

**Age and Gender Differences in Autobiographical Memory Sharing:
Who Tells Better Stories?***

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Summary

This study addresses an inconsistency in previous literature: older adults recall less details and go off-target more frequently when sharing stories, but also receive higher global story quality ratings. Autobiographical memory and fictional stories recalled by younger and older adults were content-coded for detail and off-target responding. Stories were also evaluated for global quality by peer raters. Results show age and gender differences across autobiographical memory and fictional stories. Age and gender, however, do not predict the global quality of autobiographical memory stories. Telling better stories is related to characteristics of the story, not necessarily the person sharing them.

*Note that sections of this paper (e.g., the introduction) have been greatly reduced to adhere to the guideline of this award. A more comprehensive version of this project was submitted to *Psychology and Aging*, and is available on request.

Aging Related Experience

Education

- In progress University of Florida: Developmental Psychology: Ph.D.
 2006 University of Florida: Developmental Psychology: M.S., Gerontology Certificate.
Thesis title: "Autobiographical memory sharing in everyday life: Who tells better stories?"
 2003 University of Florida: Psychology: B.S., Summa Cum Laude.
Thesis title: "The wisdom of experience: A replication and extension."

Professional Organization Memberships

- 2002-present American Psychological Association & APA (20: Adult development & aging), Student member.
 2003-present Gerontological Society of America (GSA), Student member.

Presentations (Local and National)

- Baron, J.M.** (2006, April). Autobiographical memory sharing in everyday life: Who tells better stories? Presented at the developmental psychology colloquium, Gainesville, FL.
- Baron, J.M., Bluck, S. & Alea, N.** (2005, August). Getting the gist: Recalling autobiographical memory stories. Presented at the APA meeting, Washington, D.C.
- Baron, J.M.** (2004, September). Autobiographical memory sharing in everyday life: Proposed research. Presented at the developmental psychology colloquium, Gainesville, FL.
- Baron, J.M., Bluck, S. & McAdams, D.** (2003, November). The wisdom of experience in the second half of life. Presented at the GSA meeting, San Diego, CA.

Publications

- Glück, J., Bluck, S., **Baron, J.M.**, & McAdams, D. (2005). The wisdom of experience: Autobiographical narratives across adulthood. *International Journal of Behavioral Development*, 29, 197-208.
- Baron, J.M. & Bluck, S.** Autobiographical memory sharing in everyday life: Who tells better stories? *Psychology and Aging*. Submitted manuscript.

Honors and Awards

- 2005 The Chancellor's list. APA student travel award. Graduate Student Council (GSC) travel grant.
 2004 APA (20: Adult development & aging) master's award for proposed research.
 2004-present National Institute on Aging (NIA) funded pre-doctoral fellow.
 2003 The National Dean's list. GSC travel grant.

Research Experience

- 2003-present University of Florida: Life Story Laboratory, Manager.
Research focus: Functions of autobiographical memory across the lifespan.

Teaching Experience

- 2004 Institute for Learning in Retirement: Funded by the Center for Gerontological Studies, Instructor.
Course focus: Guided autobiography memory sharing.

Community Service Activities

- 2004-present Diocese of St. Augustine: Respite care program, Volunteer
 2003 Al'z Place: Alzheimer's day care facility, Volunteer

The paper being submitted for the Cluff Award is a modified version of my Master's thesis (defended May 2006) which has now been submitted for publication. Dr. Susan Bluck was the supervisor for this project.

Introduction: Purpose of the Project

Storytelling is a ubiquitous human activity (Dunbar, 2005) that occurs across cultures (Strawbridge, 2005). The current study focuses on autobiographical memory stories because they are commonly shared in daily life and across most of the lifespan. Sharing autobiographical memory stories can be entertaining but scholarly research on such stories is also gaining momentum. Sharing autobiographical memory stories can serve three broad functions: self, social, and directive (Bluck, 2003). Since telling memory stories occurs so commonly and is theorized to serve important functions, it is worthwhile to examine what makes a ‘good’ story.

Some research suggests the likely characteristics of a good memory story. Are older adults’ memory stories more likely to have these characteristics? Memory stories that contain details are perceived as captivating and engaging (Pillemer, 1998). In addition, memory stories that lack the social conventions of brevity and relevancy (i.e., stray off-target) are viewed as poor due to conversational maxim violations (Grice, 1975). The literature is inconsistent about whether older adults tell good stories. Compared to younger adults, older adults recall fewer fictional story details (for details see, Adams, Labouvie-Vief, Hobart, & Dorosz, 1990, and Adams, Smith & Nyquist, 1997) and stray off-target more (for details see, Arbuckle & Gold, 1993). When focusing on global story quality, however, peers rate older adults’ stories higher than younger adults’ (for details see, James, Burke, Austin & Hulme, 1998, and Pratt & Robins, 1991).

Research concerning age differences in level of detail and off-target responding are inconsistent with research that assesses global story quality. As a result, the current literature is unclear regarding whether older adults tell better memory stories. The current study has two major objectives. The first is to examine claims concerning age differences in recall of story details, level of off-target responding, and global story quality using the type of story commonly shared in everyday life: episodic autobiographical memory stories. This study aims to replicate the finding that older adults show lower recall of detail in fictional stories and extends this research to examine whether this effect holds for episodic autobiographical memory stories. It is hypothesized that older adults’ memory stories will contain less detail than younger adults’ regardless of story type. Research also suggests that older adults produce more off-target information than younger adults in response to specific life history questions. In the current study, older adults are predicted to show higher levels of off-target responding in recounting autobiographical memory stories. It is unclear whether such differences should also manifest in fictional story recall: age difference in off-target responding have not been found across all types of fictional texts (James, et al., 1998). Finally, previous research suggests older adults stories are rated as higher quality, though only one study has examined autobiographical memory stories and the stories employed were not episodic in nature. The current study aims to determine whether older adults’ autobiographical memory stories are rated more favorably than younger adults’ stories: it goes beyond previous research by employing a comparison, fictional memory stories.

The second objective is to bridge research that suggests older adults are worse at remembering details of recalled events and remaining on-target, with findings showing that their memory stories are peer-rated as higher quality than younger adults. This research is the first to examine the three constructs in a single study. Analyses are designed to address the role of story characteristics (i.e., level of detail and off-target responding) and person characteristics (i.e., age, gender) in the production of autobiographical memory stories with high global quality. It is hypothesized that characteristics of the story (i.e., higher levels of detail, lower levels of irrelevant information) will be more predictive of story quality than age or gender.

Methods

These data are part of a larger project that examined changes in outcome variables pre and post memory-sharing (Alea & Bluck, in press). The shared memory stories comprise the data used in this study. The study is a 2 (age group: younger and older adults) X 2 (gender) X 2 (type of memory story: autobiographical and fictional) design. Type of memory story is a between-subjects factor. The fictional story condition serves as a comparison. Participants in both conditions recalled a story about the same topic, a romantic event.

Participants

There were 129 participants in the study. Younger adults (32 men, 32 women) ranged from 19 to 39 years old ($M = 27.94$ years; $SD = 4.84$). Older adults (33 men, 32 women) ranged from 64 to 86 years old ($M = 74.66$ years; $SD = 6.05$). The ethnic composition of the sample generally mirrors the ethnicity of the population in the area where the study was conducted (US Census Bureau, 2000). The younger adults were recruited from the university community and received \$10 for participation. The older adults were recruited from community locations and received no compensation. Older adults were pre-screened using a modified telephone version of the Mini-Mental State Examination (ALFI-MMSE; Roccafort, Burke, Bayer & Wengel, 1992) in order to exclude individuals with impaired cognitive ability.

The sample is typical with respect to age differences in cognitive function (Schaie, 1994). Older adults ($M = 30.65$, $SD = 5.00$) had better vocabulary scores than younger adults ($M = 27.61$, $SD = 4.66$), $t(127) = 3.57$, $p < .001$. Performance on the WAIS-R reasoning subscale showed younger adults correctly completed more problems ($M = 14.53$ problems; $SD = 5.24$) than older adults ($M = 8.09$ problems; $SD = 3.73$), $t(125) = 7.95$, $p < .001$, and made fewer errors (young: $M = 1.53$, $SD = 3.07$; old: $M = 3.13$, $SD = 2.68$), $t(125) = 3.12$, $p < .01$. Using an immediate recall version of the Auditory Verbal Learning Task (AVLT; Rey, 1941) younger adults correctly remembered more words ($M = 8.91$ words; $SD = 2.12$) than older adults ($M = 7.23$ words; $SD = 1.94$), $t(127)$, $p < .001$. There were no age differences for the number of errors of commission or repetitions, $t(127) = 1.54$ and $.83$, $p > .05$. The cognitive variables were unsuitable for use as covariates in the major analyses: while they were related to age, they were unrelated to the major dependent variables (Stevens, 1992).

Procedure

Participants were tested individually in a comfortable home-like interview room. Preliminary measures included background information (demographics and health questionnaire), and cognitive ability measures (verbal ability, reasoning ability and episodic memory). Participants were randomly assigned to one of two memory story conditions in which responses were audio-taped. They either remembered and told an autobiographical memory story or listened to and recalled a fictional story about a romantic event. Memory stories were shared orally with a young female interviewer trained as an interested, engaged listener, but who did not provide oral feedback or comment during recall.

In the autobiographical memory story condition, participants were given three minutes to recall a romantic event that they would like to share. This allowed ample time for recall and standardized the timing of recall sessions across the two conditions. Participants then narrated their memory story and were encouraged to tell the interviewer everything they could remember about it. They were given 10 minutes for narration so as to reflect the time one might reasonably take in everyday life. Three standard probes were used to elicit full recall.

The fictional story condition served as a comparison to the autobiographical memory condition and employed a standard passage used in narrative memory research (Dixon, Hultsch & Hertzog, 1989). Romantic events have been used in research on narrative recall (e.g., Ross & Holmberg, 1992) because they are likely to have been experienced by both younger and older adults. The fictional story is written in a colloquial style and includes information about the character's intentions, evaluations and outcomes. Younger and older adults have reported that these narratives are moderately emotional stories, elicit positive feelings, and are somewhat interesting and true-to-life (Dixon, et al., 1989). The three-minute fictional story was presented via audiotape. Participants then immediately recalled and narrated the story for ten minutes. The recall directions were identical to those in the autobiographical memory story condition. After completing the recall session, participants were administered the Memory Quality Questionnaire.

Measures

A modified telephone version of the *Mini-Mental State Examination* was employed to screen for cognitive status (ALFI-MMSE; Roccafort, et al., 1992). It contains questions regarding orientation in time and place, and others that tap into cognitive status. The ALFI-MMSE ranges from 0 to 21, with the average for 'non-impaired' individuals being 17. The basic *demographic* questions include age, gender, and ethnicity. *Self-rated Health Status* (Maddox, 1962) was assessed using a single item concerning perceived health (in relation to age peers) ranging from 1 (*very good*) to 6 (*very poor*) on a Likert scale. The vocabulary subscale of the *Wechsler Adult Intelligence Scale – Revised* (WAIS-R; Wechsler, 1981) measured verbal ability using a list of words that participants define one word at a time. Words increase in level of difficulty as the task progresses. The number of correctly defined

words was reliably scored by two coders ($Kappa = .80$). The *Primary Mental Abilities Letter Series Task* (Thurstone, 1962) was used to assess reasoning ability. It involves a timed sequence of letter series items that increase in level of difficulty. Scores reflect the number of correct series completed. One trial of the *Auditory Verbal Learning Task* (AVLT; Rey, 1941) provided a test of episodic memory through the presentation and immediate recall of fifteen unrelated words. The number of correctly remembered words is the AVLT score.

In addition to the person-centered background measure, participants completed a questionnaire assessing the phenomenological qualities of the shared memories. Studies investigating autobiographical memory (e.g., Rubin, 1998) often assess various memory characteristics (e.g., emotional valence, personal significance) as ancillary variables that can be used to explore obtained effects. Phenomenological qualities of the autobiographical memory stories were assessed using the *Memory Quality Questionnaire* (MQQ) (Alea & Bluck, in press). The 13 items represent three factors: emotional re-experiencing, personal significance, and rehearsal. Items are rated on a Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). The *emotional re-experiencing* subscale represents the extent to which positive emotions were felt at the time of the event. Higher scores represent greater emotional re-experiencing of positive affect. The *personal significance* subscale represents emotional intensity (i.e., without regard to valence), personal importance and vividness. The *rehearsal* subscale is the frequency of thinking and talking about the event. Rehearsal also includes the level of surprise the memory elicited. Events that are surprising are more frequently talked ($r = .39, p < .01$) and thought about ($r = .45, p < .01$).

Level of detail and off-target responding were measured through content-coding of the memory story narratives. The story transcripts were verbatim records of the interviews that were blinded for participants' gender and stripped of extraneous speech fillers for coding. Both coding schemes were taught through intensive training using pilot data. After achieving reliability the transcripts were coded independently by each of two coders and discrepancies were resolved by discussion. Coder drift was addressed through regular coder meetings.

The procedure used for content coding level of detail is a modified version of an existing scheme (Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002) adopted because of its explicit construct definitions and comprehensive approach. *Level of detail* was coded in four categories: place, time, perceptual, and emotion/thought details. Place details refer to localization in space, including countries, cities, streets, buildings, rooms, and locations within a room. Time details include a life epoch, year, season, month, date, day, time of day, or clock time. Perceptual details include auditory, olfactory, tactile/pain, taste, visual, and spatial-temporal information. Emotion/thought details are mental states of the characters including feelings, states, thoughts, opinions, expectations, or beliefs. The entire memory story was reviewed for each of the four types of detail in succession. One rating for each of the four detail types was assigned. Ratings ranged from three to zero. 'Three' represents a rich, highly specific, evocative, and/or vivid description that emerges from a feeling of re-experiencing. 'Two'

refers to a detailed description that lacks a feeling of re-experiencing. ‘One’ is characterized as a description that is limited to general, non-specific information. ‘Zero’ is assigned if there is no description pertaining to the specified type of detail. Beyond these parameters, specific coding rules exist for each of the four types of detail. For a comprehensive account of the scheme, see Levine et al., (2002). Level of detail is operationalized as the mean of the four detail codes in each memory story. Two coders rated a sub-sample of 15% of the 129 memory stories for level of detail: inter-rater agreement for Place was 94.7%, Kappa = .92, for Time was 100%, Kappa = 1.0, for Perceptual 92.6%, Kappa = .83, and for Emotion/Thought was 90.3%, Kappa = .79.

Off-target responses were coded independent of the detail codes in a second round of coding. Because OTV and OTS both represent off-target responding and differ only slightly in their conceptualization, the off-target responding coding used the OTS approach (James, et al., 1998). Off-target information is conceptualized as any continuous block of speech not directly relevant to the memory story. Coding procedures were modified slightly for use with episodic autobiographical memory stories. The *amount of off-target* responding was first coded by categorizing each idea segment (Kintsch, 1974) as off-target or not. Amount of off-target speech is operationalized as the number of total words across all off-target segments. The *degree of off-target* responding was then coded by assessing each off-target segment as either *indirectly relevant* or *irrelevant*. Indirectly relevant information is not directly on topic but is somehow related to the memory story (e.g., supplemental information from a similar event, background information). Indirectly relevant information is operationalized as the number of indirectly off-target text segments in the story. Irrelevant information is completely unrelated to the memory story topic and does not provide transitions, segues, or an explicit signal about the manner in which the information is connected to the remembered episode. Irrelevant information is operationalized as the number of irrelevant off-target text segments in the story. A sub-sample of 15% of the 129 memory stories was coded for amount and degree off-target. Inter-rater agreement for amount off-target was 88.5%, Kappa = .79, and for degree off-target was 97.6%, Kappa = .88.

The third major study variable, *global story quality*, was assessed through peer ratings. Eight younger adults ($M = 24.63$ years; $SD = 4.00$) and eight older adults ($M = 76.00$ years; $SD = 7.30$) provided peer ratings of global story quality for each of the transcribed memory stories. The group of peer raters included volunteers from the community and was balanced by gender within age groups. Peer raters received \$30.00. The rating sessions were held at a community location and included no more than four raters to ensure data quality. The number of memory stories rated in each session was pre-set so that raters did not feel pressure to complete their ratings hurriedly. Pilot-testing determined that two two-hour sessions were adequate for each rater to rate all of the 129 memory stories. There were four complete sets of stories that contained a combination of all autobiographical memory and fictional stories in four random orders. Coding of the four orders was counterbalanced across rater age and gender. In the first session, peer raters received an introduction to the project and standardized instructions on

how to do the task. During the first session, raters read and judged 60 of the 129 memory stories. In the second session, raters received a reiteration of the instructions and completed the ratings of the remaining 69 memory stories.

The global story quality rating procedures are based on previous research (James et al., 1998; Pratt & Robins, 1991). Raters judged the memory stories on a single global story quality dimension to ensure that the implicit view of an untrained rater (i.e., a layperson's view) was captured. Raters read one story at a time and made ratings on a five-point Likert scale ranging from 1 (*not at all a good story*) to 5 (*an extremely good story*). All raters read all stories. Global story quality is operationalized as the average rating of each memory story across all raters. Rater consistency is addressed in the preliminary analyses section.

Results

The results are divided into three major sections. The first section reports the preliminary analyses. The second section reports the results of a series of analyses of variance (ANOVA) investigating the study's first objective: these analyses address group differences in level of detail, off-target responding, and global story quality. The third section addresses the study's second objective using a hierarchical regression approach to identify memory and person characteristics that predict global story quality.

Ideal covariates are those with a significant correlation with dependent variables and little correlation among covariates (Stevens, 1992). The bi-variate correlation matrix of all dependent variables, independent variables, and background variables, assessed using a Bonferroni correction, revealed that total number of words in the memory story ($M = 358.73$ words; $SD = 288.84$) is significantly correlated with all of the dependent variables (p 's all $< .001$). Correlations with all the dependent variables and no relation to age group, gender, ethnicity, education, and health demonstrate the appropriateness of total number of words as a covariate. Total number of words is related to condition: autobiographical memory stories ($M = 514.85$ words; $SD = 335.69$) are longer than fictional stories ($M = 200.17$ words; $SD = 65.88$), $F(1, 128) = 54.18, p < .001, \eta^2 = .35$. Thus, this variable is used as a covariate in all major analyses. Note that ethnicity, education and health status were considered as possible covariates but none were significantly correlated with the dependent variables. The cognitive ability measures (i.e., verbal ability, reasoning ability and episodic memory) were not significantly correlated with the dependent variables. The relationship between cognitive abilities and age group are reported as sample characteristics in the Participants section.

The goal of the peer ratings was to assess peoples' implicit views of a good story. Thus, to determine whether the 16 peer raters judged the memory stories similarly (as should be the case if they are drawing on a normative implicit view) an Intra-Class Correlation (ICC) was performed. A two-way mixed effect model was computed for the global story quality ratings of the 16 raters. The consistency approach was used to look for

general changes in rater's judgments rather than systematic variability among the raters. The average measure ICC determined that the 16 peer raters were reliably similar in judging the memory stories, $\rho_I = .78$; $F(126, 1890) = 4.49$, $p < .001$, $\eta_2 = .36$. This provided support for creating a mean global story quality score across the raters for each story, to be used in further analyses.

The following ANOVAs investigate the study's first objective, addressing group differences (i.e., age and gender) in level of detail, off-target responding, and global story quality. For *level of detail* the data were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA, with total number of words as a covariate. The overall level of detail score (range: 0-3) was the dependent variable. The ANCOVA revealed a main effect for age group, $F(1, 128) = 4.00$, $p < .05$, $\eta_2 = .03$. As predicted, younger adults' stories are more detailed ($M = 2.14$, $SD = .47$) than older adults' stories ($M = 2.04$, $SD = .44$) regardless of the type of memory story recalled. A main effect for memory story condition was revealed, $F(1, 128) = 8.07$, $p < .01$, $\eta_2 = .06$. As expected, autobiographical memory stories include a higher level of detail ($M = 2.30$, $SD = .46$) than fictional stories ($M = 1.87$, $SD = .33$).

An analysis of covariance approach was used to assess differences in amount and in degree of *off-target responding*. Variables assessing amount of off-target responding include number of words off-target, and number of segments off-target. Number of words is the total amount of off-target responding while number of segments assesses how frequently a participant goes off-target regardless of number of words produced in any off-target segment.

For number of words off-target, the data were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA with total number of words as a covariate. The ANCOVA shows a main effect for gender, $F(1, 127) = 6.72$, $p < .05$, $\eta_2 = .05$. Men's stories contain more off-target words ($M = 73.92$ words, $SD = 154.14$) than women's stories ($M = 46.63$ words, $SD = 55.53$). This effect was qualified by a gender X condition interaction, $F(1, 127) = 8.06$, $p < .01$, $\eta_2 = .06$. Autobiographical memory stories told by men contain significantly more off-target words ($M = 135.73$ words, $SD = 207.28$) than autobiographical memory stories told by women ($M = 68.78$ words, $SD = 67.80$), $F(1, 62) = 7.55$, $p < .01$, $\eta_2 = .04$, but there is no gender difference in number of off-target words in fictional stories. There were no other differences.

Next, the data were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA with total number of words as a covariate, and number of off-target segments as the dependent variable. Results revealed a main effect for age group, $F(1, 127) = 6.02$, $p < .05$, $\eta_2 = .05$. Older adults' stories contain more off-target segments ($M = 5.71$ segments, $SD = 9.98$) than younger adults' stories ($M = 3.47$ segments, $SD = 3.45$). The main effect was qualified by the predicted age group X

condition interaction, $F(1, 127) = 4.67, p < .05, \eta_2 = .04$. Autobiographical memory stories told by older adults contain more off-target segments ($M = 9.55$ segments, $SD = 12.90$) than autobiographical memory stories told by younger adults ($M = 5.19$ segments, $SD = 4.04$), $F(1, 62) = 5.40, p < .05, \eta_2 = .08$. There was no age group difference for fictional stories. A gender X condition interaction was also detected, $F(1, 127) = 5.03, p < .05, \eta_2 = .04$. Autobiographical memory stories told by men ($M = 8.83$ segments, $SD = 12.29$) contain more off-target segments than autobiographical memory stories told by women ($M = 5.97$ segments, $SD = 6.34$), $F(1, 62) = 4.20, p < .05, \eta_2 = .05$. There were no gender differences for fictional stories. Pair-wise comparisons examining the two interactions did not detect additional group differences.

Degree of off-target responding consists of two variables: indirectly relevant and irrelevant off-target segments. To investigate group differences for these two variables the data were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) MANCOVA with total words as a covariate. Indirectly relevant and irrelevant off-target segments are the dependent variables. These two dependent variables are contingent on each other: together they comprise the amount of off-target segments variable described above. The MANCOVA revealed main effects for condition, *Wilks's Λ* = .94, (2, 127) = 3.61, $p < .05, \eta_2 = .06$ and age group, *Wilks's Λ* = .94, (2, 117) = 3.86, $p < .05, \eta_2 = .05$. There was also an age group X condition interaction, *Wilks's Λ* = .95, (2, 117) = 3.04, $p = .05, \eta_2 = .04$. Univariate results are reported separately for each dependent variable.

A 2 (age group: younger adults, older adults) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA was conducted with total words as a covariate. Number of indirectly relevant segments is the dependent variable. A gender X condition interaction, $F(1, 127) = 3.85, p = .05, \eta_2 = .03$ (see Figure 1) was detected. Autobiographical memory stories told by men contain more indirectly relevant segments ($M = 6.30$ segments, $SD = 7.50$) than autobiographical memory stories told by women ($M = 4.45$ segments, $SD = 2.90$), $F(1, 62) = 12.86, p < .05, \eta_2 = .04$, but men and women show no difference in the fictional memory story condition. No other effects were found.

A 2 (age group: younger adults, older adults) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA was conducted with total words as a covariate. Number of irrelevant segments is the dependent variable. A main effect for age group, $F(1, 127) = 7.10, p < .01, \eta_2 = .06$ was found. Older adults' memory stories contain more irrelevant segments ($M = 1.78$ segments, $SD = 6.34$) than younger adults' memory stories ($M = .23$ segments, $SD = .58$). There was an age group X condition interaction, $F(1, 127) = 5.66, p < .05, \eta_2 = .05$ (see Figure 2). Older adults' autobiographical memory stories contain more irrelevant segments ($M = 3.61$ segments, $SD = 8.73$) than younger adults' autobiographical memory stories ($M = .44$ segments, $SD = .76$), $F(1, 62) = 6.55, p < .05, \eta_2 = .06$. Including more irrelevant segments was not evident across memory story conditions:

older and younger adults' fictional stories do not differ in the number of irrelevant segments. Pair-wise comparisons show no other differences.

For *global story quality*, the data were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) X 2 (condition: autobiographical memory story, fictional story) ANCOVA with total number of words as a covariate. Global story quality, the dependent variable, is the average across the 16 peer raters for each story (range: 1-5). The ANCOVA revealed a main effect for age group, $F(1, 127) = 9.83, p < .01, \eta_2 = .08$. Contrary to expectation, younger adults' memory stories ($M = 2.48, SD = .46$) are rated higher in global story quality than older adults' stories ($M = 2.25, SD = .62$). There was also, as would be expected, a main effect for condition, $F(1, 127) = 9.10, p < .01, \eta_2 = .07$. Autobiographical memory stories ($M = 2.64, SD = .55$) are rated higher than recalled fictional stories ($M = 2.09, SD = .41$).

The main effects were qualified by an age group X gender X condition interaction, $F(1, 127) = 4.47, p < .05, \eta_2 = .04$ (see Table 1 for all M and SD). For interpretive purposes the observed three-way interaction is best presented in terms of the 2 (age group) X 2 (gender) effects found in ANCOVAs run separately for autobiographical memory stories and for fictional stories (Stevens, 1992). The global story quality data for autobiographical memory stories only were analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) ANCOVA with total number of words as a covariate. The analysis revealed a marginal main effect for age group ($p = .058$). Of note, however, was an age group X gender interaction, $F(1, 62) = 6.19, p < .05, \eta_2 = .10$. Younger men's autobiographical memory stories ($M = 2.48, SD = .45$) are rated higher than older men's autobiographical memory stories ($M = 2.15, SD = .54$) but there are no differences for younger and older women. The global story quality data for fictional stories were separately analyzed using a 2 (age group: younger adult, older adult) X 2 (gender) ANCOVA with total number of words as a covariate. The analysis revealed a main effect for age group, $F(1, 63) = 5.18, p < .05, \eta_2 = .08$: younger adults' fictional stories are rated higher ($M = 2.22, SD = .26$) than older adults' fictional stories ($M = 1.97, SD = .49$). There was no main effect for gender and no age group X gender interaction. In sum, the three-way interaction in global story quality appears to be driven by age group differences that occur for men's autobiographical memory stories but not for women's: older men tell worse autobiographical memory stories than younger men. This pattern does not appear for fictional stories.

Regression analyses were used to determine the extent to which content coded story characteristics (i.e., level of detail, off-target responding) and person characteristics (i.e., age group, gender) predict ratings of global story quality in the autobiographical memory stories. Fictional stories were used as a control in the current study and thus were not analyzed. A bi-variate correlation matrix assessed the relatedness among variables to be used in the regression models (see Table 2). Note that total number of off-target words was redundant in the model because of its high correlation with the degree of off-target responding variables (i.e., indirectly relevant and irrelevant off-

target segments). Additionally, note that age group is not significantly correlated with level of detail or global story quality.

Evaluation of the data determined the general linear model assumptions were adequately met. The global story quality score was the criterion variable. Total number of words was entered in the first step. In the second step, indirectly relevant off-target segments, irrelevant off-target segments, and level of detail were entered. In the final step, age group, gender, and age group by gender were entered. There are two predictors of global story quality in autobiographical memory stories (p 's < .05): total number of words ($\beta = .27$), and as expected, level of detail ($\beta = .25$); *adjusted R*² = .37, $F(6, 60) = 6.85$, $p < .001$. The model predicts 43.2% of the variance in global story quality (see Table 3). Total number of words in the story was the best predictor but is a conceptually inadequate predictor of global story quality. Thus, follow-up analyses examined whether the relationship between total number of words and global story quality might be mediated by a particular memory characteristics as measured by the MQQ (i.e., emotional re-experiencing, personal significance, rehearsal) that would allow for a conceptual interpretation.

Standard mediation analyses were conducted (Baron & Kenny, 1986). A bi-variate correlation matrix examined relations between level of detail, total number of words, the three memory characteristic factors, and global story quality. Personal significance of the memory was the only memory characteristic that was significantly correlated with both total number of words and global story quality. The first step in the hypothesized mediation was confirmed by the initial hierarchical regression, *adjusted R*² = .26, $F(1, 62) = 12.86$, $p < .01$, $\eta^2 = .23$ (i.e., total number of words predicts global story quality). A second linear regression showed that personal significance of the autobiographical memory (as rated by the storyteller) predicts global story quality (as rated by independent peers) ($\beta = .35$); *adjusted R*² = .10, $F(1, 62) = 8.45$, $p < .01$, $\eta^2 = .20$. Thus, the second step in the mediation was confirmed.

A final hierarchical regression model was conducted to determine whether the personal significance of the memory partially or fully mediates the relation between the total number of words in the story and global story quality. If personal significance of the memory is a partial mediator of the relation between total words and global story quality, total words will be a weaker predictor (i.e., reduced Beta weight) of global story quality when personal significance of the memory is also entered in the model. If personal significance fully mediates this relation, total number of words will no longer be a significant predictor of global story quality.

Results from the regression analyses for the mediation model are presented in Table 4. The criterion variable was the global story quality score. Level of detail was entered in the first step of the model because of its predictive value (demonstrated in the first hierarchical regression), so as to take a conservative approach to testing the mediation model. Total number of words was entered in the second step. Personal significance was entered in

the final step. As can be seen in Table 4, the storyteller's rating of the personal significance of the memory completely mediates the relationship between total number of words and peer-rated global story quality. The more personally significant an event one shares, the more words produced, and the better the story in the mind of the listener.

Discussion

Storytelling is a universal human activity (Dunbar, 2005). It occurs in various cultures (Strawbridge, 2005) and is engaged in by individuals of all ages (Bruner, 1999; Nelson & Fivush, 2004). The most commonly told stories are autobiographical: ones that individuals tell about their own life and experiences. The current study investigated age and gender differences in level of detail, off-target responding and global story quality in autobiographical memory stories (with fictional stories as a comparison). Younger and older adults recalled and narrated a specific event, a romantic episode. Narratives were content coded for level of detail and off-target responding. In addition, an independent group of younger and older peers rated the stories for global story quality. Results show age, and also gender, differences in the characteristics of memory stories. Neither age nor gender predicts global quality of autobiographical stories. Results pertaining to age and gender difference in level of detail, off-target responding, and global story quality are highlighted below, followed by a discussion of predictors of the global quality of autobiographical stories.

As expected, older adults tell less detailed autobiographical memory stories and fictional stories than younger adults. Though plausible as an explanation for these results, age-related cognitive declines do not seem to explain lower levels of detail in older adults' memory stories. The three cognitive abilities measured (i.e., verbal ability, reasoning ability and episodic memory) are unrelated to the level of detail variables either within the entire sample, or within the older adult group. In addition, if cognitive declines were involved, age differences might be expected to appear across the types of narrative recalled. Instead, past research shows that age differences in level of detail are dependent on the type of material being recalled and retold. Age differences are found more frequently when individuals recall stories about real life (whether their own, as in the current study, or others) but not when they recall fictional literary materials (e.g., fables; Adams et. al., 1990).

Rather than a cognitive decline explanation, observed age differences in sharing details may be due to differences in both communication style and communication goals. Research has found that older adults' communication style is integrative and interpretive (i.e., attempting to communicate the meaning of a story) compared to younger adults' detailed and literal style in recalling narratives (Gould, Trevithick, & Dixon, 1991; Hashtroudi, Johnson, & Chrosniak, 1990; Tun, 1989). Other research suggests that older adults prioritize telling the gist of a story over the details (Adams et al., 1990; Bluck, Levine & Laulhere, 1999; Stine & Wingfield, 1990), again suggesting a focus on general meaning. In terms of communication goals, late life is a phase in which the

goal of story-telling may be to communicate directive lessons to the listener (McAdams, de St. Aubin, & Logan, 1993; Pratt, Norris & Arnold, 1999). Older adults self-report sharing stories with the goal of teaching and informing others through passing on life experiences (Birren & Deutchman, 1991; Cappeliez, Lavalee & O'Rourke, 2001; Webster & McCall, 1999). Thus, while sharing detailed, literal stories may be important in young adulthood, older adults' communication style and goals are consistent with them recalling and narrating stories without focusing on specific details.

Though telling the gist of a story is generally adequate for conveying the message, telling less detailed stories may have implications for older adults. Particularly, sharing less detailed autobiographical memory stories may affect the social dynamic of autobiographical memory-sharing (Adams, Smith & Pasupathi, 2002; Pasupathi, 2001). Studies have shown that individuals are judged as more confident, more persuasive, and more believable when they share specific details of personal events (Pillemer, 1998). It appears that listeners are more willing to accept a personal story as being a valid real-world account when it is rich with affective and perceptual detail. Older adults may be at risk of losing credibility, and thereby even potentially losing listeners, when sharing stories with lower levels of detail.

Researchers investigating off-target responding have focused on communication style differences (James, et al., 1998) versus cognitive deficits (Arbuckle & Gold, 1993) as two opposing explanations for its occurrence. It may instead be explained by a combination of both. Off-target responding is best understood when broken down into two constructs: indirectly relevant and irrelevant off-target responding. Including indirectly relevant off-target information in a narrative may serve to provide background for the story, reflecting the storyteller's concern with adequately communicating with the listener. Inclusion of completely irrelevant off-target information, however, may reflect cognitive decline.

Indirectly relevant information may be useful to the listener because the storyteller explicitly connects this information to core features of the episode (e.g., to the who, what, when, where, and why). For instance, after mentioning where an event occurred, information regarding the location may be expanded by directly linking it to world knowledge about the location (e.g., Victoria is on Vancouver Island), an autobiographical fact about the storyteller (e.g., I was born in Victoria), or some other life story information (e.g., I traveled to Victoria in my twenties). Thus, the indirectly off-target information can aid the listener in contextualizing and understanding the episode being shared. Both older and younger adults seem to recognize the need to occasionally go off-target in order to give indirectly related, but supporting, story information (i.e., there were no age differences).

Completely irrelevant information, however, cannot be conceived of as useful for communicating the story. It includes information such as random interjections about past experiences and other information that is in no way related to the episode. Older adults provide irrelevant information more frequently in telling autobiographical

memory stories (but not in telling fictional stories) than do younger adults. The autobiographical memory story results support previous findings, using life history questions, (Arbuckle & Gold, 1993) suggesting that older adults produce more off-target information and that there is no communicative purpose to this (i.e., Inhibitory Deficit Model). Note however that this does not occur across materials but only for the autobiographical memory stories. In addition, closer inspection of even this result shows that only 32% of the older adults in our sample produced any irrelevant information (range = 1-36 segments per story). Thus, this non-adaptive straying off-target is only present in a sub-group of the older adult sample. For younger adults, and most of the older adults, off-target responding involves production of indirectly relevant information that provides a context for understanding the shared episode. Older adults who do produce irrelevant information, particularly in large quantities, however, may have difficulties garnering and maintaining interested listeners because they violate conversation maxims of coherence and relevance (Grice, 1975).

Gender also played a role in off-target responding. Men's autobiographical memory stories contained more indirectly relevant off-target information than women's stories (no difference in fictional stories). Previous researchers have also found gender differences in recalling autobiographical memories (e.g., Pillemer, Wink & DiDonato, 2003). Women focus on specific episodes more than men (Goddard, Dritschel & Burton, 1998) and thus tell memory stories that contain more emotions (Sehulster, 1995) and are more vivid (Morse, Woodward & Zweigenhaft, 1993; Niedzwienska, 2003) than men's stories. Men may be more likely to go off-target when sharing an autobiographical memory about a romantic event since women tend to be more invested in relationship topics than are men (Ross & Holmberg, 1992). For men, including indirectly relevant information may allow them to shift the primary emphasis from memory for the particular episode allowing them to construct their story using more personally salient information (i.e., indirectly relevant information such as world knowledge, or autobiographical facts) to embellish their story.

In addition to the two memory characteristics measured (i.e., level of detail, off-target responding), the global story quality of both the autobiographical memory and fictional stories was assessed through peer rater's judgments. Peer ratings of global story quality provide an understanding of how stories that might be shared in everyday contexts are judged by listeners. They tap individuals' everyday or implicit conception (Sternberg, 2005) of what constitutes a good story. Do raters judge older adults' memory stories as better than younger adults' memory stories? Contrary to expectation (James et al., 1998; Pratt & Robins, 1991), older adults' memory stories were rated worse than younger adults' stories. Analyses show that older men telling particularly poor autobiographical memory stories (as compared to younger men) drive this age effect. Younger and older women tell autobiographical memory stories with equally high global story quality.

Why might older men tell poorer autobiographical memory stories? Unfortunately, older men are often underrepresented in gerontological research (Schaie, 1996). They are difficult to recruit (Binstock & George, 1996) and there is only a sparse literature on the psychology of older men (Kernes & McWhirter, 2004). Thus, much remains unknown about older men's communication style. Older men's global story quality may be particularly poor because they are less likely to share memory stories in general (Webster & Cappeliez, 1993), have an affinity toward recalling historical events rather than personal events (Keller, 2002), and tend to provide instrumental advice instead of emotional or interpersonal information in their narratives (Rosenthal, 1987). Note that age differences in men's global story quality may be a reflection of cohort differences. Young men in the current cohort may be better able and more inclined to provide socially and emotionally relevant information that improves the overall quality of their memory stories (Ryan & Laurie, 1990), and that inclination will not necessarily diminish as they age.

Overall, autobiographical memory stories were higher in global story quality than were fictional stories. This is unsurprising because autobiographical memories are real life accounts characterized by vivid, emotional and personally salient information (Pillemer, 1998). Thus, the prediction that autobiographical memory stories would be higher in global quality seemed rather obvious. Of interest is that this seemingly obvious effect did not hold for men (regardless of age): men's fictional stories and autobiographical memory stories have the same level of global story quality. Women's autobiographical memory stories, however, are significantly higher quality than their fictional stories. Women may learn to tell better autobiographical memory stories because they are socialized from childhood to understand the importance of the social sharing of personal memories (Reese, Hayden & Fivush, 1996). Gender differences may be traced to children's socialization concerning autobiographical memory sharing: parent's communication style with girls is more elaborative and emotional, and they tend to recall contextual and evaluative information more with girls than boys (Buckner & Fivush, 2000; Fivush & Reese, 2002). In adulthood, research has found that women tend to reminisce more frequently than men and use personal memories more as a source of communication (Merriam & Cross, 1982; Webster & Cappeliez, 1993).

People often think that certain classes of people have a knack for telling riveting, interesting stories. For example, older adults are stereotypically considered better storytellers than younger adults (Ryan, Kwong See, Meneer & Trovato, 1992). Neither age nor gender, however, predicted global story quality. Instead, it is the characteristics of the memory stories themselves that predict whether a story is judged positively. Previous research indirectly suggests that high levels of detail and low levels of off-target responding might be attributes of a 'good' story (Adams et al., 1990; Arbuckle & Gold, 1993; James et al., 1998). The current study tested those relationships empirically, and confirms that level of detail is an important predictor of global story quality. Providing details not only gives credibility to the storyteller (Pillemer, 1998), but stories rich in detail also provide the listener with a

sense of re-experiencing the original event (i.e., provide the ability to relive the experience with the storyteller). Providing the listener an ability to relive the personal episode allows him or her to gain knowledge about the world without having to experience it directly (Dautenhahn, 2003; Mandelbaum, 2003). This social transmission of experienced events and their consequences may be one of the primary benefits of sharing memories (Nelson, 2003). Both the storyteller and listener benefit from effective use of detail in shared autobiographical memory stories.

Another important predictor of quality was a story's length. Personal significance of the shared memory story, however, completely mediates the relationship between story length and global story quality. When people recall and choose to tell personally significant autobiographical memories, they talk longer and produce better stories. Thus, increased story quality is not due to simply talking longer but due to choosing a personally significant event to share. Research suggests that sharing personally significant memories increases rapport and caring (Tannen, 1990), intimacy with romantic partners (Alea & Bluck, in press; Buehlman, Gottman & Katz, 1992), empathy (Beals, 1991), as well as serving other social functions (Alea & Bluck, 2003; Nelson, 2003; Pillemer, 1998).

While details make a difference, higher levels of off-target responding are unrelated to global story quality. Indirectly relevant off-target information may supplement the remembered event, providing the listener with additional contextual information but does not actually improve overall global story quality. While there were no benefits to story quality when providing indirectly relevant (i.e., supporting) information, note that there was also no reduction in global story quality due to inclusion of irrelevant information. This may be due, however, to the extremely low levels of irrelevant information provided by the current participants. Stories containing very high levels of irrelevant information may be judged poorly.

Conclusion

Telling memory stories about personal events is a common everyday activity across cultures and across individuals of all ages. Sharing such stories benefits the story "teller" by garnering listeners, and the story "listener" by receiving information (i.e., learning from others' experiences). Younger adults tell stories with higher levels of detail, and that contain less irrelevant information. Though these age and gender effects are evident, it appears that person characteristics are not crucial in predicting global story quality. Instead, choosing a personally significant event, and recalling it in some detail results in a 'good' story. Who tells better stories? This study suggests that anyone can be a good storyteller - provided they choose the right story, and elaborate it in some detail.

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Table 1
Global Quality of Younger and Older Men and Women's Stories (N = 129)

Memory Story Condition	Younger Adults		Older Adults	
	Men	Women	Men	Women
Autobiographical Memory	2.79	2.69	2.33	2.74
	(.43)	(.53)	(.50)	(.64)
Fictional Story Memory	2.20	2.24	2.00	1.94
	(.25)	(.28)	(.54)	(.44)

Note. Global story quality was rated on a 5-point scale.

Table 2
Intercorrelation of Variables in the Autobiographical Memory Stories

Variable	1	2	3	4	5	6	7
1. Words in memory story	—	.59**	.40**	.59**	.47**	.49**	.06
2. Total off-target words		—	.79**	.76**	.03	.21	.13
3. Indirectly relevant segments			—	.32*	.13	.31*	.11
4. Irrelevant segments				—	.03	.07	.25*
5. Level of detail					—	.51**	-.07
6. Global story quality						—	-.18
7. Age group							—

Note. * $p < .05$, ** $p < .01$.

Table 3

Hierarchical Regression Analyses Predicting Global Story Quality in Autobiographical Memory Stories (N = 65)

Variable	B	SE B	β
Step 1			
Words in memory story	.00	.00	.53**
Step 2			
Words in memory story	.00	.00	.51**
Indirectly relevant segments	.02	.01	.14
Irrelevant segments	-.02	.01	.26
Level of detail	.28	.15	.24*
Step 3			
Words in memory story	.00	.00	.27**
Indirectly relevant segments	.02	.01	.15
Irrelevant segments	-.02	.01	-.21
Level of detail	.29	.15	.25*
Age group	-.11	.12	-.10
Gender	.06	.12	.05

Note. Model 1: $R^2 = .28$ for Step 1. $R^2 = .42$, $\Delta R^2 = .14$ for Step 2. $R^2 = .43$, $\Delta R^2 = .01$ for Step 3. * $p < .05$, ** $p < .01$

Table 4

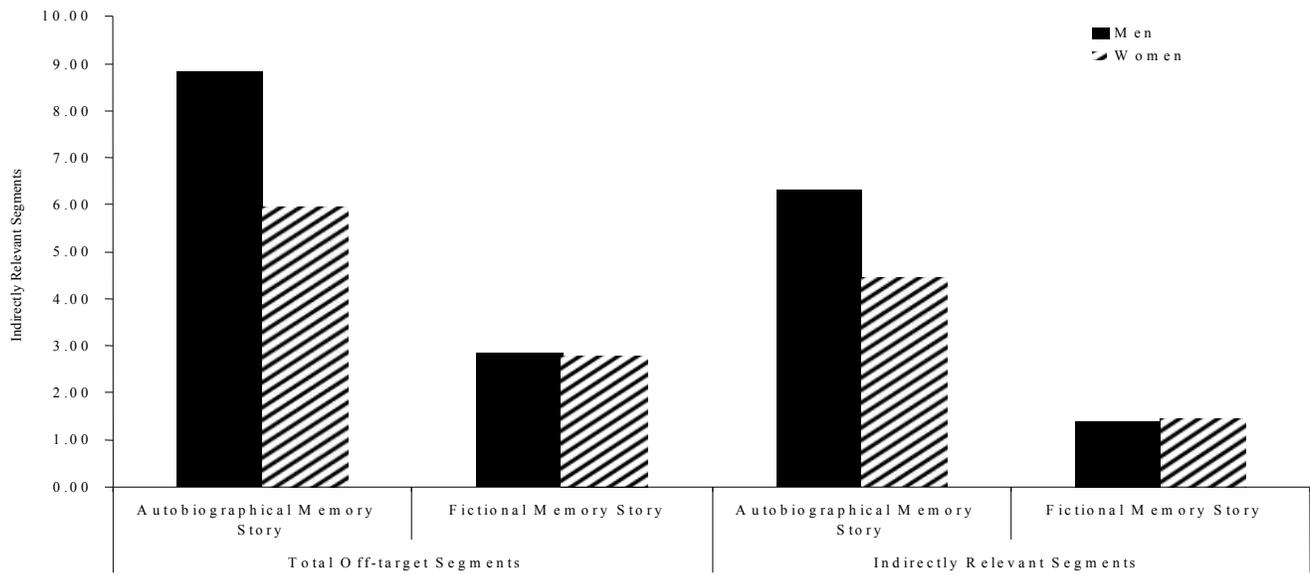
Mediation Analyses for Memory Characteristics and Personal Significance Predicting Global Story Quality in Autobiographical Memory Stories (N = 65)

Variable	B	SE B	β
Step 1			
Level of detail	.60	.13	.51**
Step 2			
Level of detail	.41	.14	.35**
Words in memory story	.00	.00	.32*
Step 3			
Level of detail	.47	.14	.40**
Words in memory story	.00	.00	.21
Personal Significance	.30	.12	.27*

Note. Model 2: $R^2 = .26$ for Step 1. $R^2 = .33$; $\Delta R^2 = .08$ for Step 2. $R^2 = .40$; $\Delta R^2 = .07$ for Step 3.

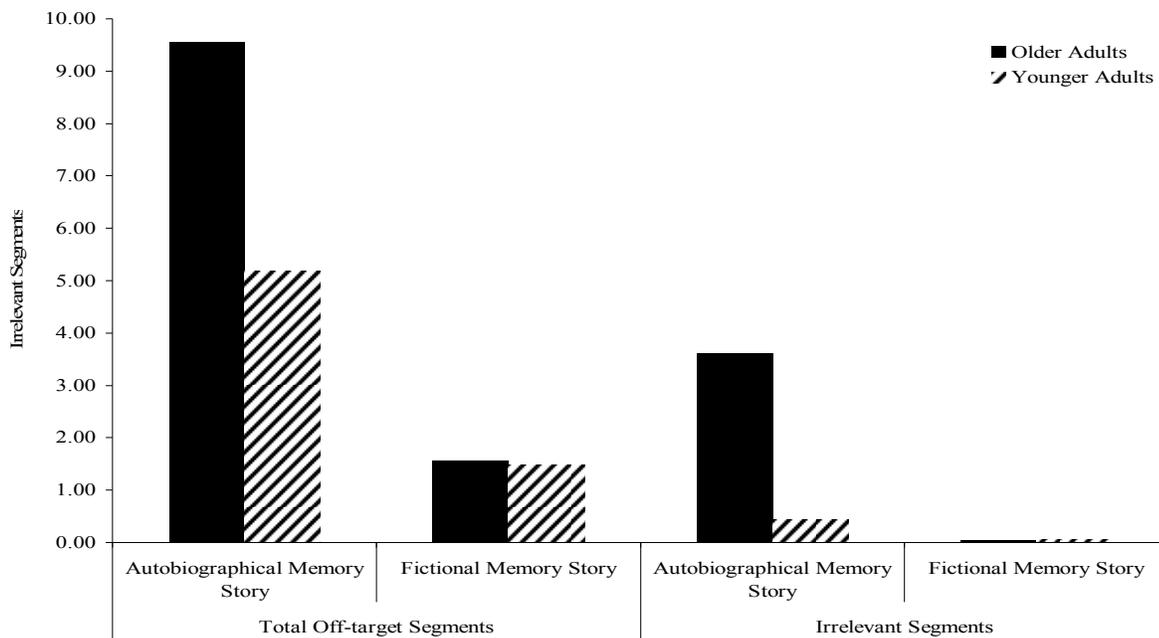
* $p < .05$, ** $p < .01$.

Figure 1. Men’s autobiographical memory stories contain more indirectly relevant segments than women’s.



Note. Analyses controlled for total number of words in the narrative.

Figure 2. Older adult’s autobiographical memory stories contain more irrelevant segments than younger adults’.



Note. Analyses controlled for total number of words in the narrative.