

**Enhancing older adults' eyewitness memory for present and future events with the Self-administered Interview<sup>®</sup>**

Running head: The SAI transfer effect in older adults.

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In press, *Psychology and Aging* (June 2014). This is not the copy of record.

Author Notes: This research was supported by a grant from The Leverhulme Trust awarded to Amina Memon and Alan Scoboria. We would like to thank Francesca Morreale for her assistance with data collection.

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## Abstract

Older adults' memory reports are often less complete and accurate than those by younger adults. The current study assessed the suitability of the Self-Administered Interview (SAI) as retrieval support for older eyewitnesses, and examines whether experience with the SAI leads to improved performance on subsequent events where the SAI is not used. Participants recalled an event with the SAI or free recall instructions. After 1-week, all participants watched a second event and freely recalled its content. SAI participants reported more correct details for the initial event, and a 'transfer' of the initial recall advantage to the second event was observed.

*Keywords:* Self-administered Interview, eyewitness testimony, older adults, meta-cognition, transfer effect

Given a demographic shift to an aging population, older adults are more likely to become victims or witnesses of crimes than in previous generations. In addition to the increased likelihood of older adults encountering crime in their own communities (Acierno et al., 2010; Brogden & Nijhar, 2000), charities and governmental agencies have documented an increase in the reported abuse and maltreatment of older adults in hospitals and care homes (Bennett, Jenkins & Asif, 2000). These developments demand innovation in public policy – including policy within the criminal justice system (Kalache & Keller, 2000).

Although older adults represent a growing witness population, research regarding their memory and decision making performance in forensic settings is sparse compared to research on younger adults. This is surprising, as cognitive aging research indicates that one of the most significant cognitive declines in older adults occurs with respect to long-term episodic memory, which plays a crucial role in eyewitness situations (Balota, Dolan, & Duchek, 2000; Verhaegen, Marcoen, & Goossens, 1993). Empirical research comparing younger and older adults' episodic memory reports has found that older adults are often less accurate and complete than their younger counterparts (see Bartlett & Memon, 2007 for a review). For example, List (1986) compared accounts of 10-year-olds, undergraduate students, and older adults. The accounts of older adults did not differ from children in terms of completeness, but were less complete than accounts provided by young adults. The reports of older adults were also the least accurate ones. Similarly, Brimacombe, Quinton, Nance, & Garrioch (1997) revealed that older adults were less accurate when describing an observed theft than younger adults. In a series of studies, Yarmey (2000) showed that older adults were 20% less accurate than younger adults in free recall tests and 13% less accurate in cued recall tests.

This evidence suggests that older adults might need more retrieval support during investigative interviews than younger individuals. The Cognitive Interview (CI) might provide such support. The CI is a face-to-face investigative interview protocol based on fundamental

theoretical principles about memory organization, storage, and retrieval (Fisher & Geiselman, 1992). Empirical and field studies with younger adults have shown that the CI elicits significantly more correct information than control interviews with no differences in accuracy rates ( see the meta-analysis by Memon, Meissner & Fraser 2010). To date, research investigating the effectiveness of the CI, or a modified version of it, with an older adult sample has mostly observed positive gains for this group (Dornburg & McDaniel, 2006; Mello & Fisher, 1996; Prescott, Milne, & Clarke, 2011; Wright & Holliday, 2000; Holliday et al., 2012).

A novel investigative interviewing tool which has been shown to enhance eyewitness accounts to a similar degree as the CI is the Self-administered interview<sup>®</sup> (SAI) (Gabbert, Hope, & Fisher, 2009). The SAI is a self-report version of the CI and provides the witness with cues and instructions to facilitate recall. The potential practical benefits of using the SAI are promising since it can be administered directly after the incident has happened and to multiple witnesses simultaneously (Hope, Gabbert & Fisher, 2011). The SAI has the added benefit that the likelihood of demand characteristics, which may arise during a face-to-face interview, are reduced (Gudjonsson, 2010). This is important because many of the factors known to distort memory reports are social in nature (e.g. misleading questioning, repeating questions, positive or negative feedback). Gabbert, Memon, Allan, and Wright (2004) found that older and younger adults were more susceptible to misinformation, when it was encountered during a social interaction than as part of a written post-event narrative.

A further advantage of the SAI is that its beneficial effects may transfer to recall attempts for future events. Gawrylowicz, Memon, and Scoboria (2013) showed that younger adults with prior SAI experience reported significantly more correct details for a new event for which the SAI was not used, without a decrease in accuracy rates. These findings suggest that the beneficial effects of the SAI are not only due to rehearsal, but that it may equip witnesses with transferable skills to use when providing reports about subsequent events.

Despite the promising benefits, it should be noted that the SAI is not considered as a replacement for the full CI. Previous research with young adults revealed that the SAI elicited a similar number of correct details, but accuracy was significantly higher with the CI (Gabbert et al., 2009). Therefore, the SAI should be regarded as an initial interviewing tool that may strengthen and protect the original memory trace if it precedes a full CI. This is in line with findings by Hope, Gabbert, Fisher and Jamieson (2014), who showed that an initial retrieval attempt in the form of a SAI had a positive impact on a subsequent CI. Participants in the SAI condition provided significantly more correct information, with stable accuracy rates, during a later CI than participants who engaged in no prior retrieval attempt or a FR.

The aim of the current study is twofold: First, we intend to replicate the beneficial SAI effect with older adults. Second, we examine whether experience with the SAI may provide older adults with transferable skills that they can use to effectively recall events in the future.

## **Method**

### **Participants and Design**

Participants were recruited via community advertisements. Of 89 individuals who agreed to participate, one withdrew and eight were excluded following screening. The screening measures included the Geriatric Depression Scale (GDS) (Niederehe, 1986) and the Montreal Cognitive Assessment (MoCA) (Nasreddine, et al., 2005). The final sample consisted of 80 community-dwelling older adults (66% female,  $M_{\text{age}} = 70$  years,  $SD = 7.19$ , range 60 – 95). Average years of education was 13.81 ( $SD = 3.37$ ). The mean score on the GDS was 2.82 ( $SD = 2.42$ , range 0 - 9), and on the MOCA was 28.43 ( $SD = 1.41$ , range 25-30). A two group repeated-measures design was used. Participants were allocated randomly to one of the two recall tool groups. One group completed the SAI for event 1 and provided free recall (FR) for event 2. The other group provided FR for both event 1 and event 2.

### **Materials**

**Events.** Event 1 showed a date-rape scene and Event 2 a fraud scene. The videos were presented on a 20-inch high quality computer screen. Participants wore headphones to eliminate distractions. The stimulus events were the same as in Gawrylowicz et al. (2013).

**Self-Administered Interview (SAI).** The SAI recall tool was presented as a booklet and comprised five sections (Gabbert et al., 2009). Section 1 emphasised completing the SAI in sequential order and completing all sections. Section 2 included mental context reinstatement instructions which encouraged participants to place themselves back to the point in time when they witnessed the event and to think about the event in as much detail as possible before writing down any memories. Participants were next instructed to ‘report everything’ and discouraged from guessing. Section 3 focused on person descriptions by providing prompts related to appearance (e.g. hair, clothing, etc.). Section 4 involved drawing a sketch of the event to generate additional spatial details. In the final section participants were allowed to report any additional information not covered in prior sections<sup>1</sup>.

**Free Recall (FR) booklet.** The FR booklet contained the written instruction to write down as much as could be remembered about the event.

**Screening tools.** The MoCA was used to screen participants for mild cognitive dysfunction. The highest achievable score is 30, and based on the normative data, a cut-off score of 25 or higher was used for inclusion. The GDS was applied to ensure none of the participants was severely depressed, since depression has been linked to memory deficits (Burt, Zembar & Niederehe, 1995). A cut-off score of 19 or above was used.

## **Procedure**

The study consisted of two individual sessions separated by one-week. Participants viewed an event having been informed that they would be asked to report what they had seen afterwards. After a 30 min delay, participants were randomly allocated to either the SAI

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<sup>1</sup> The original SAI (Gabbert et al., 2009) consists of 7 sections, however, due to the nature of the video clip we excluded the sections on vehicles and co-witnesses.

Group or the FR Control Group and were instructed to follow the written instructions carefully. One week later, participants viewed the second event. After engaging in filler tasks for 30 min, all participants received the FR booklet. No time limits were placed on responding at any point. The order in which the events were presented was counterbalanced.

### **Recall coding**

The SAI and FR booklets were coded using the same coding schemes as in Gawrylowicz, et al. (2013). The accounts were coded for the total number of correct, erroneous, and confabulated details. A detail was deemed correct as it was present in the event and correctly described, as in agreement with the coding scheme. A detail was coded as incorrect if it was in disagreement with the coding scheme (e.g. she was wearing a *green* hat, when in fact she was wearing a *red* hat). A confabulation refers to a reported detail that was not present in the video at all (e.g. there were *stairs* behind the bar, when in fact there were *no stairs* behind the bar). Inter-coder reliability was based on second coding of a random sample of 20 accounts and yielded significant agreement for the overall amount of details,  $r = .95$ , correct details,  $r = .96$ , errors,  $r = .76$ , and confabulations,  $r = .76$  (all  $p < .001$ )<sup>2</sup>.

## **Results**

### **Recall of/Memory for Event 1: SAI Effect**

To test whether the SAI improves recollection of a crime in older adults, we examined the memory reports for the first event. The SAI Group provided significantly more details overall,  $t(78) = 3.43$ ,  $p < .001$ ,  $d = 0.77$  [95% CI 0.31, 1.22], more correct details,  $t(78) = 3.21$ ,  $p = .002$ ,  $d = 0.72$  [0.26, 1.17], and more errors,  $t(78) = 3.53$ ,  $p < .001$ ,  $d = 0.79$  [0.33, 1.24]. There were no group differences for confabulations,  $t(78) = .22$ ,  $p = .822$ ,  $d = .05$ . Accuracy rates were calculated by dividing total correct details by total details reported; there were no significant group difference in accuracy,  $t(78) = 1.84$ ,  $p = .069$ ,  $d = 0.39$  [-0.05,

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<sup>2</sup>Participants reported on average fewer than two incorrect details and less than one confabulated detail in their written memory accounts. This restricted variability explains the comparatively smaller intercoder reliability scores for incorrect and confabulated details. All Pearson's correlations reached statistical significance.

0.82]. This shows a standard SAI effect – increased detail with stable accuracy (see Table 1). It is a standard finding with the CI and SAI to find increases in both correct responses and errors (Memon et al. 2010). This is to be expected any time that increased output is encouraged. The important issue is the relative magnitude of the increase in correct vs. errors. The interview procedure typically leads to proportional increases in correct and error, leading to stable accuracy rates (see Memon et al. 2010). Moreover, it should be noted that the absolute number of errors in the SAI Groups was generally very low.

### **Recall of/Memory for Event 2: Transfer effect**

Prior experience with the SAI transferred to a subsequent event for which the SAI was not used. The experienced SAI Group recalled more details overall,  $t(78) = 2.19, p = .032, d = .49 [0.05, 0.94]$ , and more correct details,  $t(78) = 2.17, p = .033, d = .49 [0.06, 0.93]$  for the second event compared to the inexperienced group. The groups did not differ for errors,  $t(78) = 1.363, p = .177, d = .32 [-0.12, 0.76]$ , confabulations,  $t(78) = -.181, p = .857, d = .04 [-0.41, 0.47]$ , or accuracy rates,  $t(78) = -.384, p = .702, d = .00 [-0.28, 0.59]$  (see Table 1).

### **Additional analysis**

**Younger-older statistical comparison.** To examine further whether older adults show a greater or lesser benefit of the SAI relative to younger adults, data from the current older cohort was compared with data from younger adults obtained during an earlier study on the SAI transfer effect (Gawrylowicz, Memon & Scoboria, 2013). The average education level of our older sample ( $M = 13.82, SD = 3.37$ ) is comparable to that of college-age samples, therefore the younger and older groups appear comparable in education level. The methods used in both studies are the same and therefore afford statistical comparison. Both employed a two groups repeated-measures design, and the same videos, time-delays, and coding procedure<sup>3</sup>.

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<sup>3</sup> The only difference was in the filler tasks. In the current study, older adults completed the in text mentioned screening tools as filler tasks in the first session and the Behavioural Inhibition and Behaviour Activation Scale (BIS/BAS) (Carver & White, 1994), Eysenck Personality Questionnaire (EPQ) (Eysenck & Eysenck, 1994), Self-Monitoring Scale (Lennox & Wolfe, 1984), and a word search during the second session. In the 2013 study,

The data from the two samples was combined, and two 2 (age group: young vs. old) x 2 (interview condition: SAI vs. FR) ANOVAs were conducted, one for each event (event 1 = SAI effect & event 2 = transfer effect), on the amount of correct details and accuracy rates.

***Recall of/Memory for Event 1: SAI Effect.*** The analysis of number of correct details recalled revealed a significant main effect of age,  $F(1, 158) = 26.38, p < .001, d = .72$  [95% CI .40, 1.04], with older adults recalling significantly more correct details ( $M = 74.51; SD = 25.09$ ) than younger adults ( $M = 57.06; SD = 23.19$ ). Moreover, a significant main effect of interview condition was observed,  $F(1, 158) = 35.68, p < .001, d = .88$  [.56, 1.20], with the SAI Group recalling significantly more correct details ( $M = 75.99; SD = 24.13$ ) than the FR Control Group ( $M = 55.62; SD = 23.00$ ). The interaction between age group and interview condition did not approach significance,  $F(1, 158) = 1.02, p = .313$ . The analysis of the accuracy rates revealed a significant main effect for age group,  $F(1, 158) = 6.99, p = .009, d = .42$  [.11, .73]<sup>4</sup>, with older adults displaying significantly higher accuracy rates ( $M = 97.39; SD = 3.17$ ) than younger adults ( $M = 95.88; SD = 3.95$ ). The main effect of interview condition and the interaction between age group and interview condition were not significant  $F(1, 158) = .61, p = .437, d = .12; F(1,158) = 2.27, p = .13$ . Thus, while older adults did better overall, the gain due to the SAI over FR was similar between the two age groups.

To recap, the SAI elicited more correct details in both age groups as compared to the FR booklet. This was not associated with a decrease in accuracy rates, which were generally high in both age groups. Older adults outperformed younger adults with both recall tools, in that they reported significantly more correct details and obtained higher accuracy rates.

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younger adults completed the NEO Personality Inventory-Revised (NEO PI-R) (Costa & McCrae, 1992) in session one and the BIS/BAS, EPQ, Self-Monitoring Scale, and Vividness of Visual Imagery Questionnaire (VVIQ) (Marks, 1999) in session two. The durations of the filler tasks were 30 minutes, identical durations were used by Garwylowicz et al. (2014).

<sup>4</sup> The Leven's test was significant for this analysis. To ensure the robustness of the significant main effect of age group an independent t-test was conducted. The effect of age group remained significant after the Welch-Satterthwaite method was applied.

**Recall of/Memory for Event 2: Transfer Effect.** For the second event, the analysis revealed a significant main effect for age group,  $F(1, 157) = 60.41, p < .001, d = 1.18$  [.85, 1.52], with older adults reporting significantly more correct details ( $M = 73.49; SD = 25.25$ ) than younger adults ( $M = 48.27; SD = 16.66$ ). Furthermore, a significant main effect of interview condition was found,  $F(1, 157) = 12.39, p < .001, d = 0.38$  [0.07, 0.69], with the SAI Group recalling significantly more correct details ( $M = 66.32; SD = 23.34$ ) than the FR Control Group ( $M = 55.04; SD = 24.92$ ). The interaction effect between age group and interview condition was not significant,  $F(1, 157) = .03, p = .86$ . The analysis of the accuracy rates revealed a significant main effect of age group,  $F(1, 157) = 6.46, p = .012, d = .40$  [.08, 0.71], with higher accuracy rates for older ( $M = 98.18; SD = 5.57$ ) than for younger adults ( $M = 96.30; SD = 3.77$ ). The main effect of interview condition was not significant,  $F(1, 157) = 1.79, p = .183, d = .21$ [-0.10, 0.52]. A significant interaction between age and interview condition was observed,  $F(1, 157) = 3.97, p = .048$ . Pairwise comparisons revealed that older adults in the FR Control Group obtained significantly higher accuracy rates ( $M = 98.42, SD = 7.32$ ) than their younger counterparts ( $M = 95.07, SD = 4.24$ ) ( $p = .002$ ). There was no significant difference in accuracy rates between age groups for the SAI Group ( $p = .699$ ) (older adults:  $M = 97.94, SD = 2.92$ ; younger adults:  $M = 97.53, SD = 2.77$ ).

Thus, both younger and older adults demonstrated benefits of experience with a SAI when recalling a new event. This was not associated with a decrease in accuracy. Similarly to the first event, older adults did recall significantly more correct details than younger adults.

## Discussion

The purpose of the current study was twofold. First, we examined the suitability of the SAI for an older witness population. Second, we investigated whether experience with the SAI can aid older adults in providing higher quality reports when recalling future witnessed events. This study provides evidence supporting both aims. Consistent with previous research

on younger adults, the SAI had a positive effect on older adults' immediate recall (Gabbert et al., 2009; 2012; Gawrylowicz et al., 2013). Moreover, results suggest that the SAI conveys skills which older adults can use to recall new events in the future.

A comparative analysis between the current older adults' data and data from younger adults obtained during an earlier published study (Gawrylowicz et al. 2013) suggests that the SAI is an effective investigative interviewing tool irrespective of witness age. Moreover, older and younger adults benefited similarly from prior experience with the SAI.

Older adults did report more correct details than younger adults without an associated decrease in accuracy rates, irrespective of the interview tool used. This is inconsistent with previous research which found that episodic memory accounts by older adults are often less accurate and complete than those by younger adults (List, 1986; Brimacombe et al. 1997; Mueller-Johnson & Ceci, 2004). It could be argued that the underperformance of younger adults was due to motivational differences. All our older adult participants were highly motivated to volunteer, often traveling long distances to visit the laboratory to take part in the study. The younger adult group comprised mainly students, who might have been less motivated to perform well on the tasks. Regardless of the reason for the difference, the key observation here is that age and interview type did not interact. Both age groups benefited from the SAI and from having prior experience with it.

The most novel finding of the research is the 'transfer effect' of the SAI with an older adult population. While elaborative retrieval is likely to contribute to the beneficial SAI effect, the transfer effect shows that processes beyond mere rehearsal of a single event are also involved. Enhancement of metacognitive strategies at retrieval is one possible candidate. Metacognitive strategies may determine the extent to which people attend to and control their memory search and output (Dodson, Bawa, & Krueger, 2007; Koriat & Goldsmith, 1996). Pansky, Goldsmith, Koriat, and Pearlman-Avnion (2009) compared older and younger adults'

memory and metacognition in response to questions about an event. They found that older adults' metacognition was less efficient, and argued that older and younger adults appear to have different strategies when it comes to controlling memory reports - older adults seem to put more emphasis on quantity, whereas younger adults put more emphasis on quality. If the SAI leads to enhanced metacognition, it might be that the SAI encourages individuals to place as much emphasis on recall quality as on quantity. Prompts such as "*do not guess*" and "*make sure that the report is as complete and accurate as possible*" may train older adults to regulate their memory output in service of completeness and accuracy.

Furthermore, experience with the SAI might provide individuals with some insight into what information is forensically relevant and therefore important to report. Completing the SAI may create expectations in participants about task requirements, which may be retained at later retrieval attempts. Thus, the SAI may support older adults' current and future memory recall in several ways. It may strengthen the original memory trace by increasing encoding of forensically relevant information as well as rehearsal, and it may improve metacognitive monitoring. However, these claims are speculative and future research is needed to determine the exact nature of skills acquired when completing the SAI.

In this study both sessions were conducted in the same laboratory and by the same experimenter, providing fairly strong environmental cues for participants in the SAI Group. This may have increased the probability that they would use some of its strategies again. It is well established that cues present at encoding can facilitate subsequent retrieval (Godden & Baddeley, 1975; Tulving & Thomson, 1973). It is arguable whether such cues would be present in various real-world contexts. Future research should examine whether the SAI transfer effect is seen when the second event and interview occurs in a distinct environment.

This work compares the SAI to free recall performance. This leaves the issue of the existence of the transfer effect for the CI an open question. No published research has

examined if the CI effect transfers to a second interview. One study that showed some advantages of the CI over the SAI (Gabbert et al., 2009) was conducted with young adults. The performance of the CI vs. the SAI for older adults is yet to be examined.

The findings have some important applied implications. First, our findings are consistent with views that underperformance by older adults is partly due to the interview procedure, rather than poor memory per se (Dodson & Schacter, 2000). This highlights the potential for investigative interviewers to elevate performance of older adults with the provision of retrieval support. Moreover, the finding of improved recollection of an event amongst older adults and the transfer of this effect to a subsequent retrieval attempt has potential to inform the development of cognitive interventions for older adults. McDaniel and Bugg (2011) observed that training programs tend not to equip older adults with personally meaningful strategies for use during their everyday lives. Most training studies have focused on learning and remembering individual items or lists involving words, numbers, faces, or names (see Herzog, Kramer, Wilson & Lindenberger, 2008 for an overview). However, these memory tasks are apparently not the ones older adults are most worried about. McDaniel and Bugg (2011) argue that a greater concern held by older adults is retrieving information from long-term memory, such as details about events they encounter in their lives. Given that the SAI enhances episodic recall, aspects of it could be used to stimulate the development of solutions to the everyday memory concerns of older adults.

The SAI is an easily implemented tool for improving justice for senior witnesses. Not only does the SAI provide retrieval support, it appears to convey transferable skills which could be used when retrieving information about events in the future. This is likely to increase both the accuracy and credibility of accounts elicited from older witnesses.

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**Table 1** Mean (SD) correct details, errors, confabulations, and accuracy rates for the SAI Group and the FR Control Group for event 1 and 2 for the older and younger adult samples.

	Event 1								Event 2							
	SAI Group				FR Control Group				SAI Group*				FR Control Group			
	Older adults		Younger adults		Older adults		Younger adults		Older adults		Younger adults		Older adults		Younger adults	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Overall	85.85	24.75	72.07	21.31	67.56	22.94	46.93	18.49	81.46	24.96	55.02	14.70	68.93	25.95	44.85	17.30
Correct	83.26	24.95	69.07	21.40	66.19	22.50	45.05	18.32	79.59	23.63	53.71	14.50	67.55	25.65	42.83	17.06
Incorrect	1.51	1.41	2.34	2.25	0.58	0.89	1.61	1.70	0.95	1.14	1.02	1.08	0.60	1.13	1.36	1.16
Confabulation**	0.82	1.41	-	-	0.76	0.32	-	-	0.77	2.47	-	-	0.85	1.33	-	-
Accuracy	0.97	0.03	0.96	0.03	0.98	0.02	0.95	0.05	0.98	0.03	0.98	0.03	0.98	0.07	0.95	0.04

\* Both the SAI Group and FR Control Group did receive a FR booklet during Event 2. The SAI Group did not complete a SAI again for Event 2.

\*\* Confabulations, which are a sub-type of incorrect responses, were not reported in the younger adult study.