new brands to age invariant memory systems by extending well known brand names and/or increase use of visual cues	▪ Monitor marketers for deceptiveness ▪ For information disclosures and range information, increase disclosure frequency and standardize information location
Use of decision aids	▪ Older expert consumers spontaneously design and use effective decision aids	▪ How do older consumers design decision aids? ▪ What types of decision aids are useful for older consumers?	▪ Develop product/services that aid decisions	▪ Develop and monitor decision aids by specifying standards; establish safety guidelines and marketing communications
Delegation of decisions	▪ Older consumers delegate decision making and rely on defaults more than younger adults	▪ When do older adults use defaults or delegate decisions? ▪ Under what conditions, do delegated decisions lead to better outcomes?	▪ Set the advantageous choice for consumers as the default in decisions ▪ Identify/target surrogates ▪ Weigh costs/benefits of providing surrogate services	▪ Monitor what organizations set as default options in their offerings to older consumers ▪ Educate consumers about evaluating/selecting surrogates ▪ License surrogates
Training	▪ Older consumers with training are more effective decision makers	▪ How can training boost processing skills to improve consumer decision making? ▪ How can training programs update persuasion knowledge?	▪ Provide training support for processing of unfamiliar products (e.g., new technological products)	▪ Develop consumer training programs that update consumer knowledge and persuasion knowledge

older adults (50–85) were more likely than younger adults (18–35) to adopt a strategy of eliminating alternatives as soon as possible. Price, Arnould, and Curasi (2000) used in-depth interviews to explore how older consumers decide to distribute special possessions. Although they identify a variety of tactics, many are characteristic of heuristic processing. For example, they describe a receiver-congruity tactic used by older consumers that involves assessing who would most likely appreciate the meaning of a specific object.

To explain this age-associated decrease in systematic processing, Hess, Rosenberg, and Waters (2001) proposed a resource allocation hypothesis, which states that, as people age, they develop the tendency to conserve mental energy, so that they rely on heuristic processing unless explicitly motivated to use detailed processing. Consistent with this motivation hypothesis, explicit instructions can, but do not always, motivate older consumers to employ systematic processing (Cole and Houston, 1987; Kim et al., 2005; Law, Hawkins, and Craik, 1998). Kim et al. (2005) found that asking older consumers to justify their decision motivated systematic processing, while Law et al. (1998) found that imagery instructions (form a mental image of the claim) improved detailed processing. Cole and Houston's (1987) instructions to simply think deeply about something, however, did not motivate detailed processing. It may be that explicit instructions, like those used by Cole and Houston are not effective, while instructions which guide the person to detailed processing are effective. Yoon (1997) showed that older adults spontaneously use systematic processing during their optimal times of day (early morning), while younger adults use detailed processing throughout the day. However, even given proper instructions or context, not all older adults will be able to use systematic processing due to age-related changes in prefrontal brain regions that limit their abilities to engage in detailed processing (Denburg, Tranel, and Bechara, 2005).

Several interesting future research questions emerge. It is clear that factors influencing older consumers' utilization of systematic processing (other than time of day and instructions) are not well understood. Additionally, conditions under which less detailed processing could lead to more effective decision making and better outcomes need to be investigated. The set of heuristics known as "fast and frugal heuristics", so named because they can be carried out with little time, knowledge and computational ability, has been discussed in the literature as capable of leading to inferences that are as accurate as more complex decision making models (Gigerenzer and Goldstein, 1996). Examining the value of such heuristics in aiding older consumers' decision-making may lead to fruitful insights. Finally, the types of information that older consumers tend to use when engaging in more heuristic processing need to be explored further.

From a managerial perspective, older consumers' reliance on heuristic processing has implications for marketing communications. Yoon, Lee, and Danziger (2007) found that older adults were generally more persuaded by peripheral cues, but during optimal times of day, they were persuaded by the cogency of the message arguments. Given that older adults' optimal time of day tends to be in the morning, this suggests that advertisers would do well to use ads with more of a rational appeal and that are informationally dense early in the day, leaving ads that play up such things as brand name or celebrity endorsement to be viewed later in the day. Visual cues such as stars, summary measures and narrative stories may also be provided when more heuristic processing is likely (Hibbard and Peters, 2003).

In terms of public policy, simply making accurate information available will not necessarily ensure that older consumers will use it; research attention needs to be directed to how heuristic processors will use the information. Additionally, agencies charged with developing policies to mitigate deceptive practices tend to focus on regulating the provision of information, both in terms of accuracy and amount. Such provisions work only if older consumers engage in systematic processing and hence, more attention needs to be devoted to understanding how deception can be mitigated under conditions of heuristic processing. In light of the findings discussed earlier that providing correct information to the elderly can in fact backfire, research is needed on how best to design and present educational programs and warnings.

Selective search

Consumers tend to engage in less information search the less involved they are with the purchase, or when they are simply constrained by time and cognitive capacity. Older consumers, in general, have been found to search less for information than younger consumers. The size of this age difference is small when the purchase is a low involvement one, such as for frequently purchased grocery items, but is relatively large for high involvement purchases (Lambert-Pandraud, Laurent, and Lapersonne, 2005; Johnson, 1990) and those with new constraints (Cole and Balasubramanian, 1993). Lambert-Pandraud et al. (2005) report that older consumers consider fewer brands, fewer dealers and fewer models when purchasing automobiles. Additionally, like Cole and Balasubramanian (1993), they find that, increasing age is associated with increasing brand loyalty.

There are several plausible explanations for these differences. One prime reason has to do with the fact that older adults are simply less able to search given cognitive capacity constraints. They may also restrict search because they wish to conserve scarce cognitive or physical resources. For example, Cole and Balasubramanian (1993) found that age differences in computer searches were greatly diminished when consumers were instructed to use a simple aid, which reduced demands on memory (writing information down). Limited physical mobility or reduced motor skills can also affect both physical external search and computer search. Other explanations have to do with differing motivations, goals and habits between older and younger adults. For example, older consumers may place greater emphasis on maintaining a satisfactory relationship with a known supplier than younger consumers, consistent with socioemotional selectivity theory (Lambert-Pandraud et al., 2005). Cohort differences may mean that older cohorts who faced fewer product options in their youth are accustomed to searching less than younger cohorts who grew up with a myriad of options. Yet other reasons may have to do with differences in how younger and older adults use their general knowledge and memory. When engaging in familiar, but complex tasks, such as buying a new car, older adults may search less than younger adults because they use their years of shopping experience to design efficient search strategies. Older adults' memories have also been reported to be more biased in favor of past choices compared to those of younger adults (Mather and Johnson, 2000).

An important research question that has yet to be addressed is the conditions under which adults' restricted search leads to more efficient search and better outcomes. Additionally, because cohort and age are intertwined as explanations for search and brand loyalty effect, cohort analyses may be useful to untangle these effects.

Marketing managers can encourage consumers to expand their search by using new technologies to reduce the effort needed to acquire information. For example, companies could provide detailed product information on the internet, and structure the information format in a manner that is easy to process. Pharmacists or dieticians could download complex information onto consumers' external memory sticks, which can later be plugged into computers at home and reviewed at their leisure. AgeLab at MIT has developed and tested on diabetic baby boomers a handheld gadget, called "the personal smart adviser," that scans bar codes in the grocery store and compares product ingredients with advice provided by a doctor (Greene, 2005).

Whereas managers, on the one hand, benefit from age-associated increases in brand loyalty, they may, on the other hand, want to interest older consumers in new brands. A strategy that might be effective is to look for what Brown, Kozinets, and Sherry (2003) refer to as retro brands — that is, brands that existed in the past but which are now updated with new features — that older consumers might identify with. This is already a common marketing tactic, but managers who are typically younger may not spontaneously think beyond their own youth to that of older adults when looking for brands to extend. A second strategy entails relying on another relatively age insensitive system: visual memory. By increasing the consistency, meaningfulness and frequency of pictorial cues for new brands across advertising, packaging and point of purchase displays, managers may increase the probability of inclusion of these brands in older consumers' consideration sets.

By increasing the frequency of information disclosures and making it easy to process at the points of decision, purchase and usage, the burden on memory can be greatly reduced; hence information will be more likely to be used. This has several implications for public policy agencies, consumer groups and

trade associations who set policies for "low searchers." First, these agencies should monitor for deceptiveness, products designed to reduce search effort. For example, some internet sites offering information on alternative medicines may make it very difficult to compare information across competitive offerings. Second, these agencies should facilitate acquisition of pertinent information by adding range information and increasing the number of times important information is disclosed. Although range information is not easily incorporated on all products such as in food labeling because of difficulties in agreeing on what are comparable items, range information could be included on a variety of consumer products and services, as is currently done in the appliance industry (FTC, 2005).

Use of decision aids

Prior research suggests that older adults spontaneously design and use decision aids. Price et al. (2000) found that consumers who were deciding how to dispose of their possessions recognized that writing down information, such as what the possessions mean and who would receive them, facilitated the disposition decision for both the donor and recipient. An experimental study suggested that older consumers with expertise are especially skilled at designing decision aids that incorporate visual symbols (Morrow et al., 2003).

Decision aids designed by third parties can also facilitate older adults' decision making. For example, Cole and Gaeth (1990), in a study on how consumers use nutritional information, boxed relevant information and asked 75 consumers (aged 48–89) to cross out the irrelevant information before making a choice. They found that this decision aid most helped those with moderate, but not weak or superior perceptual disembedding abilities. Because there was a significant correlation between age and field dependence ($r = .33$, $p < .05$), the authors concluded that the aid improved the accuracy of older adults. Similarly, Cole and Balasubramanian (1993) improved decision making of older adults by asking them to write information down.

Future research is needed to examine how older consumers spontaneously design decision aids for a variety of consumer tasks, which is a topic listed as an area of high priority by the National Research Council (2000). Another important research question to investigate is the types of decision aids that are useful for older adults, particularly in resource-demanding consumer environments.

Both marketing managers and public policy agencies can also play a role in developing decision aids. Public policy groups and industry associations face the additional challenges of regulating the marketing activities surrounding decision aids, including specifying technical standards, establishing guidelines, and monitoring marketing communications.

Delegation of decisions

A number of studies report that older adults are willing to delegate decision making in a variety of contexts by relying on other people for all or part of the decision (Burak, George, and Gurney, 2000; Finucane et al., 2005; Greene, 2005; Price et el., 2000). In the Price et al. (2000) study, at least one informant indicated that she would delegate the disposition decision for her jewelry to her daughter-in-law. In a larger scale study, both Burak et al. (2000) and Finucane et al. (2005) uncovered an age-related increase in willingness to delegate decisions. Burak et al. (2000) found that among women with a mammogram in the preceding year, the weighted percentage of women reporting active involvement in the decision to have the mammogram (patient decision or joint decision with a physician) declined from 51%, among women 40 to 45 years of age, to 19%, among those 75 or older. In a post-decision survey, Finucane et al. (2005) found that older adults (65–94) indicated higher willingness to delegate on an eight-item scale (with items such as "When choosing a Medicare health plan I prefer to not have the responsibility for choosing") than the younger adults (18–64).

From a managerial perspective, older consumers may be an appropriate market for agents or surrogate shoppers (Hollander and Rassuli, 1999; Solomon, 1986). Growing use of surrogates has important implications for producers, wholesalers and retailers, who will need to identify and direct marketing effort to the surrogates (Solomon, 1986). Additionally, organizations that provide surrogates as part of their service, such as in a medical setting, need to weigh the costs in terms of staff training and time against the potential benefits.

At the same time, regulators may need to monitor surrogates for deceptiveness and fraudulent activities. Consumer education could emphasize how to monitor and delegate to surrogates. It is likely that surrogate services might arise to monitor the performance of other surrogates (Solomon, 1986) and that licensing agencies may be created to certify surrogate services.

A further public policy implication that is relevant here has to do with the setting of default options. Extant studies on the framing of default options show that opt-out programs, where the default choice is one of participation unless otherwise requested, have higher rates of participation compared to opt-in programs. One study found that this occurs even with a non-trivial decision involving organ donation, with 42% of respondents presented with an opt-in question consenting to being donors, compared to 82% when an opt-out question was presented instead and 79% when there was no default and requiring an explicit choice (Johnson and Goldstein, 2003). Likewise, in the domain of retirement plans, participation rates tend to be significantly higher when the default is one of automatic enrollment, even when the plan is one that is clearly beneficial to participants (cf. Benartzi and Thaler, 2007). Older adults' willingness to delegate suggests a greater tendency, relative to the general population, to adopt default options and suggests that policy makers should scrutinize what organizations set as default options in their offerings to older consumers. It may be in their interests to enforce a default in cases where one option is clearly superior. Future studies are needed to investigate the degree to which older adults do, in fact, rely more on defaults and to examine the limits of delegation and the tasks and contexts in which older consumers prefer to make decisions themselves.

Training

Older adults can both rely on existing knowledge, and also acquire new information to guide their consumer decision making (Willis, Tennstedt, Mariske, Ball, and Elias, 2006; Gaeth and Heath, 1987). A study by Willis et al. (2006), conducted over five years (1998 to 2004) on 2832 adults over the age of 65, indicates that training on memory, reasoning and speed of processing can improve older adults' performance on tests of cognitive skills for at least five years. Although these results are encouraging, few marketing studies have investigated the long term impact of consumer training on elderly adults. Research is needed to uncover what training methods are effective in improving decision making among older as well as younger consumers. Gaeth and Heath (1987) successfully developed an interactive training program to reduce susceptibility to false advertising claims in older adults, and found that the training reduced susceptibility to misleading statements in both older and younger consumers, but it also reduced the younger adults' ability to discriminate between non-misleading and potentially misleading claims.

Future research is needed to investigate how training can benefit older consumers in the persuasion knowledge domain. For example, how can older adults be trained to use knowledge about persuasion tactics to guard against making bad decisions, especially in low fit situations such as when they are under time pressure or when distracting information is present (Campbell and Kirmani, 2000; Friestad and Wright, 1994)? Knowledge gained from understanding how training can help older adults can also be fruitfully applied to facilitating older adults' adoption of new products and new technologies.

Conclusions

In the present paper, we reviewed the literature on aging and decision making, and presented a framework focused around the degree of fit between the person and the context. The framework suggests that individual characteristics such as age, health status and cohort influence the abilities and resources that a consumer brings to bear on a decision, and that task and contextual factors affect the demands that are placed on these resources as people age. This allowed us to account for individual differences in abilities as people age that cannot be strictly attributed to age-based decrements in cognition as many prior studies have assumed. We took the perspective that more satisfactory decision making occurs when the capabilities of the individual match the environmental demands. Hence, for a broad variety of everyday tasks and contexts, older adults, with greater consumer experience and expertise, may be quite competent in making decisions. In contrast, even the most capable individuals would appear to be less competent when the environmental demands exceed their abilities. However, in such low person–context fit situations, the older consumers appear to be creative in how they adapt. These strategies were discussed. We then considered some implications of the model for future research, marketing management and public policy.

There are several general topic areas in need of more research. First, there is a need to assess the circumstances under which consumer knowledge compensates for cognitive declines. Second there is a need to identify and assess the effectiveness of different consumer adaptations. In consumer decision making research, a complex question emerges about how to define decision effectiveness. Thus a third area in need of research involves establishing a multi-dimensional measure of consumer decision effectiveness that includes measures such as the number of solutions generated in response to a problems, independent judges' assessments of decision quality, the degree of response accuracy relative to some criteria, satisfaction with the outcome, decision consistency (defined as the ability to integrate information in an internally consistent manner), comprehension of information and decision efficiency (defined as the ratio of outcome quality (output) to effort (input)) (Finucane et al., 2005; Thornton and Dumke, 2005). Fourth, because age-related changes do not occur at the same rate for everyone (nor do all the changes occur in everyone), and because there are considerable differences in goals and health status in different cohorts, there is substantial heterogeneity in the older market. For example, the abilities that baby boomers bring to bear on consumer decisions involving health and financial decision making would be expected to be quite different from those of older cohorts with limited mobility and resources. Thus an important recommendation for future research is to shift from studies comparing older and younger consumers to studies identifying differences within the older market.

Because of the complex decisions that consumers make, we recommend that researchers employ multiple methods, including cohort analyses, ethnographic research, laboratory and field experiments and surveys. The strengths of one method can compensate for the weaknesses in another. Cohort analyses can separate the effects of cohort, age and time period on consumer behavior. A stumbling block has been the unavailability of appropriate data sets. However, as researchers build longitudinal data sets from scanner panels, there will be additional opportunities to apply cohort data analysis techniques to disentangle the effects of age, cohort and time period. Discovery-oriented approaches, such as ethnographic research, can shed considerable light on the cognitive predilections, decision rules and trade-offs and coping behaviors of older consumers (Price et al., 2000; Kirmani and Campbell, 2004), but experiments may be better suited to identifying conditions when experience and adaptations lead to better decisions. Experimental studies of aging can pin down alternative explanations for phenomena, but they tend to sacrifice external validity in favor of internal validity. Survey research may shed light on older consumer decision making and adaptation, but as Schwarz (2003) has pointed out, much of survey data from the elderly are elicited via retrospective behavioral reports, which may be biased to the extent that older adults have to rely on age-sensitive cognitive processes to report their answers to the researcher. We suggest that new and richer insights about consumer decision making are likely to emerge in more natural consumer contexts if researchers employ multiple research methods.

For marketing and public policy managers there are several implications. First, because the older market is very heterogeneous, managers may want to consider abandoning the age variable as a segmentation variable in the adult market. Instead, they might develop segmentation schemes that include cohort, health status, goals, and expertise as well as task and context characteristics. Second, managers need to better understand the adaptations that consumers employ because this information should not only influence the marketing mix, but it should also guide intervention strategies. Finally, from a public policy perspective, if we are to have older adults successfully meet the challenges of a rapidly changing and increasingly complex consumer environments, greater attention needs to be paid to education and training programs for older adults.

References

AARP. (1996). Findings from a baseline omnibus survey on telemarketing solicitations 1909 K Street NW, Washington DC 20049: Consumer Affairs, AARP.

AARP. (2005). The state of 50+ America 1909 K Street NW, Washington DC 20049: Consumer Affairs, AARP.

Benartzi, S., & Thaler, R. H. (2007). Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, *21*(3), 81−104.

Bodenhausen, G. V. (1990). Stereotypes as judgmental heuristics: Evidence of circadian variations in discrimination. *Psychological Science*, *1*(5), 319−322.

Brown, S., Kozinets, R. V., & Sherry, J. F., Jr. (2003). Teaching old brands new tricks: Retro branding and the revival of brand meaning. *Journal of Marketing*, *67*, 19−33 (July).

Burak, R., George, J., & Gurney, J. (2000). Mammography use among women as a function of age and patient involvement in decision making. *Journal of the American Geriatric Society*, *48*, 817−821 (July).

Cabeza, R., McIntosh, A. R., Tulving, E., Nyberg, L., & Grady, C. L. (1997). Age-related differences in effective neural connectivity during encoding and recall. *NeuroReport*, *8*(16), 3479−3483.

Campbell, M. C., & Kirmani, A. (2000). Consumers' use of persuasion knowledge: The effects of accessibility and cognitive capacity on perceptions of an influence agent. *Journal of Consumer Research*, *27*, 69−83 (June).

Carrigan, M., & Szmigin, I. (2000). Advertising in an ageing society. *Ageing and Society*, *20*(2), 217−233.

Carstensen, L., Fung, H. H., & Turk-Charles, S. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, *27*, 103−123 (June).

Castel, A. D. (2005). Memory for grocery prices in younger and older adults: The role of schematic support. *Psychology and Aging*, *20*(4), 718−721.

Centers for Disease Control (CDC). (1999). National Center for Chronic Disease Prevention and Health Promotion, Chronic Disease notes and reports: Special focus. *Healthy Aging*, *12*, 3.

Chasteen, A. L., Schwarz, N., & Park, D. C. (2002). The activation of aging stereotypes in younger and older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *57*(6), P540−P547.

Colcombe, S., & Kramer, A. F. (2003). Fitness effects on the cognitive function of older adults: A meta-analytic study. *Psychological Science*, *14*, 125−130 (March).

Cole, C. A., & Balasubramanian, S. K. (1993). Age differences in consumers' search for information: Public policy implications. *Journal of Consumer Research*, *20*, 157−169 (June).

Cole, C. A., & Gaeth, G. J. (1990). Cognitive and age-related differences in the ability to use nutritional information in a complex environment. *Journal of Marketing Research*, *17*, 175−184 (May).

Cole, C. A., & Houston, M. J. (1987). Encoding and media effects on consumer learning deficiencies in the elderly. *Journal of Marketing Research*, *24*, 55−63 (February).

Damasio, A. R. (1994). Descartes error: emotion, reason and the human brain New York: Avon.

Davidson, C. (2005). In the service of baby boomers: A seismic mind shift for financial service providers. *The CPA Journal*, *75*, 18−19 (September).

Denburg, N. L., Tranel, D. T., & Bechara, A. (2005). The ability to decide advantageously declines prematurely in some older persons. *Neuropsychologia*, *43*(7), 1099−1106.

Department of Health and Human Services (2007), "A Profile of Older Americans: 2007," (accessed March 3, 2008), [available at http://www.aoa.gov/prof/Statistics/profile/2007/2007profile.pdf].

Earles, J. L., Kersten, A. W., Mas, B. B., & Miccio, D. M. (2004). Aging and memory for self-performed tasks: Effects of task difficulty and time pressure. *The Journals of Gerontology: Psychological Sciences and Social Sciences*, *59B*(6), P285−P293.

Federal Trade Commission (FTC, 2005), "Disclosing Energy Efficiency Information: A Guidelines for Online Sellers of Appliances," (accessed August 1, 2005), [available at *http://www.ftc.gov/bcp/conline/pubs/buspubs/onlappl.htm*].

Finucane, M., Mertz, C. K., Slovic, P., & Schmidt, E. S. (2005). Task complexity and older adults' decision-making competence. *Psychology and Aging*, *20*, 71−84 (March).

Fleischmann, D. A., Wilson, R. S., Garbrieli, J. D. E., Bienias, J. L., & Bennett, D. A. (2004). A longitudinal study of implicit and explicit memory in old persons. *Psychology and Aging*, *19*(4), 617−625.

Fozard, J. L., & Gordon-Salant, S. (2001). Sensory and perceptual changes with aging. In J. E. Birren, & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (pp. 241−266)., 5th ed. San Diego: Academic Press.

Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research*, *21*, 1−31 (June).

Fung, H. H., & Carstensen, L. L. (2003). Sending memorable messages to the old: Age differences in preferences and memory for advertisements. *Journal of Personality and Social Psychology*, *85*, 163−178 (July).

Gaeth, G. J., & Heath, T. B. (1987). The cognitive processing of misleading advertising in young and old adults. *Journal of Consumer Research*, *14*, 43−54 (June).

Gigerenzer, G., & Goldstein, D. G. (1996). Reasoning the fast and frugal way: Models of bounded rationality. *Psychological Review*, *103*(4), 650−669.

Glisky, E. L., Rubin, S. R., & Davidson, P. S. R. (2001). Source memory in older adults: An encoding or retrieval problem? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *27*(5), 1131−1146.

Goldstein, S. (1968). The aged segment of the market, 1950 and 1960. *Journal of Marketing*, *32*, 62−68 (April).

Graf, P., & Schacter, D. L. (1985). Implicit and explicit memory for new associations in normal and amnesic subjects. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *11*(3), 501−518.

Greene, Kelly (2005), "Encore (A Special Report); When We're all 64," *The Wall Street Journal*, September 26, 2004 R1.

Hasher, L., & Zacks, R. T. (1988). Working memory, comprehension and aging: A review and a new view. In G. H. Bower (Ed.), *The psychology of learning and motivations: advances in research and theory*, *Vol. 22*. (pp. 193−225) San Diego, CA: Academic Press.

Hasher, L., Zacks, R. T., & May, C. P. (1999). Inhibitory control, circadian arousal, and age. In D. Gopher, & A. Koriat (Eds.), *Attention and performance, XVII, Cognitive regulation of performance: interaction of theory and application* (pp. 653−657). Cambridge, MA: MIT Press.

Hedden, T., & Park, D. C. (2003). Contributions of source and inhibitory mechanisms to age-related retroactive interference in verbal working memory. *Journal of Experimental Psychology: General*, *132*(1), 93−112.

Hedden, T., & Yoon, C. (2006). Individual differences in executive processing predict susceptibility to interference in verbal working memory. *Neuropsychology*, *20*(5), 511−528.

Hess, T. M. (2005). Memory and aging in context. *Psychological Bulletin*, *131* (3), 383−406.

Hess, T. M., Rosenberg, D. C., & Waters, S. J. (2001). Motivation and representational processes in adulthood: The effects of social accountability and information relevance. *Psychology and Aging*, *16*(4), 629−642.

Hibbard, J. H., & Peters, E. (2003). Supporting informed consumer health care decisions: Data presentation approaches that facilitate the use of information in choice. *Annual Review of Public Health*, *24*, 413−433.

Holbrook, M., & Schindler, R. (1989). Some exploratory findings on the development of musical taste. *Journal of Consumer Research*, *16*, 119−125 (June).

Hollander, S. C., & Rassuli, K. M. (1999). Shopping with other people's money: The marketing management implications of surrogate-mediated consumer decision making. *Journal of Marketing*, *63*, 102−118 (April).

Jacoby, L. L., & Dallas, M. (1981). On the relationship between autobiographical memory and perceptual learning. *Journal of Experimental Psychology: General*, *110*(3), 306−340.

Jacoby, L. L., Kelley, C. M., & Dywan, J. (1989). Memory attributions. In H. L. RoedigerIII, & F. I. M. Craik (Eds.), *Varieties of memory and consciousness: essays in honour of endel tulving* (pp. 391−422). Hillsdale, NJ: Erlbaum.

Johnson, E. J., & Goldstein, D. (2003). Do defaults save lives. *Science*, *302*, 1338−1339.

Johnson, K. D. (2004). Financial crimes against the elderly. *Problem-oriented guides for police, problem-specific guides series*, *No. 20*. (pp.)Washington, D.C.: U.S. Department of Justice, Office of Community Oriented Policing Services.

Johnson, M. M. (1990). Age differences in decision making: A process methodology for examining strategic information processing. *Journals of Gerontology: Psychological Sciences*, *45*, 75−78 (March).

Jopp, D., & Smith, J. (2006). Resources and life management strategies as determinants of successful aging: the protective effect of selection, optimization and compensation. *Psychology and Aging*, *21*(2), 253−265.

Kemper, S., & Harden, T. C. (1999). Experimentally disentangling what's beneficial about elderspeak from what's not. *Psychology and Aging*, *14*(4), 656−670.

Kemper, S., & Kemtes, K. (2000). Aging and message production and comprehension. In D. C. Park, & N. Schwarz (Eds.), *Cognitive aging: a primer* (pp. 197−213). New York, NY: Psychology Press.

Kerr, W. C., Greenfield, T. K., Bond, J., Ye, Y., & Rehm, J. (2004). Age, period and cohort influences on beer, wine and spirits consumption trends in the US national alcohol surveys. *Addiction*, *99*(9), 1111−1120.

Kim, S., Goldstein, D., Hasher, L., & Zacks, R. T. (2005). Framing effects in younger and older adults. *Journals of Gerontology: Psychological Sciences and Social Sciences*, *60B*(5), P215−P218.

Kirmani, A., & Campbell, M. C. (2004). Goal seeker and persuasion sentry: How consumer targets respond to interpersonal marketing persuasion. *Journal of Consumer Research*, *31*, 573−582 (December).

Labouvie-Vief, G. (1998). Cognitive–emotional integration in adulthood. *Annual Review of Gerontology and Geriatrics*, *17*, 206−237.

Lambert-Pandraud, R., Laurent, G., & Lapersonne, E. (2005). Repeat purchasing of new automobiles by older consumers: Empirical evidence and interpretations. *Journal of Marketing*, *69*, 97−113 (April).

Law, S., Hawkins, S. A., & Craik, F. I. M. (1998). Repetition-induced belief in the elderly: Rehabilitating age-related memory deficits. *Journal of Consumer Research*, *25*, 91−107 (September).

Levy, B., & Langer, E. (1994). Aging free from stereotypes: Successful memory in china and among the american deaf. *Journal of Personality and Social Psychology*, *66*(6), 989−997.

Light, L. L., Singh, A., & Capps, J. L. (1986). The dissociation of memory and awareness in young and old adults. *Journal of Clinical & Experimental Neuropsychology*, *8*(1), 62−74.

Lustig, C., May, C. P., & Hasher, L. (2001). Working memory span and the role of proactive interference. *Journal of Experimental Psychology: General*, *130*(2), 199−207.

Mather, M., & Johnson, M. (2000). Choice-supportive source monitoring: Do our decisions seem better to us as we age? *Psychology and Aging*, *15*(4), 596−606.

Mathur, A., & Moschis, G. P. (2005). Antecedents of cognitive age; A replication and extension. *Psychology and Marketing*, *22*(12), 969−994.

May, C. P., Hasher, L., & Stoltzfus, E. (1993). Optimal time of day and the magnitude of age differences in memory. *Psychological Science*, *4*, 326−330 (February).

McKuen, Pamela Dittmer (2001, October 24), "Stores Offer Discounts, But Not Everyone Bites," *Chicago Tribune*, retrieved March 27, 2007, from http://www.soldonseniors.com/Tribune.htm

McManis, S. (2005). Working for the man; what sellout? Rock stars now eager to license songs to advertisers. *Sacramento Bee*, *29* November 2005.

Mitchell, D. B., & Bruss, P. J. (2003). Age differences in implicit memory: Conceptual, perceptual, or methodological? *Psychology and Aging*, *18*(4), 807−822.

Morgan, C. M., & Levy, D. J. (2002). *Marketing to the Mindset of Boomers and Their Elders*. St. Paul, MN: Attitudebase.

Morrow, D. G., Von Leirer, O., Andrassy, J. M., Tanke, E. D., & Stine-Morrow, E. A. L. (1996). Medication instruction design: Younger and older adults schemas for taking medication. *Human Factors*, *38*(4), 556−573.

Morrow, D. G., Ridolfo, H., Menard, W., Sanborn, A., Stine-Morrow, E., Magnor, C., Herman, L., Teller, T., & Bryan, D. (2003). Environmental support promotes expertise-based mitigation of age differences on pilot communication tasks. *Psychology and Aging*, *18*(2), 268−284.

Moscovitch, M., & Winocur, G. (1995). Frontal lobes, memory, and aging. *Annals of the New York Academy of Sciences*, *769*, 119−150 (December).

Myles-Worsley, M., Johnston, W. A., & Simons, M. A. (1988). The influence of expertise on X-ray image processing. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *14*(3), 553−557.

National Research Council. (2000). *The aging mind: opportunities in cognitive research.* Committee on Future Directions for Cognitive Research on Aging. In P. Stern, & L. Carstensen (Eds.), *Commission on Behavioral and Social Sciences and Education* Washington DC: National Academy Press.

Nevius, C.W. (2007, February 25). "It's baby boomers vs. old timers at retirement communities. *San Francisco Chronicle*. Retrieved February 28, 2007, from http://www.sfgate.com

Norman, K. A., & Schacter, D. L. (1997). False recognition in younger and older adults: Exploring the characteristics of illusory memories. *Memory and Cognition*, *25*(6), 838−848.

Packaged Facts. (2006). Marketlooks: baby boomer market New York: MarketResearch.com: New York.

Palmore, E. (1978). When can age, period and cohort be separated? *Social Forces*, *57*(1), 282−295.

Park, C. W., Iyer, E. S., & Smith, D. (1989). The effects of situational factors on in-store grocery shopping. *Journal of Consumer Research*, *15*, 422−433 (March).

Park, D. C. (1999). Aging and the controlled and automatic processing of medical information and medical intentions. In D. C. Park, K. Shifrin, & R. W. Morrell (Eds.), *Processing of Medical Information in Aging Nations* (pp. 3−22). Mahwah, NJ: Erlbaum.

Park, D. C., Lautenschlager, G., Hedden, T., Davidson, N. S., Smith, A. D., & Smith, P. K. (2002). Models of visuospatial and verbal memory across the adult life span. *Psychology and Aging*, *17*(2), 299−320.

Park, D. C., Royal, D., Dudley, W., & Morrell, R. (1988). Forgetting of pictures over a long retention interval in young and older adults. *Psychology and Aging*, *3*(1), 94−95.

Phillips, L. W., & Sternthal, B. (1977). Age differences in information processing: A perspective on the aged consumer. *Journal of Marketing Research*, *19*, 444−457 (November).

Price, L. L., Arnould, E. J., & Curasi, C. F. (2000). Older consumers' disposition of special possessions. *Journal of Consumer Research*, *27*, 179−201 (September).

Rahhal, T. A., May, C. P., & Hasher, L. (2002). Truth and character: Sources that older adults can remember. *Psychological Science*, *13*, 101−105 (March).

Rentz, J. O., & Reynolds, F. D. (1991). Forecasting the effects of an aging population on product consumption: An age–period–cohort framework. *Journal of Marketing Research*, *28*, 335−360 (August).

Reyna, V. F. (2004). How people make decisions that involve risk: A dual-processes approach. *Current Directions in Psychological Science*, *13*(2), 60−66.

Reyna, V. F., & Brainerd, C. J. (1995). Fuzzy-trace theory: an interim synthesis. *Learning and Individual Differences*, *7*(1), 1−75.

Riggle, E. D. B., & Johnson, M. M. (1996). Age differences in political decision making: Strategies for evaluating political candidates. *Political Behavior*, *18*(1), 99−118.

Roberts, S. D., & Zhou, N. (1997). The 50 and older characters in the advertisements of modern maturity: Growing older, getting better? *Journal of Applied Gerontology*, *16*(2), 208−217.

Roedder John, D., & Cole, C. A. (1986). Age differences in information processing: Understanding deficits in young and elderly consumers. *Journal of Consumer Research*, *13*, 297−315 (December).

Rogowski, J., Lillard, L. A., & Kington, R. (1997). The financial burden of prescription drug use among elderly persons. *The Gerontologist*, *37*(4), 475−482.

Salthouse, T. A. (1996). The processing-speed theory of adult age differences in cognition. *Psychological Review*, *103*(3), 403−428.

Schewe, C. D., & Meredith, G. (2004). Segmenting global markets by generational cohorts: determining motivations by age. *Journal of Consumer Behavior*, *4*, 51−63 (October).

Schwarz, N. (2003). Self-reports in consumer research: The challenge of comparing cohorts and cultures. *Journal of Consumer Research*, *29*, 588−594 (March).

Schwarz, N., Sanna, L. J., Skurnik, I., & Yoon, C. (2007). Metacognitive experiences and the intricacies of setting people straight: Implications for debiasing and public information campaigns. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology*, *39*. (pp. 127−161).

Shiv, B., & Nowlis, S. M. (2004). The effect of distractions while tasting a food sample: The interplay of informational and affective components in subsequent choice. *Journal of Consumer Research*, *31*, 599−699 (December).

Skurnik, I., Yoon, C., Park, D. C., & Schwarz, N. (2005). How warnings become recommendations: Paradoxical effects of warnings on beliefs of older consumers. *Journal of Consumer Research*, *31*, 713−724 (March).

Solomon, M. R. (1986). The missing link: Surrogate consumers in the marketing chain. *Journal of Marketing*, *50*, 208−218 (October).

Spencer, W. D., & Raz, N. (1995). Differential effects of aging on memory for content and context: A meta-analysis. *Psychology and Aging*, *10*(4), 527−539.

Tepper, K. (1994). The role of labeling processes in elderly consumers' responses to Age segmentation cues. *Journal of Consumer Research*, *20*(50) (March).

Thornton, W., & Dumke, H. (2005). Age differences in everyday problem-solving and decision making effectiveness: A meta-analytic review. *Psychology and Aging*, *20*(1), 85−99.

Tréguer, J. -P. (2002). *50+ Marketing.* New York: Palgrave MacMillan.

Wahlin, A., Macdonald, S., deFrias, C., Nilsson, L. -G., & Dixon, R. (2006). How do health and biological age influence chronological age and sex differences in cognitive aging: moderating, mediating, or both. *Psychology and Aging*, *21*(2), 318−331.

Waldstein, S. (2000). Health effects on cognitive aging. In P. C. Stern, & L. L. Carstensen (Eds.), *The Aging Mind: Opportunities in Cognitive Research* National Research Council: National Academy Press.

West, R. L. (1996). An application of prefrontal cortex function theory to cognitive aging. *Psychological Bulletin*, *120*(2), 272−292.

Wheeler, S. C., & Petty, R. E. (2001). The effects of stereotype activation on behavior: A review of possible mechanisms. *Psychological Bulletin*, *127*(6), 797−826.

Williams, P., & Drolet, A. (2005). Age-related differences in responses to emotional advertisements. *Journal of Consumer Research*, *32*, 343−354 (December).

Willis, S., Tennstedt, S., Mariske, M., Ball, K., Elias, J., Koepke, K. M., Morris, J., Rebok, G., Unverzagt, F., Stoddard, A., & Wright, E. (2006). Long-term effects of cognitive training on everyday functional outcomes in older adults. *JAMA*, *296*, 2805−2814 (December 20).

Yntema, S. (2001). *Americans 55 & Older: A Changing Market* (3rd ed.). Ithaca, NY: New Strategist Publications.

Yoon, C. (1997). Age differences in consumers' Fig. 1 processing strategies: An investigation of moderating influences. *Journal of Consumer Research*, *24*, 329−342 (December).

Yoon, C., May, C. P., Goldstein, D., & Hasher, L. (forthcoming). "Aging, Circadian Arousal Patterns and Cognition," In D. C. Park & N. Schwarz (Eds.), *Cognitive Aging: A Primer* (2nd ed.). Philadelphia, PA: Psychology Press.

Yoon, C., Lee, M. P., & Danziger, S. (2007). The Effects of optimal time of day on persuasion processes in older adults. *Psychology and Marketing*, *24*, 475−495 (May).

Yoon, C., Hasher, L., Feinberg, F., Rahhal, T. A., & Winocur, G. (2000). Cross-cultural differences in memory: The role of culture-based stereotypes about aging. *Psychology and Aging*, *15*(4), 694−704.