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Gist-Based Memory for Prices and 'Better Buys' in Younger and Older Adults

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Abstract

Aging typically leads to various memory deficits which results in older adults' tendency to remember more general information and rely on gist memory. The current study examined if younger and older adults could remember which of two comparable grocery items (e.g., two similar but different jams) was paired with a lower price (the "better buy"). Participants studied lists of grocery items and their prices, in which the two items in each category were presented consecutively (Experiment 1), or separated by intervening items (Experiment 2). At test, participants were asked to identify the "better buy" and recall the price of both items. There were negligible age-related differences for the "better buy" in Experiment 1, but age-related differences were present in Experiment 2 when there were greater memory demands involved in comparing the two items. Together, these findings suggest that when price information of two items can be evaluated and compared within a short period of time, older adults can form stable gist-based memory for prices, but that this is impaired with longer delays. We relate the findings to age-related changes in the use of gist and verbatim memory when remembering prices, as well as the associative deficit account of cognitive aging.

Keywords

memory; aging; gist-based memory; associative memory; value

We often encounter vast amounts of numerical information and need to retain portions of that information in order to guide behavior, such as when comparing prices in order to make an informed purchase. Given that older adults have various deficits in episodic and associative memory (Naveh-Benjamin, 2000), the ability to remember the costs of certain products (or at least their relative price, compared to other brands of the same item) may be impaired with age. However, older adults may use forms of schematic support to remember certain kinds of associations in context (Hess, 2005; Umanath & Marsh, 2014). Older adults can remember information that is related to previously-learned semantic knowledge (e.g., Hess & Slaughter, 1990; see also Kan, Alexander, & Verfaellie, 2009) and information that is consistent with relevant real-world conditions (Hess, 2005). Castel (2005) found that older

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adults, compared to younger adults, were equally able to remember market prices of grocery items (e.g., pickles $3.79), but were impaired for unrealistic pairings (e.g., ice cream $17.59), suggesting that prior knowledge, expectations, and goals may have a substantial impact on older adults' associative memory (see also Castel, McGillivray, & Worden, 2013; Mohanty, Naveh-Benjamin, & Ratneshwar, 2016). However, in Castel (2005), age-related differences in remembering gist regarding the prices was not impaired in older adults, as both the younger and older adults could recall that the ice cream was over-priced and the pickles were priced at market value.

Older adults may rely more on gist-based memory (a highly abstracted and semantically-rich representation of the past) relative to more specific verbatim memory (memory for the exact sensory inputs of a given situation in the past), while younger adults may rely on both in different situations (e.g., Reder, Wible, & Martin, 1986). Fuzzy-trace theory (Brainerd & Reyna, 2001) suggests that, with age, the ability to retain verbatim information deteriorates more quickly than the ability to retain gist information (e.g., Schacter, Koutstaal, Johnson, Gross & Angell, 1997; Titcomb & Reyna, 1995; Tun, Wingfield, Rosen & Blanchard, 1998). Castel (2005) found that while older adults often forgot the exact price of overpriced items, they could remember the more general level information (e.g., that the ice cream was too expensive). Although gist memory can be a useful way of remembering information that cannot be recalled verbatim, it is imperfect by nature, and can lead to errors (Reyna, 1995), putting older adults at risk of confusing two similar items in memory. Even so, gist-based memory allows for the transfer of learning to new situations and to complex forms of thought such as using analogies and drawing inferences based on the classification of events and objects (e.g, Caplan & Schooler, 2001; Reder, Wible, & Martin, 1986).

The ability to switch between gist recall and verbatim recall is a critical function that has been referred to as "flexible remembering" (Koutstaal, 2006). Koutstaal (2006) has provided further evidence that older adults utilize gist-based representations, and that the ability to switch between these two forms of remembering is used by younger adults more than older adults. This suggests that gist-based processing may be a default mode of encoding and retrieval by older adults, even though older adults can and do encode details (Koutstaal, 2003; Light et al., 2000). Adams and colleagues (1991; Adams et al., 1997) have shown that older adults recall the gist of narrative text passages, as well as more interpretative information (such as metaphoric meaning), whereas younger adults are better at recalling specific details of the story. This pattern of results suggests that older adults use different strategies than their younger counterparts, especially in terms of the abstraction and retrieval of information requiring a gist-based understanding.

When encountering vast amounts of numerical information, older adults might quickly break down verbatim information to a more general, manageable gist-based form, such as remembering that a new television costs "about $1000", rather than the more specific (and accurate) price of $989. We seek to examine this in the context of older and younger adults' gist-based and verbatim, or exact, memory for everyday grocery items, to determine under what conditions participants can remember gist-based associative information that could potentially allow for more informed purchasing behavior. In the current experiments, we investigated whether older adults could pay attention to small price differences between similar items, and if the delay between the presentation of comparable items influenced the ability to remember gist-based associative information. Participants were asked to study various grocery items, keeping in mind that it would be most important to remember the item that cost less than a similar alternative. Building upon prior work, we expected both age groups to recall which item was less expensive due to reliance on gist memory. Because the task required comparisons between very similar items (e.g., two types of yogurt), participants were forced to first initially rely on exact memory representations of each item in order to determine the better buy. It would not be helpful, for example, to recall that yogurt was cheaper than cereal. It was important to maintain exact visual representations of similar items rather than, for example, just remembering that yogurt was presented.

When the two comparable items were presented in close temporal proximity (one after the other), we hypothesized that both younger and older adults may effectively remember the cheaper of the two items (Experiment 1). However, under conditions that did not facilitate comparisons between similar items, such as when there were intervening items (Experiment 2), we expected age-related differences may emerge, or be more pronounced. Building off of prior work (Castel, 2005), we wanted to determine if older adults would form gist-based memory for the “better buys” under conditions in which it was difficult to remember exact prices. Thus, unlike Castel (2005), in which participants studied items and prices, in the present task, participants had the dual goal of evaluating which of two items was less expensive, and also attempting to remember the price of both items. In addition, in the present study, we also selected a faster presentation rate compared to Castel (2005) in order to encourage participants to feel the need to selectively and strategically remember the better buy, and not necessary have sufficient time to accurately encode all of the exact prices.

Experiment 1

In Experiment 1, participants viewed a list of various grocery items and their associated prices. Participants were asked to imagine that they were grocery shopping and their objective was to purchase the lower-priced item in each category. They were informed that there were two similar grocery items per category (e.g. two different jams, two different jars of pasta sauce, etc.). The two comparable items were presented consecutively (see Figure 1a) in order to facilitate comparison. In addition to remembering which item from each category had the lower price, participants were asked to remember the exact prices associated with each item. At test, participants were shown all of the items in their corresponding pairs (e.g., the two jams; see Figure 1b) and were asked to identify which item was lower in price and to recall the price of each item.

Presenting the two comparable items in close temporal proximity (i.e., consecutively) may be representational of an everyday shopping experience, and was designed to facilitate the comparison of which item was less expensive (such as when comparing two items that are on the same shelf in a store). In addition, older adults may be able to engage in evaluative processing when the two items in question appear in a shorter temporal sequence, reducing memory demands during this time period. We hypothesized that under these conditions, older adults could engage in more efficient comparative and evaluative processing of the two related items and this would lead to a more stable gist-based memory for the item that was lower in price, possibly leading to small or negligible age-related differences in terms of memory for the better buy. For the pairs of items that varied more widely in price (by $1.50), we expected that gist memory would be sufficient to determine which item was less expensive (i.e., “about $3.00” versus “about $5.00”), while more exact recall would be required when similar items differed by a smaller amount ($0.50). We expected that although older adults would show impairments in the recall of exact prices, gist-based memory for which item was lower in price would be less impaired with age, and this would be most apparent for item pairs that differed widely in price.

Methods

Participants—Twenty younger adults (M_{age} = 20.90 years, SD = 2.63; 13 females and seven males) and twenty older adults (M_{age} = 77.25 years, SD = 7.65; 12 females and eight males) participated in the experiment. The younger adults were undergraduate students at the University of California, Los Angeles and participated for course credit. The older adults were from the Los Angeles area and were paid $10 for each hour of participation. All of the older adults reported to have high school and/or university education levels, ($M_{\text{years of education}}$ = 16.31 years, SD = 1.78). All older adults were in self-reported good health, lived independently in the community, and did not report taking any medication that would influence cognitive performance.

Methods—Each participant viewed 24 color photographs of common grocery items and their associated market value price. The size of the pictures was kept constant (approximately 4 x 4 inches) and the pictures were presented in the center of the computer screen for six seconds each. Each item had a corresponding price, which appeared directly above the picture in 44-point font. The 24 items belonged to 12 different categories of items: bagged salad, sandwich bread, butter, cereal, cookies, eggs, jam, milk, orange juice, pasta sauce, waffles, and yogurt. None of the grocery items were identical; rather, there were two similar items for each category, and all of the prices were unique. In six of the pairs, the price varied by a small amount ($0.50), and in the other six pairs, the price varied by a large amount ($1.50). The participants were not told that some pairs of items differed more or less in price. During the test phase, each pair of similar items appeared side by side in a random order and position (left or right) on each slide. An example of selected stimuli and presentation are shown in Figure 1a, and an example of the testing phase is shown in Figure 1b.

Procedure—Participants were seated in front of a computer and were asked to imagine that they were shopping for groceries and the objective was to remember the lower-priced item in each category. Participants were told that there were a total of 24 individual items that fell into 12 different categories. Participants were aware that there were two similar grocery items in each category, and that they would be presented one after the other. The two similar items in each category were visually distinguishable and differed in price by a large or small amount. After the study phase, the experimenter briefly explained the test instructions. At test, participants were shown 12 slides in a random order. Each test slide consisted of one pair of similar items and participants were instructed to indicate which of the two items had the lower price. If the participant could not remember which item had a lower price, he or she was asked to make a guess. The participant was then asked to recall the exact prices of both items or to make a guess if he or she could not remember. All responses were made verbally and recorded by the experimenter.

Results and Discussion

The number of lower-priced items correctly identified in a pair of similar items (12 pairs total) for younger and older adults are presented in Figure 2. A 2(younger versus older adults) × 2(small versus large price difference) mixed ANOVA was conducted and revealed that, overall, older adults' performance was comparable to younger adults in recall of which item was the "better buy" (M = 9.60, SD = 1.73 and M = 8.65, SD = 1.87 respectively), $F(1, 38) = 2.78$, MSE = 4.51, $p > .10$, $\eta^2 = .07$. There was no main effect of price difference, such that the proportion of items recalled when the difference in price was large was similar to when it was small (M = 4.75, SD = 1.08 and M = 4.38, SD = 1.23 respectively), $F(1, 38)$ = 2.79, MSE = 2.81, $p > .10$, $\eta^2 = .07$. Additionally, there was no significant interaction between price difference and age, $F < 1$. In terms of exact recall of prices for each item (see Table 1), there was no effect of price difference, $F(1, 38) = 2.78$, MSE = 2.45, $p = .10$, $\eta^2 = .07$, and no interaction between age group and price difference, $F < 1$. There was an effect of age on exact price recall, such that younger adults remembered more exact prices than older adults, $F(1, 38) = 6.79$, MSE = 20.00, $p = .01$, $\eta^2 = .18$. However, all participants struggled on the exact recall of prices, possibly because they were more engaged in remembering which item was less expensive, and not encoding the exact price, or not retaining the exact price information for the later memory test.

Experiment 2

In Experiment 1, in which the comparable items were presented in close temporal succession age-related differences in memory for the better buy were minimal. This may be due to processes that facilitated the comparison of the two items, such that participants did not have to retain the price of the first item in memory for a long period of time in order to compare it to the other item and decide which was less expensive. In Experiment 2, we used a randomized presentation, such that the two comparable items were not presented in close temporal succession. This was expected to create greater task demands that involved having to compare products and prices, and holding information in working memory for a substantial period, at least until the presentation of the other comparable item. To examine this issue, we used a similar procedure to Experiment 1 with one critical difference. Unlike Experiment 1, in which items from the same category were presented consecutively, in Experiment 2, the presentation of the two similar items was spaced apart in time, with intervening items appearing between the presentations of the two comparable items (see Figure 3a). Under these conditions, we hypothesized that younger adults would show better memory for which item was lower in price relative to older adults.

Method

Participants—Twenty younger adults (M_{age} = 21.25 years, SD = 2.22; 17 females and three males) and 20 older adults (M_{age} = 73.80 years, SD = 8.60; 14 females and six males) participated in the experiment. The younger adults were undergraduate students at the

University of California, Los Angeles and participated for course credit. The older adults were from the Los Angeles area, were paid $10 for each hour of participation, and reported to have high school and/or university education levels ($M_{\text{years of education}}$= 16.17, SD = 2.51). All older adults were in self-reported good health, lived independently in the community, and did not report taking any medication that would influence cognitive performance. None of the participants had participated in Experiment 1.

Materials and Procedure—The materials and procedure were identical to that of Experiment 1, but rather than presenting comparable items from the same category (e.g., the two types of orange juice) consecutively, the two items were presented in a randomized order, such that two items were never presented in close succession. There were always at least two intervening items separating the pairs of similar grocery items (the magnitude of temporal separation lacked meaningful effects). As in Experiment 1, all item pairs were tested in different randomized order, and participants had to identify the less expensive item and also recall (or make their best guess of) the prices of the two items before advancing to the next recall trial. See Figures 3a and 3b for example study and test items.

Results and Discussion

The number of lower-priced items identified correctly for younger and older adults are presented in Figure 4. A 2 (younger vs. older participants) × 2 (small vs. large price difference) mixed ANOVA was conducted and revealed an effect of age on recall accuracy. Overall, older adults recalled fewer items correctly than younger adults (M = 7.50, SD = 1.63 and M = 8.75, SD = 1.65 respectively), $F(1, 38) = 5.78$, $MSE = 15.63$, $p < .05$, $\eta^2 = .15$. There was also a potential trend of price difference, such that the number of cheaper items recalled was greater when the difference in price between competing items was large ($1.50) than when it was small ($0.50) ($M$ = 4.33, SD = 1.40 and M = 3.80, SD = .99, respectively), $F(1, 38) = 3.74$, $MSE = 5.51$, $p = .07$, $\eta^2 = .10$. For verbatim recall of prices, there was no effect of price difference, $F(1,38) = 1.22$, $MSE = 1.51$, $p = .28$, $\eta^2 = .03$ (see Table 1). There was no significant interaction between age and price difference, $F < 1$, and no effect of age group on exact price recall accuracy, $F < 1$. As in Experiment 1, it is important to note that all participants struggled on this task, again likely because they were more focused on retaining the better buy information, and perhaps “discarded” or soon forgot the exact prices after they initially encoded and compared them with the other item in question.

Participants were forced to hold items in memory before they had a chance to compare the first item with another similar item. At that point, the existing memory trace had to be updated to include which item was less expensive. Older adults made more mistakes than younger adults when deciding which item had the lower price, which suggests that the ability to hold each item in working memory for a period of time (i.e., for at least two intervening items) declines with age. The trend of price difference on recall accuracy of the less expensive item suggests that participants are sensitive to higher and lower “savings” associated with a pair of items, and tend to remember those with the largest price difference between the two items. Also, pairs that are separated by larger price differences may support the use of more gist-based processing than pairs with smaller price differences – for example, if one brand of orange juice cost $4.49 and the other cost $2.99, participants could use gist-based memory to remember that they cost "about \$4.00" and "about \$3.00." However, if the two juices cost \$2.99 and \$3.49, they could both be estimated to cost "about 3.00," decreasing the advantage of gist-based remembering. Additionally, the age equivalence in recall of exact prices may be due to a floor effect. Younger adults were not better than older adults at remembering exact prices. Very few exact prices were recalled, which suggests that younger and older participants may have prioritized and thus only remembered gist-based price information in order to make comparisons. Alternatively, participants may only have kept an item's exact price in working memory until presented with its alternative in order to determine which item was the "better buy."

Additionally, an ANOVA was conducted to examine how the effect of presentation method in Experiment 1 and Experiment 2 (i.e., sequential presentation of similar items vs random presentation) may differentially affect performance across age. This 2(random/interleaved versus sequential presentation) × 2(younger versus older adults) × 2(large versus small price difference) mixed ANOVA revealed a two-way interaction between age group and presentation method (random or sequential), $F(1,76) = 8.13$, $MSE = 12.10$, $p = .01$, $\eta^2 = .11$. There was also a significant main effect of price difference, such that gist-based recall for information associated with large price differences was remembered more accurately, $F(1,76) = 6.53$, $MSE = 8.10$, $p = .01$ $\eta^2 = .09$. There were no significant interactions between the size of price difference and age group, $F < 1$, or the size of price difference and presentation method, $F < 1$; there was also no significant three-way interaction between size of price difference, age group, and presentation method, $F < 1$.

When two items of the same category were presented consecutively, both younger and older adults could later identify the less expensive item with relatively high accuracy at test, in contrast to the findings from Experiment 2. This suggests that when older adults can maintain the two items in a working memory buffer to compare their prices, they can later remember which item was less expensive, eliminating age-related differences in accuracy. However, when the delay between presentations of the two items is greater in duration and working memory is engaged in encoding other price-item information (Experiment 2), older adults have reduced capacity to remember which items were less expensive. Older adults performed less accurately in recalling the exact prices of the items, suggesting that younger adults' more accurate verbatim memory provides them an advantage in this experiment. That is, once participants of both age groups saw both items in a category, they directed their effort to remembering the "better buy," which was readily salient. Given that older adults have less accurate verbatim memory and lower processing capacity, they may have directed less attention to encoding exact prices. Due to younger adults' higher processing capacity, they may have more easily and accurately encoded the exact price information and the "better buy" information simultaneously.

The significant interaction between presentation method and age group when comparing gist-based recall from Experiment 1 and Experiment 2 suggests that random and consecutive presentation of the prices of similar grocery items affects younger and older participants' gist-based memory differently (although a larger sample would further address issues related to power). Specifically, older adults benefitted more from consecutive presentation of similar grocery items than younger adults did, as compared to gist-based recall of grocery items presented randomly. While younger adults recalled grocery price information with relatively high accuracy regardless of presentation method, older adults were particularly affected by presentation method, displaying greater memory accuracy in Experiment 1 (sequential presentation) compared to lower memory accuracy in Experiment 2 (random presentation). Thus, it may be that the older adults' benefit from sequential presentation led to comparable performance to younger adults in Experiment 1.

General Discussion

The present study investigated the effects of reliance on gist memory when recalling information about similar and comparable grocery items. Taken together, the two experiments provide insight into the conditions under which younger and older adults remember which of two similar items is a "better buy." These findings have theoretical implications in terms of age-related differences and similarities in associative memory, as well as practical implications regarding how aging influences comparative shopping and consumer behavior.

In the present study, we found that there are some situations in which older adults' reliance on gist memory is not detrimental to performance. As shown in Experiment 1, when similar information is presented in close temporal proximity, it is easier to remember the differences between items. That is, the price information for the first item presented only needs to be attended to and held in working memory for a brief amount of time (until the next item is presented) in order to make a "better buy" decision. When similar items were presented consecutively, older and younger adults were able to better distinguish between the lower-priced and higher-priced items and identify a higher proportion of the items correctly at test. It is also possible that participants utilized their schematic knowledge of grocery shopping to remember price comparisons since similar items are placed together in typical shopping scenarios. A small difference in price versus a large difference in price did not seem to affect the performance of either younger adults or older adults, as it was easy to quickly distinguish which item was less expensive, and then just remember this item. Furthermore, overall age differences in memory performance were minimal and cannot be attributed to ceiling effects. In fact, older adults correctly identified more target items than their younger counterparts ($M = 9.60$ and $M = 8.65$, respectively), though this difference was not significant.

In contrast to Experiment 1, in Experiment 2, when the 24 items were presented randomly, older adults were significantly less accurate in correctly identifying the less expensive item than younger adults. In that experiment, the difference in performance may be due to similar items being presented further apart in time during the encoding phase, as there were a number of intervening items between any two similar items. Participants had to hold information about each item in mind for a longer period of time until a comparison of price could be made between two similar items. The size of the price difference affected performance in Experiment 2. Both younger and older adults correctly identified more items that had a large difference in price compared to pairs of items that had a small difference in price. Perhaps by the time the second item of a pair was presented, only the gist of the first item's price was available (or perhaps that was all that was encoded, as might be the case for older adults). Therefore, when the price differences were small, memory for the gist of the first item's price might not have been sufficient to make a comparison judgment about which item was less expensive.

It appears that large differences in price are only helpful in identifying the less expensive item when similar items are not presented consecutively. Perhaps, if the difference in price were exaggerated even more for the large difference condition (greater than $1.50) and the difference in price for the small difference condition were even smaller (less than $0.50), the effects of the price difference manipulation would be more observable. However, both age groups in Experiment 2 were sensitive to the values of the items, in that they did respond with higher prices when recalling the price of items that were originally more expensive, and lower prices when recalling the less expensive items, perhaps suggesting gist-based retention of value is maintained in older adults, despite deficits in recall of the exact prices (cf., Reder, Wible & Martin, 1986; Reyna & Brainerd; Tun, Wingfield, Rosen & Blanchard, 1998; see also Kan, Alexander, & Verfaellie, 2009). When the conditions are more representative of a typical shopping experience, older adults are able to overcome the deficit present in Experiment 2 by relying more on gist-based memory and schematic support (and less on working memory), and Experiment 1 may better simulate typical real-world conditions. It may also be the case that older adults were aware of the difficulty in remembering all of the exact prices, so they selectively focused on remembering only the less expensive items, thus reducing their memory load by half of the items, and enhancing memory for only the better buys. Anecdotally, several older participants said during encoding that they stopped trying to remember the exact prices as it was very difficult, and they wanted to focus on which items were the better buy. Further research could examine if inhibitory deficits may lead to encoding of less relevant prices, or if older adults can overcome any such deficits by strategically encoding only relevant prices that are consistent with their goals (cf. Castel, 2007).

While older adults performed more accurately in Experiment 1 compared to Experiment 2, younger adults gained no benefits in gist-based recall from sequential presentation of similar items, possibly because they did not employ any selective strategies. However, in both experiments, participants in both age groups struggled in recalling the exact price information for each item (with some participants in both groups not recalling any exact prices correctly). Although this is in contrast to prior work by Castel (2005), some important differences were present in the current paradigm: participants had relatively limited study time (six seconds) to encode prices and the better buy (compared to 10 seconds for each item in Castel, 2005), participants had a larger number of item prices to remember, not all prices ended in the digit 9, and their goals were to remember the better buys and the prices, as opposed to just the exact prices. Thus, under the present conditions that involve limited study time, the dual goals of remembering exact prices and better buys, and the potential for interference from similar prices and comparable items, it appears that recalling the exact prices can be very difficult for both younger and older adults.

The present study examined gist-based memory for item-price pairings in a situation that might mimic real-life decisions and have some level of schematic support (cf. Hess, 2005; Mohanty et al., 2016; Umanath & Marsh, 2014). People are likely already familiar with the incentive to pay attention to the prices of items and remember which items had lower prices; this appears to be maintained in old age, as older adults may have prior task success when remembering things such as which store has lower prices (Geraci & Miller, 2013). This may represent a compensatory strategy on the part of the older adults (e.g., West, 1996) to focus on general information, and may represent a form of memory that is spared in older adults (Zacks & Hasher, 2005). In real-world situations outside of a grocery store, similar information may not be presented consecutively (e.g., when comparing the prices of identical items across two stores or price comparing while shopping online). When this occurs, comparison of prices and benefits must be made even when information has been presented days apart, such as when considering different options for life insurance or bids for a roof repair. In this type of situation, older adults may struggle more to weigh their options and choose the "better buy", but may succeed if the options are presented simultaneously, or organized in a way that facilitates sequential comparison. There may also be costs involved in retaining gist-based information, such as remembering a credit card bill as being "about $500", when in fact one could later be overbilled if the exact price was inaccurate. Further investigation is needed to determine whether or not participants see the possible problems that may accompany relying on gist in situations in which the smallest details may have a large impact on final results, or if older adults simply feel (possibly as a result of impaired memory) that sometimes small details are not as critical to remember, relative to gist-based information.

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Figure 1a.
Example stimuli presented sequentially (i.e., similar products presented consecutively on individual slides as done during the study phase in Experiment 1) with example prices associated with each item.

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Figure 1b.
Example of one item in the test phase for Experiment 1.

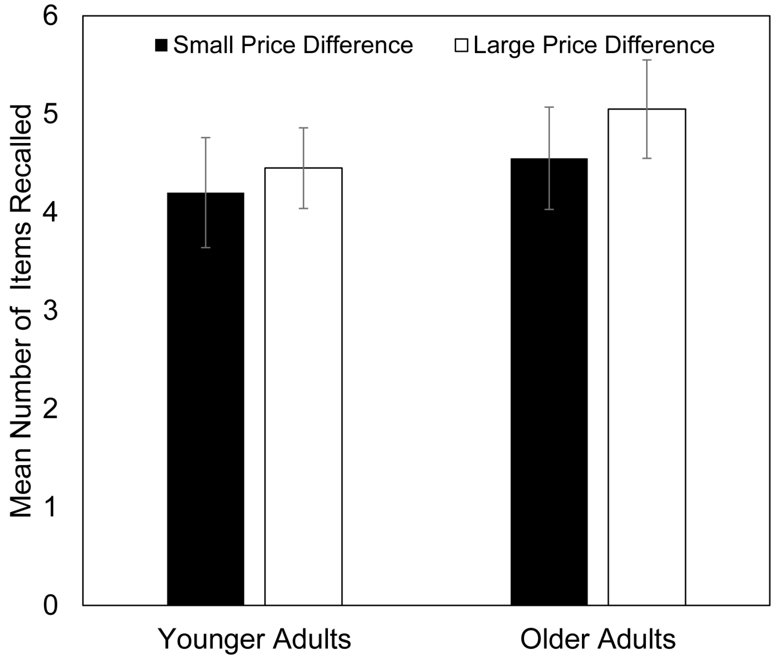

Figure 2.
Mean number of less-expensive ("better buy") items recalled by younger and older adults when there was a small or large difference in price between the two comparable items in Experiment 1, in which comparable items were presented in sequential order. Error bars represent 95% confidence intervals.

Figure 3a.

Example stimuli presented randomly (i.e., similar products not presented consecutively) on individual slides with example prices associated with each item (as in Experiment 2).

Figure 3b.
Example of one item in the test phase for Experiment 2.

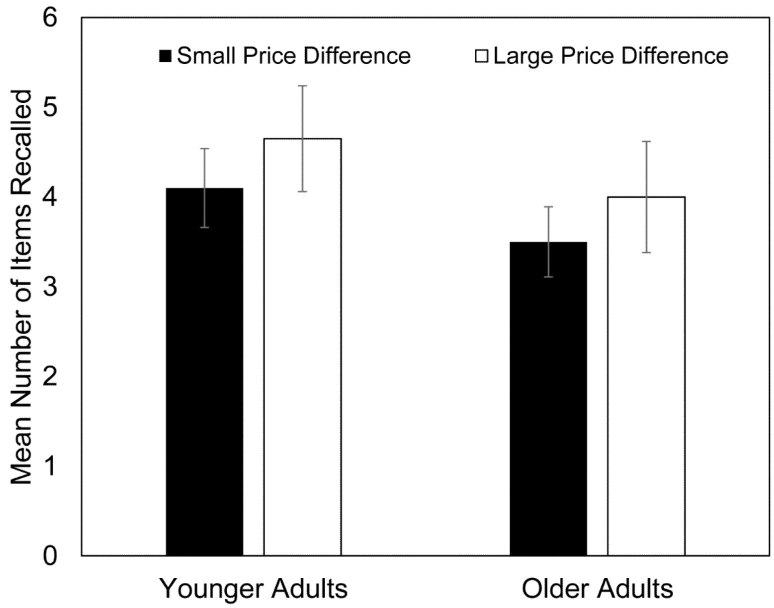

Figure 4.
Mean number of less-expensive items ("better buy") recalled by younger and older adults when there was either a small or large difference in price between the two comparable items in Experiment 2, in which items were presented in a random order. Error bars represent 95% confidence intervals.

Table 1

Mean number (and standard deviations) of the exact prices older and younger adults correctly recalled in Experiment 1 (sequential presentation of grocery items) and Experiment 2 (random presentation of similar grocery items).

	Younger Adults		Older Adults	
	M	***SD***	***M***	***SD***
Experiment 1 (Sequential presentation)	3.75	2.86	2.25	2.12
Experiment 2 (Random presentation)	3.30	2.18	2.95	2.24