Memory for Actions of an Event: Older and Younger Adults Compared

ALAITZ AIZPURUA
ELVIRA GARCIA-BAJOS
MALEN MIGUELES

University of the Basque Country

ABSTRACT. Previous studies have shown increased false memory effects in older compared to younger adults. To investigate this phenomenon in event memory, in the present study, the authors presented younger and older adults with a robbery. A distinction was made between verbal and visual actions of the event, and recognition and subjective experience of retrieval (remember/know/guess judgments) were analyzed. Although there were no differences in hits, older adults accepted more false information as true and, consequently, showed less accurate recognition than younger adults. Moreover, older adults were more likely than younger adults to accompany these errors with remember judgments. Young adults accepted fewer false verbal actions than visual ones and awarded fewer remember judgments to their false alarms for verbal than for visual actions. Older adults, however, did not show this effect of type of information. These results suggest that aging is a relevant factor in memory for real-life eyewitness situations.

Keywords: event memory, false memory, older adults, remember, know, guess judgments, verbal and visual actions

PEOPLE FOCUS ON KEY ACTIONS when they witness an event, such as a robbery, an assault, or a car accident (see, for example, Woolnough & MacLeod, 2001). Recognition of these contents is not usually accurate, because participants tend to accept false actions congruent with the original event (see, for example, Garcia-Bajos & Migueles, 2003; Holst & Pezdek, 1992; List, 1986; Migueles & Garcia-Bajos, 1999). Moreover, when asked to classify their memories according to remember/know distinction (Tulving, 1985)—that is, to indicate whether they are able to recollect some aspects of the original episode (i.e., remember judgment)
or whether the memory is just familiar (i.e., know judgment)—participants usually claim to remember nonpresented information, indicating a subjective experience of vivid recollection that lead to false memories (Migueles & Garcia-Bajos, 2002; Schacter & Curran, 2000).

One of the most consistent findings in the cognitive aging literature is that, compared with younger adults, older adults are more likely to accept false information that is similar to information actually presented as true. Older adults’ greater susceptibility to false recognition has been observed with verbal contents, such as word lists (Norman & Schacter, 1997), sentences (Bayen, 1999) and fragments of prose (Reder, Wible, & Martin, 1986), and visual contents like drawings (Koutstaal, 2003), photographs (Schacter, Koutstaal, Johnson, Gross, & Angell, 1997), faces (Memon, Bartlett, Rose, & Gray, 2003), and complex scenes (Gutchess, Welsh, Hedden, Bangert, Minear, Liu, & Park, 2005). Similar results have been obtained using materials combining both verbal and visual information. For example, when stories selected from actual news programs are presented on television (Frieske & Park, 1999), older adults also show an increase in false recognition compared with younger adults.

The few studies that have systematically investigated differences between young and older adults in event memory have shown that, compared with younger adults, older adults tend to be less accurate witnesses (List, 1986; Loftus, Levidow, & Duensing, 1992). However, some more specific issues related to older adults’ event memory remain unaddressed. First, in previous research on event information (e.g., List, 1986; Loftus et al., 1992) it has not been determined whether differences between older and younger adults in recognition accuracy derive from fewer hits, more false alarms, or both. The main purpose of the current investigation was to apply signal detection theory to the study of differences between younger and older adults in event memory. Specifically, participants were presented with a video of the robbery of a lottery outlet. Previous studies employing other materials and methods have found that, compared with younger adults, older adults usually show larger proportions of false alarms and similar rates of hits (Koutstaal, 2003). In addition, they may establish a riskier or a more liberal criteria than younger adults when responding to a recognition test (e.g., Cohen & Faulkner, 1989; Koutstaal & Schacter, 1997; Multhaup, De Leonardis, & Johnson, 1999), in part because older adults might rely on gist information in a greater extent than younger adults (e.g., Koutstaal, 2006). Thus, in memory for the event, we expected not to observe differences between younger and older adults in proportion of hits, but rather, we expected older adults to show a higher proportion of false alarms, less accurate recognition, and more liberal criterion than younger adults.

Second, as Schacter and Curran (2000) pointed out, the term false memory is reserved for memory errors that are subjectively held as true memories. In eyewitness memory, young adults may show false memories because they usually claim to remember nonpresented information (Migueles & Garcia-Bajos, 2002), but older adults have not been asked to report on their subjective experience
of retrieval. So it remains unclear whether they are more likely than younger adults to experience false memories for events. Thus, another goal of the current study was to examine remember/know/guess judgments indicative of subjective experience of retrieval for actions of the event in younger and older adults. We predicted that older adults would produce more remember judgments for their false alarms, as it has been observed with photographs (Schacter et al., 1997) and words (Norman & Schacter, 1997). Using a typical eyewitness suggestibility paradigm, it has been found that older adults are more prone than younger adults to make high-confidence memory errors (Dodson & Krueger, 2006).

Third, the large majority of the studies focusing on differences between younger and older adults in false recognition have examined memory either for verbal information or for visual information. Nevertheless, in real-life eyewitness situations, events usually involve both verbal and visual information. For example, in a mugging, a robber may perform an action that is mainly visual (e.g., hitting the customer with a shotgun) that perceptually differs from another action that includes verbal information (e.g., shouting “this is a stick up!”). To our knowledge, the effects of the type of information have been examined using misinformation paradigm (Braun & Loftus, 1998; Pezdek & Greene, 1993) but not in eyewitness memory situations. We therefore explored whether memory and false memories differed for verbal and visual information of the event. To do this, verbal and visual contents of the event were selected, and a set of false verbal and visual contents were created. Participants in a previous normative study considered these true and false contents to be probable in the event. In the current study, older and younger adults were presented with the event and made recognition decisions and remember/know/guess judgments for these contents.

Previous studies using associative lists of words have demonstrated increased false memories following auditory rather than visual presentation of items at study (e.g., Israel & Schacter, 1997; Smith, Lozito, & Bayen, 2005), suggesting that encoding visually presented materials produces a distinctive memory representation that facilitates source monitoring processes at retrieval for semantically related information. However, in real-world situations, processing visual information of an event would not lead to a more distinctive memory representation than processing verbal information. In fact, eyewitness memory for visual and verbal information would depend on the relevance of the contents. For example, Garcia-Bajos and Migueles (1999) examined memory for verbal and visual information of a live-simulated argument and found better recall and recognition for verbal actions that represented the plot of the event than for visual actions that were more complementary for the argument. In addition, findings from misinformation paradigm indicate not only that suggestibility effect is smaller for verbal than for visual information (Pezdek & Greene, 1993), but also that misleading verbal information produces fewer Remember judgments than misleading visual information (Braun & Loftus, 1998). This pattern of results suggests that in eyewitness situations verbal information may be more resistant to false memory effect than visual
information. In addition, we predicted significant effects of type of information only on the part of young adults. This prediction followed from findings showing that older adults’ memory is not affected by this kind of manipulation. For example, Smith et al. (2005) recently found that young adults’ free recall benefited from visual (in contrast to auditory) presentation of words (i.e., presentation modality effect), whereas older adults did not.

**METHOD**

**Participants**

Thirty-nine students (range = 19–25 years) from the University of the Basque Country and 29 older adults (range = 55–78 years) enrolled in specific courses organized by the university volunteered to participate. Table 1 shows demographic characteristics of participants. Overall cognitive ability was assessed by examining performance on the Forward Digit Span (FDS) and Backward Digit Span (BDS) from the Wechsler Adults Intelligence Scale (Wechsler, 1981/1996), and on the verbal comprehension task from Primary Mental Abilities test (Thurstone, 1938/1996). There were no differences between younger and older adults in these cognitive measures, all ts < 1.98.

**Design**

A mixed 2 (group: young adults vs. older adults) × 2 (type of information: verbal or visual) factorial design was used, with group as a between-participants factor and type of information as a within-participants factor.

**Materials**

The event, presented on a 3 min 30 s video, showed the robbery of a lottery outlet. One of the robbers pretends to be a customer while another two, wearing

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**TABLE 1. Means for Participants’ Characteristics (SDs in Parentheses)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age</th>
<th>Years of education</th>
<th>Forward digit span&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Backward digit span&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Vocabulary understanding&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger</td>
<td>20.77 (2.01)</td>
<td>14.81 (1.07)</td>
<td>6.23 (0.90)</td>
<td>5.23 (0.96)</td>
<td>26.90 (5.56)</td>
</tr>
<tr>
<td>Older</td>
<td>61.24 (4.90)</td>
<td>14.82 (2.23)</td>
<td>5.79 (0.90)</td>
<td>4.93 (1.39)</td>
<td>28.83 (8.90)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Subtest of the Wechsler Adult Intelligence Scale–III.

<sup>b</sup>Subtest of the Primary Mental Aptitude Test.
ski masks, break in through a back door and go to the front where the employees are. The ringleader points a gun at the head of one of the employees and tells her to give him the key to open the cupboard where the money is kept. When she refuses, he punches her in the face. Once the money is handed over, one of the robbers puts it in a bag and goes outside, where a car is waiting for her. The other two robbers intimidate the customers and walk out the door. When they see that their accomplices have abandoned them, they steal a motorcycle at gunpoint and escape. The event was assessed on seven-point Likert scales ranging from 1 to 7 as violent \((M = 6.26)\), emotional \((M = 5.61)\), and causing an impact \((M = 4.88)\). Independent \(t\)-tests revealed that all these scores differed significantly from the mean value of 4 \((p < .01)\). Older adults awarded higher scores than younger adults to the level of emotion \((M = 5.77\) vs. \(M = 5.45\), \(U = 1800.5\), \(p = .009)\), but there was no correlation between these scores and major recognition measures (i.e., hits, false alarms, accuracy, or criterion).

The material was validated to select the actions to be included in the recognition test. First, two judges worked independently to create possible actions to be rated in a normative study and then discussed and selected the actions that achieve greater agreement. Specifically, the judges analyzed the actions of the event and selected 16 perceptively clear true actions, 8 being verbal actions (e.g., telling to a customer not to look at him) and 8 being visual actions (e.g., taking the keys from the owner’s pocket), and then constructed another 16 false actions compatible with the event, 8 of them being verbal (e.g., asking them not to hurt the owner) and another 8 being visual actions (e.g., pushing the shop assistant away). All the actions were carried out by only one perpetrator. However, the number of possible perpetrators of the actions was controlled. For example, half of the actions, whether true or false, had only one single possible perpetrator (the action “kept reading the paper during the robbery” can only be attributed to the driver), while the other half had two possible perpetrators (the action “came in shouting ‘this is a stick up!’ “ could be attributed to either of the two robbers who entered the premises just as the robbery begins).

Second, to assess the probability of occurrence of these 32 actions, a previous study was conducted involving 15 participants (7 women and 8 men; \(Range_{age} = 26–48\); \(M_{age} = 32.20\); \(SD_{age} = 7.07\)). These participants, who were not the same ones as those who took part in the main experiment, were asked to rate the probability of occurrence of each action for this type of event on a seven-point Likert scale ranging from 1 (low) to 7 (high). A mean probability value was obtained for the occurrence of each action \((Range_{probability} = 2.5–6.5)\). None of these values showed a correlation with the main aspects evaluated in this experiment (i.e., hits, false alarms, accuracy, or criterion). The judges selected 12 true and 12 false actions, half of them verbal and half visual. No differences were obtained in the mean probability of occurrence values, neither between true and false actions nor between verbal and visual actions.
Procedure

Participants, who completed the experiment in groups of approximately 10 people, were told they were going to witness a robbery and that they should pay attention because afterwards their memory of the event would be evaluated. The video sequence was projected on a $2 \times 1.5$ m screen. After watching the video, participants reported their personal details, rated the level of emotion, violence, and impact associated with the event, and completed the digit memory test and the verbal comprehension test. Finally, and with no time limit, participants completed the recognition task, indicating whether each action was true or false. Participants were asked to classify actions they considered to be true according to the remember/know/guess distinction (see Rajaram, 1993). They were provided with oral instructions and some illustrative examples. Specifically, they were asked to give a Remember judgment if they had specific details that enabled them to mentally relive some aspects of the experience of the information at study; to give a know judgment if they were unable to relive such an experience, but the information generated feelings of familiarity; and to give a guess judgment when they considered the statement to be true even in the absence of any memory experience. The option of guess judgment prevented participants from giving a know judgment when they were, in fact, randomly guessing.

RESULTS

Recognition Task

To compare recognition of verbal and visual actions in older and younger adults, four $2 \times 2$ analysis of variants (ANOVAs), with group and type of information as variables, were applied analyzing hits, false alarms, accuracy, and response criterion. Post-hoc analyses (Tukey HDS [Honestly Significant Differences]) were performed on all significant interactions. Results are shown in Table 2.

**Hits and false alarms.** In the proportion of hits, no effects were detected in the factors themselves, and neither was the interaction found to be significant. However, in the proportion of false alarms, the Group factor, $F(1, 66) = 12.21$, $MSE = .57$, $p < .01$, $\eta^2_p = .16$, indicated that older adults had a significantly greater number of false alarms than their younger counterparts (0.63 vs. 0.50). The main effect of type of information was not significant, $F(1, 66) = 3.37$, $p = .07$. The interaction between group and type of information was significant, $F(1, 66) = 11.55$, $MSE = .33$, $p < .01$, $\eta^2_p = .15$, and revealed that young people had a lower proportion of false alarms for verbal than for visual actions [$0.42$ vs. $0.57$, $t(38) = -3.95$, $SEM = .04$, $p < .001$], whereas this difference was not observed in older adults ($0.65$ and $0.61$).
A’ scores. A’ scores (Snodgrass & Corwin, 1988) represent recognition accuracy and range from 0 to 1. Scores of 0.5 indicate chance performance, and higher scores reflect greater accuracy. Independent t-tests revealed that all scores differed significantly from the 0.5 value (p < .01). The group factor, F(1, 66) = 13.84, MSE = .36, p < .001, η² = .17, indicated that young adults were significantly more accurate than older adults (0.68 vs. 0.58). The effects of type of information factor, F(1, 66) = 6.33, MSE = .12, p = .014, η² = .09, revealed that the accuracy level was higher for verbal than for visual information (0.66 vs. 0.60). However, the group × type of information interaction, F(1, 66) = 4.39, MSE = .07, p = .02, η² = .07, indicated that this effect was confined to young adults, who showed a statistically significant higher accuracy for verbal than for visual actions [0.74 vs. 0.63, t(38) = 3.92, SEM = .03, p < .001], whereas no differences were observed among older adults (0.58 and 0.57).

B”D scores. The B”D scores (Donaldson, 1992) represent the response criteria and range from −1 to +1. Zero scores indicate a neutral response criterion; negative values, a more lenient criterion (tendency to respond true); and positive scores, a more stringent criterion (tendency to respond false). Independent t-tests conducted revealed that all B”D scores were significantly different from the 0 value (p < .001). Effects of group, F(1, 66) = 1.38, p = .24, and type of information, F(1, 66) = .07, p = .79, were not significant. However, the interaction between group and type of information, F(1, 66) = 6.76, MSE = .99, p = .012, η² = .09, indicated that young adults adopted a more strict criterion for verbal than for visual actions [−0.30 vs. −0.49, t(38) = 2.17, SEM = .09, p = .037], while this difference was not significant among older adults [−0.57 and −0.41, t(28) = −1.57, SEM = .10, p = .13]. In addition, older adults adopted a more liberal criterion than younger adults for verbal information [−0.58 vs. −0.30, t (38) = 2.54, SEM = .11, p = .014], but not for visual information (−0.40 vs. −0.49).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Younger adults</th>
<th>Older adults</th>
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<tr>
<td></td>
<td>Mean</td>
<td>Verbal</td>
</tr>
<tr>
<td>Hits</td>
<td>.77 (.13)</td>
<td>.78 (.14)</td>
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<tr>
<td>False alarms</td>
<td>.50 (.16)</td>
<td>.42 (.20)</td>
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<tr>
<td>A’</td>
<td>.68 (.11)</td>
<td>.74 (.08)</td>
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<tr>
<td>B”D</td>
<td>−.40 (.43)</td>
<td>−.30 (.47)</td>
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</table>
Remember, Know, and Guess Judgments

To examine the qualitative characteristics of memory, two $2 \times 2 \times 3$ ANOVAs (group $\times$ type of information $\times$ judgments) were performed, one for hits and the other for false alarms. Results are shown in Table 3.

Remember, know, guess judgments for hits. Analysis revealed a significant main effect of judgments, $F(2, 132) = 193.57, p < .001, \eta^2_p = .75$. In general, hits received more remember than know or guess judgments (0.55 vs. 0.13 and 0.08, $p < .001$) and more know than guess judgments (0.13 vs. 0.08, $p < .01$). Group $\times$ judgments interaction was significant, $F(2, 132) = 6.08, p = .003, \eta^2_p = .08$. Pairwise comparisons showed that older adults awarded hits slightly more remember judgments (0.59 vs. 0.50, $p = .043$), and fewer know (0.10 vs. 0.16, $p < .01$) and guess judgments (0.04 vs. 0.11, $p = .003$) than younger adults. There was a significant interaction between type of information and judgments, $F(2, 132) = 5.77, p < .001, \eta^2_p = .08$, and pairwise comparisons showed that hits for verbal information received more remember (0.59 vs. 0.50, $p = .007$) and fewer guess judgments (0.06 vs. 0.10, $p = .021$) than hits for visual information.

Remember, know, guess judgments for false alarms. The judgments factor, $F(2, 132) = 26.89, p < .001, \eta^2_p = .29$, indicated that false alarms received more remember than know or guess judgments (0.29 vs. 0.16 and 0.11, $p < .001$), and more know than guess judgments (0.16 vs. 0.11, $p = .16$). Group $\times$ judgments interaction was significant, $F(2, 132) = 17.51, \eta^2_p = .21, p < .001$. Pairwise comparisons showed that older adults awarded false alarms twice as many remember (0.38 vs. 0.19, $p < .001$) and fewer guess judgments (0.07 vs. 0.16, $p = .002$) than younger adults. It is worth noting that there was a significant interaction between group and type of information in remember judgments, $F(1, 66) = 7.52, p = .008, \eta^2_p = .10$. Pairwise comparisons revealed that young adults had a significantly lower proportion of false alarms accompanied by remember judgments for verbal than for visual actions [0.16 vs. 0.22, $t(38) = -2.15, p = .038$], with no such difference being observed among older adults (0.41 and 0.36).

**DISCUSSION**

We investigated the nature and prevalence of false memories for verbal and visual actions of a robbery in older and younger adults. The event was assessed by participants as emotional, violent, and causing an impact. The verbal and visual actions examined, whether true or false, had the same probability of occurrence in the presented event. In line with results of previous studies using similar events (e.g., Garcia-Bajos & Migueles, 2003; List, 1986; Migueles & Garcia-Bajos, 1999), we found that participants recognized as true half or more of the false actions that
### TABLE 3. Mean Proportions of Remember, Know, and Guess Judgements for Hits and False Alarms for Verbal and Visual Actions in Younger and Older Adults (SDs in Parentheses)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Younger adults</th>
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<td>Mean</td>
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<td>Visual</td>
<td>Mean</td>
<td>Verbal</td>
<td>Visual</td>
<td>Mean</td>
<td>Verbal</td>
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<td>Hits</td>
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<td>Remember</td>
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<td>.59</td>
<td>.66</td>
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<td>Know</td>
<td>.16</td>
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<td>.10</td>
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<td>Guess</td>
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<td>False alarms</td>
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<td>Remember</td>
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<td>.22</td>
<td>.38</td>
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<tr>
<td>Know</td>
<td>.15</td>
<td>.14</td>
<td>.15</td>
<td>.18</td>
<td>.18</td>
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<tr>
<td>Guess</td>
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were nevertheless compatible with the event. When examining phenomenological aspects of recognition, it was observed that participants assigned remember judgements to both their hits and their false alarms. In other words, they experienced the same episodic nature for their errors as they did when recognizing true information, as it has been found in the limited area of eyewitness memory that had used the remember/know/guess paradigm (Frost, 2000; Migueles & Garcia-Bajos, 2002). True and false memories may differ in some specific dimensions that are not reflected in remember judgments (Mather, Henkel, & Johnson, 1997). However, Slotnick and Schacter (2004) recently observed that although different brain regions are activated with true and false recognition, this differential activity would be inaccessible to the conscious mind.

With regards to aging, older adults accepted more false actions as real and showed an increase in false recognition comparing to young participants. Thus, older adults showed a less accurate recognition of event information than younger adults (List, 1986; Loftus et al., 1992) because they made more false alarms, since no differences were observed in hits. Consistent with studies examining false recognition in younger and older adults (e.g., Cohen & Faulkner, 1989; Koutstaal & Schacter, 1997) a riskier criteria was adopted by older adults when responding to the recognition task, although these differences were significant only for verbal information. Regarding remember/know/guess judgments, the most interesting finding was that older adults were much more likely to claim that they had a subjective experience of recollection for false information, consistent with previous findings obtained with pictures (Schacter et al., 1997) and words (Norman & Schacter, 1997). Specifically, older adults had twice as many false alarms accompanied by remember judgments as young adults. Taken together, these results demonstrated that, compared with younger adults, older adults were more likely not only to have false recognition, but also to accompany these memory errors with the same subjective experience of remembering as true memories. Thus, using terms by Schacter and Curran (2000), older adults were more susceptible to show false memories for the witnessed event than younger adults.

Theoretical accounts of increased false memory effects in older adults have postulated over-reliance in semantic gist, along with deficits in memory for specific information (Balota et al., 1999; Koutstaal & Schacter, 1997; LaVoie & Faulkner, 2000; Norman & Schacter, 1997). These explanations may be related, as not having a literal memory for the information presented, older adults would have been more likely than younger adults to depend on gist (Koutstaal, Reddy, Jackson, Prince, Cendan, & Schacter, 2003; Tun, Wingfield, Rosen, & Blanchard, 1998). In fact, access to gist information is relatively automatic, and it is preserved with aging (Cohen & Faulkner, 1989; Koutstaal & Schacter, 1997). False actions presented in the recognition task were as probable as true actions of the event, and it is known that older adults are more prone than younger adults to depend on plausibility of information (Reder et al., 1986) and prior knowledge (Mather, Johnson, & De Leonardis, 1999); moreover, prior knowledge about crimes can bias our memory.
for the actions of the event (Garcia-Bajos & Migueles, 2003; Holst & Pezdek, 1992; List, 1986). Compared with younger adults, older adults depend on gist-based processing to a greater extent, and it is logical to expect older adults to establish relatively more lenient criteria at the time of retrieval. Current results that indicate a more liberal responding at retrieval for verbal information from the part of older adults would lend support the gist-based processing theory, although more research is needed in this respect.

It should be pointed out that, in contrast with studies in which distracter items in recognition tasks are easy to discriminate from the studied items (e.g., Burke, Heuer, & Reisberg, 1992; Heuer & Reisberg, 1990), in the current research, false contents fit in the original event, and, as in studies analyzing misinformation effect (e.g., Loftus & Hoffman, 1989), participants would be misled by suggested information. However, verbal and visual information differentially affected young adults’ memory of the event, as they made fewer false alarms and showed more accurate recognition for verbal than for visual information. In addition, it was found that their proportion of false alarms accompanied by remember judgments was significantly lower for verbal than for visual actions. That is, false memories were less likely for verbal than for visual information in young adults. These results are consistent with what it has been observed with visual details in studies using the misinformation paradigm (Braun & Loftus, 1998; Pezdek & Greene, 1993), in which visual information was especially susceptible to the false memory effect. It is possible that participants relied on the script for the robbery when making their recognition decisions. A script is essentially based on generic visual actions (e.g., Holst & Pezdek, 1992; Garcia-Bajos & Migueles, 2003), and particular verbal information would not be represented on the script. In other words, in our study, verbal information describing what specifically was said in the event would be more particular for the current robbery and easier to discriminate. Thus, previous knowledge about crimes could lead to the increased false memory effects for visual information observed in the study, producing greater false alarms for visual actions.

By this logic, older adults would have also relied on a script to guide their retrieval and reported more false alarms for visual actions. However, individuals should be able to retrieve perceptual details to show an effect of type of information. We formed a specific prediction for the interaction between age and type of information, and expected older adults’ memory not to be differently affected by verbal and visual information. The obtained results fit nicely in this prediction, as when the effects of type of information were significant, differences between verbal and visual information were only observed in young participants. These results resemble findings by Smith et al. (2005) with associative lists of words. Smith et al. found that older adults did not show any presentation modality effect in recall. This lack of type of information effect in older adults could be related with deficits in memory for specific perceptual information. For example, Wingfield, Tun, and McCoy (2005) recently found that word list recall was lower for older adults with mild-to-moderate hearing loss compared with better hearing older adults. This
explanation should be considered, although it is not very likely in the context of the present experiment, since older adults who participated in the study were asked about their hearing deficits. However, even if older adults could encode perceptual details, they may not be able to spontaneously use this information at the time of retrieval (e.g., Koutstaal, 2003; Multhaup, 1995), and, as a result, their representations for verbal information would be perceptually similar to their representations for visual information. Studies from cognitive neurosciences demonstrate that frontal lobes are essentially involved in the integration and maintenance of multimodal information in working memory (e.g., Prabhakaran, Narayanan, Zhao, & Gabrieli, 2000) and, on average, older adults show lower working memory capacity than younger adults. We also found that older adults had significantly lower scores in an index of working memory capacity (i.e., BDS) relative to those of younger participants. It is thus likely that reduction in processing resources in older adults could be responsible for their lack of type of information effect.

In summary, older adults had more false alarms and awarded more remember judgments to their false recognition decisions than younger adults, experiencing increased false memories in memory for the witnessed event. Young adults showed fewer false alarms, more accuracy, and fewer false memories for verbal than visual actions, whereas older adults did not exhibit this effect of type of information. Thus, aging is a relevant factor in memory for real-life eyewitness situations, although further research is needed to gain a more complete picture of the processes involved in memory and false memories for events in older adults.

AUTHOR NOTES

Alaitz Aizpurua Sanz is a researcher at the University of the Basque Country. Her research interests include aging, false memories, cognitive processes, eyewitness memory. Elvira Garcia-Bajos is an associate professor at the University of the Basque Country. Her research interests include experimental designs, methodology, eyewitness memory, false memories, inhibitory processes. Malen Migueles is an associate professor at the University of the Basque Country. Her research interests include eyewitness memory, false memories, autobiographical memories, inhibitory processes.

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