Psychology and Aging

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Online First Publication, January 11, 2016. http://dx.doi.org/10.1037/a0039990

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0882-7974/16/$12.00 http://dx.doi.org/10.1037/a0039990

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Older adults sometimes exhibit higher levels of off-target verbosity during story recall than do young adults. This appears as the inclusion of extraneous information not directly relevant to the topic. Some production of such material has been clearly related to cognitive decline, particularly older adults' inability to inhibit production of irrelevant information. In tandem, however, research also suggests that some extraneous information is indirectly related to the topic and may reflect age differences in communicative styles. To further elucidate the social–cognitive aspect of this issue, the question of import is: What is the *content* of the additional information provided by participants during story recall? The present study answers this question. Grounded in the autobiographical memory and life story literatures, we introduce the construct, *story asides*, and a reliable content-analytic scheme for its assessment. Young and older adults ($N = 129$) recalled 1 of 2 types of stories: a personal autobiographical memory or an experimenter-generated fictional story. Narratives were reliably coded for story asides. As expected, older adults produced more story asides than young adults only for autobiographical stories. The discussion focuses on the role of story asides in everyday communication including the possibility that they may be a sign of communicative expertise.

Keywords: off-target verbosity, aging, story recall, autobiographical memory

Sharing stories is a universal feature of human communication (Dunbar, 2005; Swearingen, 1990). Stories sometimes concern fictional events (e.g., a TV character's fairy-tale wedding). Individuals, however, commonly share stories of their personal experiences (Pasupathi & Carstensen, 2003; Pillemer, 1998). People tell autobiographical stories beginning at about age 5 (Nelson & Fivush, 2004) and across the life span (Bluck, Alea, & Demiray, 2010). Because of the ubiquity of storytelling in everyday life (McLean, Pasupathi, & Pals, 2007), considerable research has examined the ability to recall stories across the life span. Some research suggests that older adults more often go "off target" when recalling stories compared with young adults, providing information that may not be directly relevant to the topic (e.g., Arbuckle & Gold, 1993). The current research introduces a new construct, *story asides*, and its operationalization. We believe it will be useful in the study of aging as it allows classification of the indirectly relevant information that is a common element of remembered stories. This study examined adult age differences in recalling autobiographical memory stories, with fictional stories as a comparison.

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This research was partially supported by a Ruth L. Kirschstein National Research Service Award Predoctoral Minority Fellowship awarded to Nicole Alea from the National Institute on Aging (Grant 1 F31 AG20505).

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Elements of Storytelling

A host of factors have been linked to successful communication of stories including sensory abilities, communicative confidence (Ryan, Kwong See, Meneer, & Trovato, 1992) conveying the gist (Baron & Bluck, 2009) and providing details (e.g., D'Argembeau, Comblain, & Van der Linden, 2003). We focused in the current research, however, on one central element of story production: maintaining story focus (i.e., avoiding irrelevant information; Arbuckle & Gold, 1993).

Maintaining Story Focus: Age Differences

In past research, maintaining focus on appropriate material has been assessed via *off-target verbosity* (OTV; Arbuckle & Gold, 1993), the inclusion of information that is either irrelevant or not directly relevant to the story (Adams, Smith, Pasupathi, & Vitolo, 2002; Arbuckle, Pushkar, Bourgeois, & Bonneville, 2004; Juncos-Rabadán, Pereiro, & Rodríguez, 2005). Note that completely irrelevant material is, however, rarely produced (e.g., Pushkar et al., 2000). The current construct, story asides, focuses only on what previous researchers would refer to as indirectly relevant material, particularly on delineating the content of that material.

Research in the OTV tradition shows that inclusion of off-target information increases with age (e.g., James, Burke, Austin, &

Hulme, 1998; McGinnis, Goss, Tessmer, & Zelinski, 2008) and has been linked to deficits such as lower competence in activities of daily living (Arbuckle et al., 2004). Off-target speech has been linked to a certain aspect of cognitive decline, inhibition deficits. Older adults have been reported to have more irrelevant information spontaneously come to mind, and be less able to inhibit irrelevant information once it is in mind (Zacks & Hasher, 1994). Thus, the Inhibition Deficit Hypothesis (Hasher & Zacks, 1988; see also Lustig, Hasher, & Zacks, 2007, for a review) provides an explanation for why older adults produce more irrelevant material than young adults during story recall.

We propose an extension to the inhibition deficit explanation, suggesting that communicative style may also play a contributing role in older adults' storytelling. Our hope is that building on cognitive explanations (i.e., Inhibition Deficit Hypothesis) with social–cognitive explanations (i.e., Story Asides Construct) may help to more fully model this phenomenon. Our thinking is based on two lines of research. In one of these, Giambra (1989) demonstrated that when asked to report frequency of mind wandering (i.e., irrelevant thoughts) during vigilance tasks, older and younger adults do not differ. We recognize that vigilance tasks require only that participants indicate via a button press when a target image appears on a screen (i.e., a quite different task than storytelling). In this early work, however, Giambra warned against overgeneralizing with respect to inhibition deficits, proposing that the study findings "support the view that increased input of irrelevant information into working memory in old age cannot be a generalized cognitive phenomenon" (p. 142). Further, current research (Jackson & Balota, 2012) supports the claim that older adults do not experience greater mind-wandering. Both using vigilance tasks (Experiments 1–3) and, even more relevant, a reading comprehension task (i.e., fictional story passages; Experiment 4) older adults reported *fewer* instances of mind-wandering than younger adults. Taken together, these results suggest that inhibition deficits may not universally impact all cognitive processes to the same extent, particularly when considering social–cognitive language tasks in which other influences (e.g., communicative goals) might also be considered. For example, we suggest with regard to storytelling that older adults may produce more indirectly relevant information than younger adults but may do so because they feel that the information they are producing is relevant.

Second, responses that have typically been classified as off-target are, for precision, very narrowly defined. For example, Gold, Andres, Arbuckle, and Schwartzman (1988) operationally defined verbose speech as "speech that was off target when replying to a stimulus in the interview, that is, speech that conveyed information irrelevant to the question" (p. 30). Additionally, speech was coded for both item verbosity (the number of off-target items) and extent (how far the speaker strayed from the topic). Thus, an example of an off-target response to "Do you have any children?" is "Yes, two. *They are both adopted*" (off-target information in italics). The participant gave the necessary response, but then also provided supplemental, indirectly relevant information (Arbuckle & Gold, 1993). Alternatively, James et al. (1998) classified off-target speech by scoring transcripts for the number of relevant and irrelevant words, with no further breakdown. While both of these strategies have yielded valuable insights for the frequency, extent, and relevance of additional information that older adults include during storytelling, the *content* of that information, and how that content connects to the topic, has not yet been investigated. Thus, a crucial question remains: When individuals produce additional indirectly relevant information during recall, what are they saying? Answering this question requires analyzing the content of the provided supplementary information and investigating the ways in which the content is related to the topic of discourse.

In summary, the aforementioned findings offer the possibility that older adults do not feel they are slipping off target more than younger adults and when they do produce supplementary information, it may be reasonably (i.e., indirectly) related to the question. Together, those results provide a logic for viewing older adults as telling stories that include additional information to provide context to the listener. That is, older adults' communication style may include reference to a broader range of material than younger adults. Supporting this view, older adults' autobiographical interviews contain more indirectly relevant information than young adults but with no differences in irrelevant information (Beaudreau, Storandt, & Strube, 2005; Brandão & de Mattos Pimenta Parente, 2009). As an example, in one study (Brandão & de Mattos Pimenta Parente, 2009) younger and older adults told a personal story about a funny incident they experienced, followed by a fictional story about a suspenseful topic. Narratives were analyzed for *relevant propositions* (i.e., directly related to topic, such as scene, character, and action information), *indirectly relevant propositions* (i.e., unnecessary but related to the topic, such as feelings of the narrator and story causes or consequences), and *irrelevant propositions* (i.e., not related to the topic, such as information about the narrator's present state of mind or opinions related to other themes). The number of irrelevant propositions was used as a measure of incoherent speech.

Results showed that young adults expressed more directly relevant propositions and older adults expressed more indirectly relevant propositions. There were no age differences on incoherent speech. Of note, these age differences only emerged for personal narratives, not fictional narratives. The authors concluded that older adults' speech was no less coherent than young adults' speech but instead that older adults' inclusion of indirectly relevant information was important for constructing a well-formed narrative.

Although we definitely acknowledge inhibitory deficits as predominantly responsible for the rare cases in which older adults produce abundant irrelevant information (Gold, Andres, Arbuckle, & Zieren, 1993; Gold & Arbuckle, 1995; Pushkar et al., 2000), generalizing too broadly about older adult verbosity may contribute to negative age stereotypes. This concern motivated the current research focusing on the content of additional information produced during story recall. We argue for an inclusive account that more fully integrates the speaker's communicative style. As in the examples just presented, going off-target may provide background information about the narrator, story characters, or other aspects of the story (Pillemer, 1998). While off-target information may not be *directly* relevant to the question posed by an interviewer, it may infuse personal meaning into the recounted event or be socially appropriate for the speaker-listener context (Baron & Bluck, 2009). As Marsh (2007) suggests, the retelling of stories is influenced by social factors, including the speaker's purpose or the status of the listener. For example, individuals tell longer stories when the listener is perceived to be attentive compared to inattentive. Further, when the purpose of the story is to entertain the

listener, individuals use exaggeration, provide supplemental information, use more emotional language, and have fewer speech disfluencies, compared with when they simply want to convey the facts. Thus, providing supplemental information in the form of story asides may be beneficial for garnering listeners, and may explain why older adults' stories are sometimes judged as better than those told by young adults (e.g., James et al., 1998; Kemper, Rash, Kynette, & Norman, 1990; Ryan et al., 1992).This is consistent with older adults' greater skill in modifying stories to fit listeners' developmental level (Adams, Smith, Pasupathi, & Vitolo, 2002). Providing additional material may thus be indicative of communicative expertise.

Other researchers have also argued that off-target responding reflects life phase differences in communication (Boden & Bielby, 1983; Giles & Coupland, 1991). The current research builds on literature suggesting that older adults' inclusion of additional information when telling stories is reasonable (e.g., Trunk & Abrams, 2009), such as the Pragmatic Change Hypothesis (James et al., 1998). That hypothesis proposes that a speaker's intentions influence the way he or she exchanges information with others, taking into account such factors as the social context and the identity of the listener. Specifically, older and younger adults' speech styles differ as a function of holding different communicative goals: Older adults place greater value on interpersonal communication and have a greater interest in exchanging personal narratives compared with younger adults (Boden & Bielby, 1983; Giles & Coupland, 1991; James et al., 1998). The Pragmatic Change Hypothesis suggests that increased talkativeness and off-topic speech in older adults reflect these communicative preferences.

Story Asides: A Focus on Content

Past research conducted from a communication perspective has generally focused on how communicative goals differ for younger and older adults (e.g., younger adults' preference for succinct, concise stories; Trunk & Abrams, 2009), or has compared the incidence of relevant and irrelevant information (James et al., 1998). The novelty of the present research is that it investigates another layer of this phenomenon by content-coding the type of additional information that individuals provide in their narratives, thereby revealing its place in individuals' stories. Given this approach, we introduce the construct, *story asides*. These are conceived as optional story elements that are related, tangentially, to the story. Three distinct story asides categories were developed to describe the content of the information participants produced that was indirectly related to the story topic. These include: *world knowledge* (contextualizing the topic by providing relevant facts about the world), *biographical facts* (providing demographic information related to people involved in the event), and *life story coherence* (providing information that connects characters' life experiences to the topic). A fuller description of these categories appears in the Method section.

The development of our story asides construct was based on the literatures on autobiographical memory (Bluck & Habermas, 2000; Conway, Singer, & Tagini, 2004), sharing of personal narratives (e.g., Freeman, 2010), and the construction of life stories (e.g., McAdams, 2003). Conway et al.'s (2004) Self-Memory System model suggests that autobiographical memories are reconstructed each time they are recalled, with retrieval serving the individual's current goals. Thus, memories can be recalled and told differentially depending on the social parameters of a situation (Alea & Bluck, 2003). Research on personal narratives and life stories also suggests that individuals recall basic elements but also integrate events through autobiographical reasoning (Bluck & Habermas, 2000; Glück, Bluck, Baron, & McAdams, 2005), narrative processing (Singer, Blagov, Berry, & Oost, 2013), and meaning-making (McAdams & McLean, 2013). Individuals shape autobiographical stories to "provide their lives with some sense of meaning, unity, and purpose" (Hooker & McAdams, 2003, p. 297) and to create and maintain social bonds with the listener (Pasupathi & Rich, 2005). Including information that is not specifically tied to the recalled event may thus be a normative aspect of individuals' recall when sharing stories in everyday life.

Fictional Versus Autobiographical Stories

Most research investigating story recall relies on fictional stories (e.g., Adams, Labouvie-Vief, Hobart, & Dorosz, 1990; Gagnon & Dixon, 2008). Autobiographical memory sharing, however, is integral to social relationships (Bluck, 2003). People share such stories to teach and inform others, create intimacy (Alea & Bluck, 2003), and elicit empathy (Nelson, 2003). Thus, providing story asides to portray the context or meaning of an event might be particularly useful when recalling autobiographical memory stories, but less so for fictional stories. This is consistent with age differences that have been found for off-target information in autobiographical (James et al., 1998) but not fictional stories (Marini, Boewe, Caltagirone, & Carlomagno, 2005). We thus felt justified in including fictional stories as a comparison to autobiographical memory stories in the current research. Our major focus, however, was to examine age group differences by story type. Thus, we made no specific hypotheses concerning overall differences between autobiographical and fictional stories. We did, however, feel that these two story types act as useful comparisons for one another given that both types of stories are shared in everyday life and they do share some common characteristics (i.e., both are narratives, involve basic story elements, are on the same general topics, and are being recalled).

The Current Study

Our aim was to examine the types of story asides produced by younger and older adults in recall of autobiographical memory and fictional stories. Gender differences were explored. Though we made no predictions regarding gender, we tested for gender and age by gender interactions throughout. Some research has suggested that older men show greater verbosity (Leaper & Ayres, 2007).

Older adults were predicted to show higher levels of story asides in recounting autobiographical memory stories, consistent with previous research on off-target speech (e.g., James et al., 1998), but not in fictional story recall. Though inhibition clearly plays a role in language production (e.g., Hasher & Zacks, 1988), we suggest that social–cognitive factors may act in tandem to drive differences in how older and younger persons tell stories about their lives. Note that if the only factor at play is cognitive ability, older adults' inability to inhibit production of information indirectly related to the story should result in such information appearing equally when remembering either autobiographical or fic-

tional events. Instead, we predict that story asides will be included more by older than younger adults only when telling autobiographical stories.

To operationalize story asides, we developed a reliable content-analytic scheme that captures indirectly relevant material recalled when telling stories. Based on theory and iterated with participant narratives, three categories of story asides were defined: world knowledge, biographical facts about the narrator or the story characters, and information situating the recalled event in a larger life context.

Method

The study was a 2 (age group: young, old) × 2 (gender: men, women) × 2 (story type: autobiographical memory story, fictional memory story) between-subjects design. The major dependent variable was the expression of story asides, including three content-coded categories: world knowledge, biographical facts, and life story coherence.

Participants

Participants were 64 young (32 men; $M = 27.94$ years; $SD = 4.84$) and 65 older (33 men; $M = 74.66$ years; $SD = 6.05$) adults. Reflecting the make-up of the community in which the study was completed (U.S. Census Bureau, 2004), 70% of young adults were White, 11% Hispanic, 9% Asian, 8% Black, and 2% reported their race as "other." Ninety-seven percent of older adults were White. No ethnicity differences were detectable on any study measures. Young adults were recruited from the community, including the campus community. Older volunteers were recruited from community organizations and screened for cognitive impairment (Roccaforte, Burke, Bayer, & Wengel, 1992). Young adults had an average of 17.89 years of education ($SD = 2.40$) and older adults' education averaged 16.42 years ($SD = 3.20$), $t(126) = 2.94$, $p = .004$. Age differences in cognitive functioning were typical (Schaie, 1994), with older adults scoring higher on the vocabulary test from the Wechsler Adult Intelligence Scale-Revised (Wechsler, 1981), and lower on episodic memory and inductive reasoning, assessed with the Rey Auditory-Verbal Learning Test (Schmidt, 1996) and Thurstone's Primary Mental Abilities (Thurstone, 1962) test, respectively. On a Likert-scale (Maddox, 1962) ranging from 1 (*very good*) to 6 (*very poor*), young and older adults both reported being in *good* to *very good* health compared with same aged peers (young: $M = 1.83$, $SD = 0.78$; older: $M = 1.80$, $SD = 0.88$), $t(127) = .19$, $p = .85$.

Procedure

Participants completed background measures, measures of cognitive functioning (i.e., vocabulary, episodic memory, and inductive reasoning), and were then randomly assigned to one of two conditions (story type: autobiographical, fictional). In both conditions, they were asked to remember two events: a romantic evening and a vacation. These topics were chosen because they are commonly used in both the autobiographical and fictional memory literatures (e.g., Dixon & Gould, 1996; Ross & Holmberg, 1992) and are events likely to have been experienced by both young and old men and women. The order of recalling events was counterbalanced across age, gender, and condition. There were no order effects.

In the *autobiographical memory story condition*, participants were given three minutes to think about the autobiographical memory story they wanted to share. This time frame was used to equate the two conditions (the prerecorded fictional story took 3 min to play). The directions to cue the autobiographical memory story (e.g., a vacation) are standard in the literature, and stated: "Think about a vacation that you had with your partner. During this time try to remember where you were, what you did, and what you were thinking and feeling. The story can be about something that happened years ago or more recently, as long as the memory is memorable and positive for you." Participants were then asked to narrate their memory of that event. The procedure was then repeated for the second event.

In the *fictional story condition*, participants listened to a 3-min prerecorded narrative presented via audiotape about one of the events. The directions to cue the fictional story were virtually identical to the autobiographical memory story, and (e.g., a vacation) stated: "Listen to a story about a vacation that couple had together. During this time think about where they were, what they did, and what they were thinking and feeling. The story is about an event that is memorable and positive for the couple." Participants then narrated their memory for the fictional event. The procedure was then repeated for the second event. These fictional memory stories, modified versions from Dixon, Hultsch, and Hertzog (1989), were developed for and have been commonly used in research. They are written in a colloquial style, describe a single event, include information about the characters' intentions, plans, evaluations, outcomes, and behavior, and are reported by young and older adults as being moderately emotional stories that elicit positive feelings and are somewhat interesting and true-to-life (Dixon, Hultsch, & Hertzog, 1989). These fictional stories were amenable to being extended with story asides during recall.

The procedure was identical for the two conditions. Memory stories were recalled orally with a young female interviewer to enhance disclosure (Shaffer, Pegalis, & Bazzimi, 1996). Other storytelling research (Adams et al., 2002) suggests that younger and older women do not elaborate differentially when engaging with a young woman experimenter. Although the content of the interviews were different in that previous research, our interview procedure closely matches the procedures used in off-target verbosity research (e.g., Pushkar et al., 2000). The interviewer followed a structured script and was trained to act as an interested listener: to maintain eye contact, and to appear interested throughout the narration of the memory stories. However, the interviewers did not interact verbally with participants beyond the use of standard probes. Thus, verbose speech was not encouraged by the interviewer, and there was no intervening on the part of the interviewer during the participant's narration. In addition, as can be seen from the directions to elicit the two different types of stories, there was no explicit request for additional material unrelated or indirectly related to the story content. The interviewing context was not conversational in nature, and there was no tendency to illicit overly verbose speech (as may actually be the case in an everyday memory-sharing context).

Participants were given 10 min to narrate each memory story. When they appeared to be finished recalling their story, three standard probes were used to elicit further recall. They were: "Can you tell me more about what you [they] were doing, thinking or feeling?", "Is there anything else?", and "Is that all?".

Content-Coding of the Memory Stories for Story Asides

Transcripts of two autobiographical or two fictional stories were created that were verbatim records of participant's recorded recall of memory stories. Transcripts were blinded for participants' gender (i.e., by using ambiguous labels such as he or she) and cleaned for extraneous speech fillers (e.g., um, uh). Coders were trained using pilot data. Reliability between two coders was achieved for each code using a subsample of 15% of the story narratives (reliabilities by code are provided below). Discrepancies and coder drift (Krippendorff, 2004) were addressed in weekly coder meetings. Percent agreement is given below.[1] Kappa could not be estimated because of nonsymmetrical associations or limited variability for the variable.

Coders were blind to the study aims and hypotheses. Thus, though they may have been able to accurately guess the participant's age group in some cases, doing so would not have led them to code in a manner that confirmed hypotheses. All narratives were coded for expression of three different story asides that were explicitly expressed in participants' autobiographical and fictional memory stories. Each coding scheme is detailed below (manuals available upon request). Table 1 summarizes the three story aside codes and provides examples from the two story conditions. The original fictional stories included story asides but the participant could also provide additional story asides in their recall. An example of each type of story, content-coded for story asides can be found in the Appendix.

The coding scheme for story asides was developed by the authors based on previous work (James et al., 1998; Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002; Trabasso, 2005) and is similar to the indirectly relevant material that is referred to in the off-target speech literature (e.g., James et al., 1998). The hallmark of a story aside is that it is information that does not refer to the specific event itself; it is information that the narrator provides as an indirectly relevant aside while telling an autobiographical or fictional story. Thus, irrelevant material (i.e., information not pertinent to the story) referred to in the off-target verbosity literature (e.g., Pushkar et al., 2000) is not captured in our coding scheme.

Based on the life story literature and examination of the current story narrative data, three types of story asides (i.e., indirectly relevant story information) were identified for coding: world knowledge, biographical facts, and life story coherence (see detailed descriptions below). The coding categories were made mutually exclusive by following a sequential order, which was to code for world knowledge, then biographical facts, then life story coherence. Thus, if any particular information seemed to fit more than one story aside category, the above sequential coding rule was used to classify the information in to only one of the story aside categories. To make sure that we captured all relevant story aside material, we had a fourth category, miscellaneous. This category captured nonstory information that did not fall into one of the three prescribed categories (miscellaneous category in italics: e.g., We went out for a fancy dinner. *Gosh, I'm hungry right now*.) Across the two types of stories (and across the two stories shared), the mean frequency of the miscellaneous category was 1.39 (SD = 3.42) and there were no age differences in producing such material. Thus, the miscellaneous category was used infrequently, demonstrating the comprehensiveness of the coding scheme.

The story aside construct is similar, at a molar level, to that used in off-target speech research (James et al., 1998), in which off-target information is conceptualized as any continuous block of speech indirectly relevant to the story, but not irrelevant. Off-target verbosity (Arbuckle, & Gold, 1993) coding and off-target speech coding both assess production of material that is not directly relevant to the story as does the story aside construct developed in the current work. Note that off-target speech coding additionally identifies the level of going off-target, as material is coded as being either indirectly relevant or irrelevant. We did not explicitly code level of relevance because maintaining relevance to the story was built in to our coding scheme. For example, initial directions in the coding manual state that "Story asides are not directly about the story being remembered, but are 'brought in' to the story being shared, for a variety of reasons . . . Story asides often give the remembered event context in the world and/or in a person's life. That is, the aside is deemed necessary by the teller so that the listener will fully understand their story." Our story aside categories are thus all focused on material that should supplement the story; they can be considered *indirectly relevant* material. Our miscellaneous story aside category, however, may contain both completely irrelevant material as well as indirectly relevant material that did not fit into a story aside category. The story aside categories were coded at the propositional level (i.e., a meaningful unit of self-contained information) by identifying the frequency of instances in the memory story (Ahuvia, 2001; Hsieh & Shannon, 2005). The total number of asides was tallied for each narrative and averaged across the two stories. Examples of asides in the text are in italics below.

World knowledge. The first story aside category is world-knowledge, which involves general knowledge or facts about the world indirectly related to the content of the story (autobiographical story e.g., "We flew JAL *because it flies most frequently to Japan*," agreement = 93%). These asides are told as part of the story to give it a context within the world or to fill in information about the world in relation to the story being told. Thus, world knowledge asides are indirectly related to the story. That is, the narrator is giving background information for the story so that the listener better understands the progression or flow of the story within the larger world (fictional story e.g., "Sally had been to the Rockies, *which are in Colorado . . .*"). World knowledge clarifies the story being told in terms of general or specific information about the world, how things work (autobiographical story e.g., "After the amusement park we went to the movie theater. *Most amusement parks have a tourist attraction outside the park with movie theaters and other entertainment.*"), where things are (fictional story e.g., "The Grand Canyon, *which is in Arizona*"), how to do something (autobiographical story e.g., "From there we went to the drive-in movie, *which is a movie screen outside and you sit in your car to watch it*."). A defining characteristics of world knowledge is that the information needs to represent general

[1] Target values for interrater agreement were determined a priori based on previous research (e.g., Alea, Bluck, & Semegon, 2004; Baron & Bluck, 2009; Glück, Bluck, Baron, & McAdams, 2005) and statistical convention (Hsu & Field, 2003).

Table 1
Detailed Examples of Story Aside Codes

Story aside code	Description of code	Autobiographical examples	Fictional narrative examples
World Knowledge	Facts about the world placing the event in context	"I guess the first evening that comes to mind is last summer where we went to my partner's favorite Indian restaurant. **Indian restaurants serve Curry food**."	"Sally had been to the Rockies, **which are in Colorado, but also run through other states, like Wyoming and Utah** . . ."
		"We went to Island of Adventures, **which is an amusement park with lots of roller coasters and whatnot and several different types of rides . . ."**	"I'm glad they went in September because, **the crowds are always very large in the summer time,** and the weather was warm but not terribly hot . . ."
Biographical Fact	Biographical facts about people involved in the event	"**He is from India,** so he loves curry food."	"Well, Bob and Sally **were from Topeka, Kansas**, and they wanted to go to visit the Grand Canyon."
		"It was a hard time for me because **my grandmother died recently**."	"Jim and Theresa **lived for some time in a suburb of Washington D.C., Alexandria, Virginia**. For the fourth of July . . ."
Life Story Coherence	Long-standing characteristics of individuals or links between the current event and distant events, one's whole life	"My partner wanted to surprise me for our anniversary. **He's such a romantic**."	"And, Bob had **longed to go there since he was a boy**."
		"It seemed all we did on our vacation was eat! **Eating makes me very happy!**"	"Since then, **Jim and Teresa were obviously very busy people, so had rarely found the time to visit the sites in Washington** . . ."

Note. Bolded text indicates the location of the specific story aside within each narrative.

knowledge about the world that is not short-lived, but involves a long-standing fact that will not likely end or change in the near future (i.e., Paris will likely always be the capital of France). World knowledge can usually be found in reference manuals (e.g., history books, travel guides for vacations, etc.).

Biographical facts. Biographical fact asides involve factual biographic or demographic information about the people involved in the event; either oneself or other characters in the story (agreement = 100%). In the autobiographical condition, these are mostly autobiographical facts, although sometimes biographical information about other characters in the autobiographical story are also given (autobiographical story e.g., "My husband, *who was born in the Philippines.*"). In the fictional story condition, these are biographical facts about the story characters (fictional story e.g., "Well, Bob and Sally were from Topeka, Kansas."). As with world knowledge, these facts are related to the event being remembered (i.e., they are indirectly relevant) but they are not simply information that is being directly about the event. Rather, biographical facts are story asides that are included in the narrative to provide the listener with a sense of who the narrator or story characters are and what their background(s) is or are. Thus, biographical facts give the listener information about the narrator or characters in the story above and beyond the specific event being recalled. A defining characteristic of a biographical fact is that it is often long-standing information about a person's history or information about a person's past that is not going to change (autobiographical story e.g., "In 1952 I was in the army, and two years later, I met my spouse for the first time . . ."), including a character in a fictional story (fictional story, e.g., "Sally had been to the Rockies . . . but she had never been to . . ."). Biographical facts are the "skeletal structure" of the life history of a person and can include information about where someone or a character was born (or other significant births in their life), what type of job someone has (or had), significant losses or deaths, where they have traveled, being married or divorced, and where they might have lived or currently live.

Life story coherence. Life story coherence (similar to *causal coherence*; see Bluck & Glück, 2004; Habermas & Bluck, 2000) involves indirectly relevant references to extended time-frames in the life experience of characters involved in the remembered event; that is, information about a characters' life experience that is tangentially related to the event (but not simply life history facts, as is the case for biographical facts). Life story coherence was coded when participants either (a) extended the temporal frame by reference to characteristics of a character, such as temperament, personality, appearance, habits (fictional story e.g., "Bob and Sally went to the Grand Canyon. *Bob is an 'outdoors' type of person* and really wanted to go."; agreement = 91%), or (b) linked the remembered event to other events or life periods, or a whole life (autobiographical story e.g., "It was my only vacation, *since I haven't taken a vacation since I was a child*."; agreement = 94%). Life story coherence is information that provides insight into the event(s) or character(s) involved in the story in the context of past events, or the life lived (autobiographical story e.g., "*I grew up very poor*, so this place really impressed me."). To clarify, life story coherence asides are unique from biographical facts because they go beyond basic facts to provide the narrator's subjective views or opinions or references to past experiences that would not be part of a skeletal biographical history.

Results

Preliminary Analyses

Initial analyses were conducted to explore potential covariates, including word count and cognitive functioning (i.e., episodic memory, vocabulary, and inductive reasoning). We did not assess the amount of time participants spoke, but did perform a word count of their produced narratives. Word count was positively related to overall story asides expressed, $r(129) = .86$, $p < .001$, and was thus used as a covariate in all analyses to control for story length. Descriptive statistics for word count by story type, age, and gender are reported in the top portion of Table 2. None of the word count differences were significant. In terms of cognitive variables, there were no significant relations with story asides: episodic memory $r(129) = -.004$; vocabulary $r(129) = .08$; inductive reasoning $r(129) = -.03$, $ps > .05$. Thus, including more story asides does not seem to be associated with these particular cognitive variables. Past research has linked off-target verbosity specifically to cognitive measures assessing inhibition (e.g., Arbuckle & Gold, 1993). For completion, however, analyses reported below for the overall story asides were also conducted with the three cognitive functioning variables as covariates. All results remained the same: Cognitive functioning did not appear to affect age group, gender, or story type differences in the expression of story asides. Thus, it was not considered further and is not included in the reported analyses.

Primary Analyses

The primary analyses examined age differences in the expression of story asides in recalled autobiographical memory versus fictional stories. Gender differences were also explored. Thus, analyses were 2 (age: young, old) × 2 (gender: men, women) × 2 (story type: autobiographical, fictional) analyses of covariance (ANCOVA) with word count included as the covariate, and overall story asides (as well as the three subcategories) as the dependent variables. Estimated marginal means and *SE*s are reported for significant effects in the text and figures. The covariate is in the model at $M = 482.41$. Means are not reported for nonsignificant effects (unless part of an interaction effect) because the descriptive statistics by age, gender, and story type are reported in Table 3. Further, if nonsignificant effects had Fs < 1.00, no additional statistical information was provided (for brevity) but is available from the authors.

Descriptive statistics for overall story asides and story aside categories by age and gender are in Table 3. The ANCOVA revealed two significant effects for the overall expression of story asides: A main effect of age, $F(1, 119) = 8.39$, $MS = 318.17$, $p = .004$, $\eta_p^2 = .07$, and an Age × Story type interaction that qualified this age effect, $F(1, 119) = 9.08$, $MS = 344.36$, $p = .003$, $\eta_p^2 = .07$.[2] Older adults ($M = 11.35$, $SE = 0.77$) expressed more story asides overall than younger adults ($M = 8.17$, $SE = 0.78$). As seen in Figure 1, follow-up univariate ANCOVAs for the Age × Story type interaction, however, revealed that the age difference in story asides was for autobiographical memories only. As expected, older adults ($M = 13.04$, $SE = 1.16$) expressed more story asides overall than younger adults ($M = 6.56$, $SE = 1.16$) when recalling autobiographical stories, $F(1, 62) = 9.50$, $MS = 662.40$, $p = .003$, $\eta_p^2 = .13$, but age groups did not differ in the recall of fictional stories (M young $= 9.79$, $SE = 1.18$; M old $= 9.66$, $SE = 1.19$), $F < 1.00$. There were no gender or story type main effects or any other interactions, Fs < 1.00.

Three separate ANCOVAs were also conducted for the specific categories of story asides. Descriptive statistics are reported in Table 3. There were no main effects or interactions for the expression of *world knowledge*. For the expression of *biographical facts*, there was a main effect of age, $F(1, 119) = 8.74$, $MS = 22.07$, $p = .004$, $\eta_p^2 = .07$, and a main effect of story type, $F(1, 119) = 18.30$, $MS = 46.21$, $p < .001$, $\eta_p^2 = .13$. Older adults ($M = 2.58$, $SE = 0.20$) expressed more biographical facts than did young adults ($M = 1.75$, $SE = 0.20$), and biographical facts were expressed more often in recalling fictional ($M = 2.92$, $SE = 0.23$) than autobiographical stories ($M = 1.41$, $SE = 0.22$). There was no gender effect, $F < 1.00$. Significant main effects were qualified by an Age × Story type interaction, $F(1, 119) = 11.69$, $MS = 29.53$, $p = .001$, $\eta_p^2 = .09$, which is highlighted in Figure 2. Follow-up univariate ANCOVAs revealed that there was no difference in biographical facts by story type for older adults (M autobiographical $= 2.31$, $SE = 0.30$; M fictional $= 2.85$, $SE = 0.31$), $F(1, 62) = 2.17$, $MS = 7.66$, $p = .15$, $\eta_p^2 = .03$, but young adults expressed more biographical facts when recalling fictional ($M = 2.99$, $SE = 0.31$) than autobiographical stories ($M = 0.51$, $SE = 0.30$), $F(1, 60) = 30.64$, $MS = 48.59$, $p < .001$, $\eta_p^2 = .34$. In addition, older adults expressed more biographical facts than young adults when recalling autobiographical stories, $F(1, 62) = 14.54$, $MS = 52.15$, $p < .001$, $\eta_p^2 = .19$, but there was no age difference in the recall of fictional stories, $F < 1.00$.

There were no age, gender, or story type main effects (M autobiographical $= 7.59$, $SE = 0.81$; M fictional $= 6.00$, $SE = 0.83$) for *life story coherence* (see descriptive statistics, Table 3), but there was an Age × Story type interaction, $F(1, 119) = 3.84$, $MS = 125.40$, $p = .05$, $\eta_p^2 = .03$, as depicted in Figure 2. When recalling autobiographical stories, older adults ($M = 9.55$, $SE = 1.08$) expressed more instances of life story coherence than young adults ($M = 5.62$, $SE = 1.07$), $F(1, 62) = 3.96$, $MS = 241.32$, $p = .05$, $\eta_p^2 = .06$, but this age difference was not evident for the fictional stories (M young $= 6.03$, $SE = 1.10$; M old $= 5.97$, $SE = 1.10$), $F < 1.00$. There were no differences in the expression of life story coherence between the story types for each age group, Fs < 1.00.

As the story asides construct is new, we wanted to further delineate it by exploring the relative use of these three categories (i.e., world knowledge, biographical facts, and life story coherence) and whether that differed by age group across autobiographical and fictional stories. Thus, a mixed 2 (age) × 2 (gender) × (story type) × 3 (story aside category) ANCOVA was conducted with story aside category as a repeated-measure. As already reported, a between-subjects age main effect, $F(1, 118) = 8.39$,

[2] Effect size interpretations for η_p^2 are: .01 = small, .06 = medium, and .14 = large (Cohen, 1988). Because the story asides construct is novel, results were considered significant at the .05 level. However, we also wanted to consider what results would remain if Type I error inflation was controlled within each set of analyses. Thus, using the Bonferroni correction, the adjusted p value was .0125 (.05/4 analyses). Only two results would become nonsignificant if the more stringent α level is used: the Age × Story type interaction for life story coherence, and the story type by story asides interaction.

Table 2
Descriptive Statistics by Age, Gender, and Story Type for Word Count

	Age group			
	Young		Old	
Story type	Male	Female	Male	Female
Autobiographical	753.03 (487.04)	609.00 (355.83)	707.50 (385.92)	841.85 (621.89)
Fictional	221.44 (51.89)	244.50 (66.52)	203.97 (77.35)	243.23 (73.11)

Note. *SD*s are reported in parentheses. There were no significant main effects or interactions for word count.

$MS = 106.06$, $p = .004$, $\eta_p^2 = .07$, and the Age × Story type interaction for overall story asides emerged, $F(1, 118) = 9.09$, $MS = 114.79$, $p = .003$, $\eta_p^2 = .07$.

The focus here, though, was on results that relate to the relative use of story aside categories. There was a main effect for category, $F(2, 236) = 8.42$, $MS = 174.83$, $p = .003$, $\eta_p^2 = .07$, which is shown in Figure 3. Follow-up univariate repeated measures
ANCOVAs revealed that life story coherence ($M = 6.82$, $SE = 0.12$) was expressed more often than both biographical facts ($M = 2.16$, $SE = 0.16$), $F(1, 126) = 26.62$, $MS = 468.10$, $p < .001$, $\eta_p^2 = .17$, and world knowledge ($M = 0.81$, $SE = 0.12$), $F(1, 126) = 8.35$, $MS = 147.92$, $p = .005$, $\eta_p^2 = .06$, which also differed, $F(1, 126) = 38.24$, $MS = 89.75$, $p < .001$, $\eta_p^2 = .23$. A significant story Type × Story aside categories interaction, $F(2, 236) = 3.96$, $MS = 82.15$, $p = .04$, $\eta_p^2 = .03$, which is also depicted in Figure 2, revealed that this main effect was being driven by the pattern for the fictional stories: Life story coherence was expressed the most and world knowledge the least (life story coherence: $M = 6.00$, $SE = 0.83$; biographical facts: $M = 2.92$, $SE = 0.23$; world knowledge: $M = 0.80$, $SE = 0.21$); life story coherence-world knowledge $t(61) = 12.52$, life story coherence-biographical facts $t(61) = 7.67$, biographical facts-world knowledge $t(61) = 5.18$, ps $< .001$. Although life story coherence ($M = 7.59$, $SE = 0.83$) was also expressed the most in autobiographical stories (world knowledge: $M = 1.41$, $SE = 0.22$; biographical facts: $M = 0.80$, $SE = 0.20$), $t(64) = 7.74$, $p < .001$, $t(64) = 7.30$, $p < .001$, respectively, there was no difference between the expression of world knowledge and biographical facts in autobiographical stories, $t(64) = 1.91$, $p = .18$.

To summarize, in terms of story asides expressed by both older and younger adults, life story coherence was more common than biographical facts, which were more common than world knowledge (the latter occurred infrequently). However, there were age differences in story aside use across story types: Older adults recalled more biographical facts overall than the young. They also just as frequently provided biographical facts when telling autobiographical as fictional stories. Younger adults, however, included significantly fewer biographical facts when talking about their own lives than when recalling a fictional story. Most directly relevant to our expectation of older adults' inclusion of story asides in personal storytelling is that older adults produced more life story coherence asides in telling autobiographical compared with fictional stories. Younger adults showed no difference by story type.

Discussion

Storytelling is ubiquitous in everyday life (e.g., Dunbar, 2005) and across the life span (Bluck et al., 2010; Webster, 1995). Adults of all ages tell stories about fictional events but they also frequently tell stories about their own personal, autobiographical past (e.g., Baron & Bluck, 2009; McAdams & McLean, 2013; McLean et al., 2007). Such memory-sharing appears to be universal; it occurs regardless of education level, ethnicity, gender, socioeconomic status (Rimé, Finkenauer, Luminet, Zech, & Philippot, 1998; Strawbridge, 2005) or culture (e.g., Wang, 2004). The current research focused particularly on variations that may occur with age in recall of both autobiographical and fictional stories. The study investigated age differences in a central story element examined in previous research: inclusion of appropriate material (e.g., Arbuckle & Gold, 1993). We introduced a new construct, story asides, as useful in examining how older and younger adults tell and elaborate stories. Findings and implications are discussed in the following sections.

Age Differences in Story Asides

We introduced a new construct, *story asides*, to precisely assess the content of indirectly relevant information that is part of story recall. Story asides are conceptualized as optional elements that may be included to provide context for, or infuse meaning into, a story. As such, in our conception, additional material that individuals provide beyond the recalled event is not conceived of strictly as off-target (Arbuckle & Gold, 1993) but as potentially adding value to the story. Consistent with our prediction and in line with related research assessing the expression of *indirectly* related information (Beaudreau et al., 2005; Brandão & de Mattos Pimenta Parente, 2009), older adults produced more story asides than young adults during recall of autobiographical memory stories but not in our comparison condition, fictional stories.

This pattern of age effects is also in line with those observed by James et al. (1998). By analyzing the content of story asides and doing so across story types, however, we were able to contribute beyond past research. Our findings show that both older and younger adults use story asides in sharing fictional stories, but older adults more frequently include story asides to supplement their autobiographical stories. In particular, older adults included more autobiographical facts and instances of life story coherence than younger adults, but did not differ in production of the more semantic story aside (i.e., world knowledge). In fact, world knowledge was the least frequently used type of story aside regardless of age. It appears that simply informing others of basic semantic facts

Table 3
Descriptive Statistics by Age, Gender, and Story Type for Overall Story Asides and Story Aside Content Categories

	Age group			
	Young		Old	
Story type	Male	Female	Male	Female
Overall story asides				
Autobiographical	11.87 (9.87)	11.00 (10.90)	18.06 (16.87)	22.41 (18.05)
Fictional	3.19 (1.68)	3.93 (1.79)	2.94 (1.84)	3.47 (1.82)
World knowledge				
Autobiographical	1.27 (2.76)	.75 (1.24)	1.94 (2.08)	2.12 (3.16)
Fictional	.00 (.00)	.07 (.26)	.00 (.00)	.13 (.35)
Biographical facts				
Autobiographical	1.33 (1.95)	.81 (1.17)	2.24 (1.99)	4.06 (3.31)
Fictional	2.13 (1.45)	2.40 (.99)	1.88 (1.20)	2.33 (1.59)
Life story coherence				
Autobiographical	9.27 (7.56)	9.44 (9.90)	13.88 (15.24)	16.24 (13.35)
Fictional	1.06 (1.12)	1.47 (1.13)	1.06 (1.24)	1.00 (.76)
Overall story asides				
Autobiographical	11.87 (9.87)	11.00 (10.90)	18.06 (16.87)	22.41 (18.05)
Fictional	3.19 (1.68)	3.93 (1.79)	2.94 (1.84)	3.47 (1.82)
World knowledge				
Autobiographical	1.27 (2.76)	.75 (1.24)	1.94 (2.08)	2.12 (3.16)
Fictional	.00 (.00)	.07 (.26)	.00 (.00)	.13 (.35)
Biographical facts				
Autobiographical	1.33 (1.95)	.81 (1.17)	2.24 (1.99)	4.06 (3.31)
Fictional	2.13 (1.45)	2.40 (.99)	1.88 (1.20)	2.33 (1.59)
Life story coherence				
Autobiographical	9.27 (7.56)	9.44 (9.90)	13.88 (15.24)	16.24 (13.35)
Fictional	1.06 (1.12)	1.47 (1.13)	1.06 (1.24)	1.00 (.76)

Note. *SD*s are reported in parentheses.

is not a major aspect of elaborating a story. Instead, information about the characters and their lives (i.e., biographical facts, life story coherence) are more frequently seen as useful to include by the individual telling the story. This is particularly true when that person is an older adult. Thus, whereas previous research reported the overall amount of indirectly related information expressed by younger and older adults (Beaudreau et al., 2005; Brandão & de Mattos Pimenta Parente, 2009), our study moves the literature forward by examining the specific content of indirectly relevant information (i.e., story asides) older adults were more likely to produce when recalling stories. In our future work, we hope to focus even more closely on these biographical story asides that are related to how individuals contextualize remembered events in the context of their own lives (i.e., *autobiographical reasoning*; Bluck & Habermas, 2000). It may be that younger adults, having only recently developed a life story (Habermas & Bluck, 2000), are less likely to include such information when recounting life episodes.

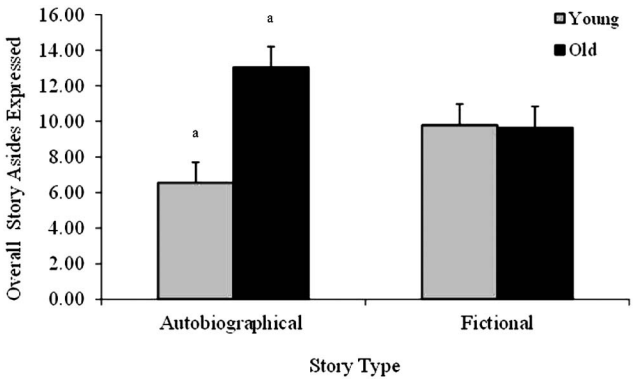

Figure 1. Age differences in overall story asides expressed in autobiographical memory and fictional stories. Overall story asides is a frequency count. Marginal means and *SE* bars are reported. Bars with the same superscript are significantly different.

Our findings highlight several points. First, the results suggest that while inhibition deficits should not be ruled out as a possible cause for story elaborations, such additions may not solely be the result of inhibition deficits (e.g., Arbuckle & Gold, 1993; Gold et al., 1988). Instead, additions to stories can also be considered in light of other influences such as communicative style or goals (e.g., James et al., 1998; Trunk & Abrams, 2009). If older adults produced more story asides solely because they had difficulty inhibiting information, we would expect them to produce more story asides than the young in both fictional and autobiographical stories. In this open-ended oral narrative task, they had the opportunity to include more story asides than younger adults in both fictional and autobiographical stories. However, older adults only produced more story asides than young adults when recalling autobiographical stories, not fictional stories, supporting the interpretation that older adults' use of asides may reflect their communication style. Younger adults, on the other hand, may not see the need to include information about their own life when recalling personal stories: They did include story asides but did not do so

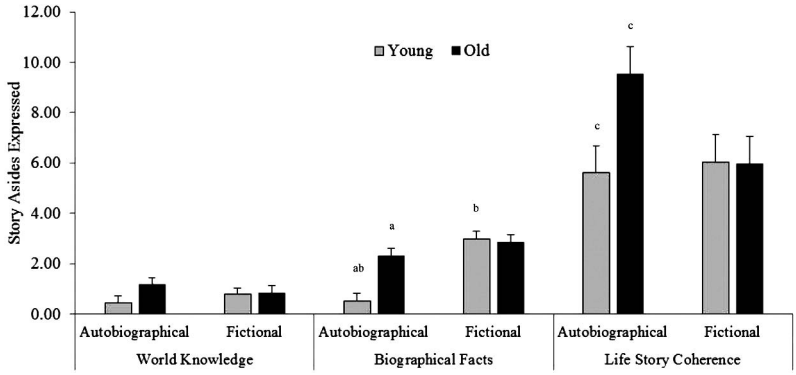

Figure 2. Age differences in world knowledge, biographical facts, and life story coherence expressed in autobiographical memory and fictional stories, by and across age group. Story asides expressed is a frequency count. Marginal means and *SE* bars are reported. Bars with the same superscript are significantly different.

preferentially when talking about their own life (i.e., in the autobiographical memory condition).

It is important, however, that while infusion of story asides into discourse might be a useful storytelling strategy, this is not to imply that it is necessarily conscious or volitional. Indeed, we simply cannot claim that older adults explicitly or consciously decide when inclusion of story asides is appropriate or not, on the basis of the measures used in the present study. Instead, we suggest that the use of story asides may be socially or contextually driven, operating at an implicit level and subsequently manifesting as stylistic differences (e.g., as per James et al., 1998), with older adults adopting a more elaborative, integrative style. Likewise, we speculatively suggest that older adults' style may be a type of social–cognitive expertise, an aspect of pragmatics (e.g., Lövdén & Lindenberger, 2005) acquired through social experience across adulthood. As such, younger adults have not yet gained this expertise and tell stories about the self and others in a more similar fashion. However, future research would benefit from understanding the degree to which other cognitive abilities contribute to these stylistic differences, particularly by exploring whether the ability to use such strategies (i.e., to selectively produce or withhold story asides in various contexts) is moderated by measures of cognitive control (that may decline with age); a question that is beyond the scope of the present research.

As reviewed in the introduction, our interpretation of these findings is in keeping with current theories of autobiographical memory (e.g., Conway et al., 2004) and the growing literature on narratives and the life story (Hooker & McAdams, 2003; McAdams & McLean, 2013; Singer et al., 2013). Such approaches view the recall and sharing of autobiographical stories not as a purely cognitive phenomenon but one that is influenced by emotion, personality, and social processes. As such, the inclusion of additional information beyond the literal event may be a normative, even positive, way for individuals to recall and share stories. Such a position is in line with the theory of value-directed memory that proposes that selectively attending to information that is considered important (i.e.,

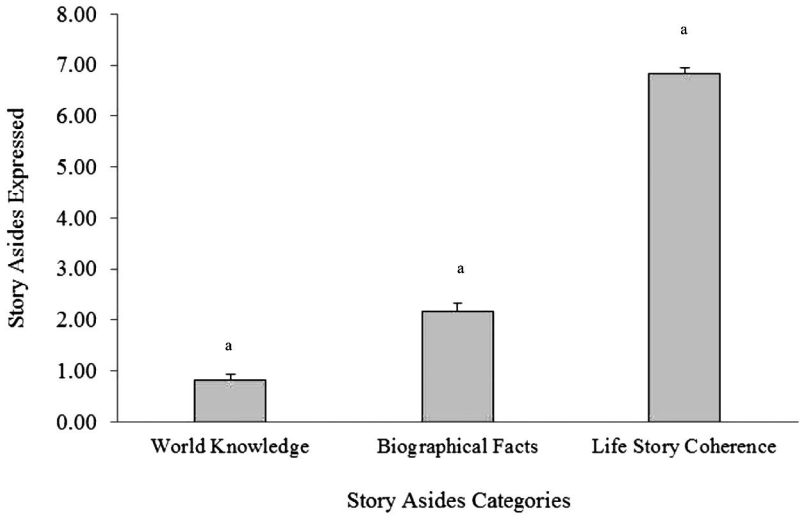

Figure 3. Differences between world knowledge, biographical facts, and life story coherence story aside categories. Story asides expressed is a frequency count. Marginal means and *SE* bars are reported. Bars with the same superscript are significantly different.

high-value) results from strategic control of attention and memory (see Castel, 2008, for an overview). For example, researchers (Castel et al., 2011) instructed older and younger adults to recall a list of words that were each paired with a numerical value to denote how important it was to remember that word (i.e., low-value or high-value words). Results illustrated that while older adults had lower recall than young adults overall, they were just as successful at recalling important words. Although age-related declines in mental functioning may have impacted older adults' memory abilities (i.e., overall recall worse than the young), older adults were able to effectively focus their resources on recalling information they believed to be important. Extending these observations to the current findings, the inclusion of story asides when recalling autobiographical stories may be driven partly by older adults placing a high value on the recall of supplemental information to provide meaning and context when telling autobiographical stories.

Note that our interpretation does not disregard the influence of certain types of cognitive decline, specifically inhibition deficits, on the production of story asides. As such, it is compatible with research on off-target verbosity (e.g., Arbuckle & Gold, 1993) that suggests that producing off-target information might only become a signature of cognitive decline when it becomes extremely incoherent and voluminous (Pushkar et al., 2000). Researchers have repeatedly suggested that high off-target verbosity is exhibited only by a minority of older adults and acknowledged that producing low levels of off-target verbosity may be necessary to progress the conversation (Gold & Arbuckle, 1995). The majority of older adults, therefore, fall in the low or middle range of the off-target continuum. Thereby, we found it fruitful to create the story asides construct to probe the content of indirectly relevant material produced during storytelling.

Our research contributes to the literature by examining additional influences beyond inhibition deficits, specifically by categorizing the content of supplemental material normatively produced by older adults to understand the role it plays in communicating stories.

Past research has not delineated the point at which producing off-target information transitions from being a matter of good conversation skill to a reflection of cognitive deficits. It is possible that individuals with moderate to severe inhibition deficits might continue to include supplementary information in their stories because they subjectively feel the information is relevant. That is, across the continuum of producing off-target material, inhibition deficits may interact with communicative style. Deficits may play a greater role at the most extreme end, resulting in a minority of older persons producing clearly irrelevant material that interferes with communicating a story. As such, we propose that a comprehensive way to examine the nature of story asides in older adulthood is to complement existing research from a cognitive aging perspective with our ecological, life story approach to telling memory stories in everyday life (see also Baron & Bluck, 2009).

Acknowledging that the production of story asides is at least partially driven by communicative style, why might older adults include more story asides than young adults in autobiographical stories? One possibility relates to the psychosocial functions that autobiographical memories serve (Bluck, 2003). Telling autobiographical stories is important for maintaining self-continuity (Bluck & Alea, 2008), fostering social bonds (Alea & Bluck, 2003, 2007), and directing future behavior (Cohen, 1998; McAdams, 2003). Individuals use autobiographical stories to create a sense of continuity, purpose, and meaning for their life's experience (Hooker & McAdams, 2003; McAdams & McLean, 2013). As such, older adults may be more interested in providing context and meaning when recounting autobiographical stories, whereas young adults may be focused more on the literal, informational content of events. This fits with research suggesting that younger adults are more knowledge-focused while older adults focus more on emotion and meaning (Fung, Carstensen, & Lutz, 1999; see also Carstensen, Fung, & Charles, 2003). While findings show that both fictional and autobiographical stories are imbued with story asides, greater inclusion of such asides seems preferentially important to older adults when talking about their own lives. In particular, life story coherence asides are the most commonly used type of aside and may be the core construct to be considered in future research on story asides. This style of communication may reflect a preference for connecting life episodes through autobiographical reasoning (Bluck & Habermas, 2000) that has the potential to create personal meaning and spur insight (Glück et al., 2005).

Note that we were not focused on comparing the two story types per se (i.e., main effect of story type) but instead were focused on how storytelling differs by age groups across autobiographical and fictional stories. We provided a rationale for the use of fictional stories as our comparison condition in the introduction suggesting that fictional stories are a reasonable, though not perfect, ecologically relevant comparison to autobiographical memory stories. In fact, at the main effect level, there was no difference between the two story types in the inclusion of story asides overall.

Limitations and Conclusion

The study has several limitations. The first two are methods issues. It is possible that older adults expressed more story asides because they were sharing autobiographical stories with a young experimenter and might have felt this person warranted further explanation of events because of their youthful age. In contrast, young participants would not feel the need to provide more information when speaking with age-contemporaries. Indeed, people may recall (Conway & Pleydell-Pearce, 2000) and tell (Alea & Bluck, 2003) stories differently depending on a variety of characteristics of the listener (e.g., age, gender, and race). Our pattern of findings do not particularly support the idea, however, that older adults produced more story asides when recalling autobiographical and not fictional stories solely because of sessions being conducted by a young experimenter. For example, older adults do provide more story asides but they do that only when recalling autobiographical memories not when telling fictional stories. This suggests that older adults did not feel the need to educate the young woman experimenter. Fictional stories would also be in need of clarification if the older teller does not believe the young listener has sufficient world knowledge or knowledge of people and their lives to comprehend the story. In addition, analysis of the specific story asides categories suggests that age differences in production of story asides was not because of the age of the experimenter. If older persons feel they need to create context when telling stories to the young listener, the most likely type of information for them to share would be world knowledge, facts about the world from before the young person was born. The other story aside categories are not history-bound so would not need to be included. However, the story aside, world knowledge, was infrequently mentioned by older adults when talking to the young experimenter. In fact, there were no age group, story type, or inter-

action effects for sharing world knowledge when recalling stories. These points convince us that experimenter age should not be seen as a major confound in the current research. That said, future research on story asides could further explore how individuals produce story asides in different listener contexts: When different-aged persons of different races and gender act as listeners.

A further limitation is that we suggest that older adults' use of story asides when telling stories is not conscious or volitional, but occurs in relation to their more contextually oriented communication style. In fact, however, older adults may be strategically using story asides. Future research using a within-subjects design and including measures of cognitive control (e.g., see Kryla-Lighthall & Mather, 2009 for suggested assessment), would be useful in examining whether older individuals are *strategically* producing story asides in some types of narratives (e.g., autobiographical) more than others (e.g., fictional).

The final limitation is an interpretive issue. We interpreted our finding that older adults produce story asides more than younger adults only in the autobiographical memory condition as suggesting that older adults' use of asides may be conversationally appropriate, not simply because of a cognitive deficit. An alternative interpretation would be that older adults do not differ from the young in producing asides when recalling fictional texts because of a deficit in richly representing imagined scenarios. In the current study, we parsed story asides into three content-related categories, but future research might aim to also examine the level of semantic and episodic information produced in story asides in relation to various story types. This would allow, for example, relation of story aside findings to age-related differences in semantic and episodic memory.

In conclusion, despite the current study's limitations, we suggest that age-related declines may certainly be inevitable in some areas. Aging does not, however, denote unidirectional decline but can be conceived of as multidimensional and multidirectional (Baltes, 1997; Baltes, Lindenberger, & Staudinger, 2006; Freund, Li, & Baltes, 1999). Psychological research needs to focus on capacities that are preserved or enhanced in older age (e.g., Carstensen, Isaacowitz, & Charles, 1999; Isaacowitz, 2006) in addition to those that decline to avoid supporting negative age stereotypes (Hess, 2006; Hess, Auman, Colcombe, & Rahhal, 2003). In that regard, the current findings regarding story asides provide a positive view of older adults as storytellers.

Past research on cognitive aging shows adults produce more off-target responses as they age (McGinnis et al., 2008). Viewing story recall and memory-sharing in everyday context, we introduced the construct, *story asides*, suggesting that these may contextualize and add meaning to stories. Older adults produced more story asides, particularly when recalling autobiographical events. Even if story asides are partially the result of inhibition deficits, older adults appear to have the ability to integrate meaningful information about their lives when sharing autobiographical stories. Telling stories, particularly about one's own life, may be an area in which there is potential for maintenance and even gains across adulthood. If future research supports this perspective, psychology will have a good story to tell about aging.

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(*Appendix follows*)

Appendix

Story Aside Coding Materials

I. Example of Story Asides in a Participant's Autobiographical Story

Ok, well, I'll talk about our first romantic type moment. **Well, we had been having the pre what looks like we're gonna get engaged comments.** So she was working at an office down from where I was working and we were both working at the University at the time and said "You know we need to talk" and I thought for sure this was "it ain't gonna happen." *I had just been accepted into the University of Florida.* **We lived in Windsor, Ontario, Canada** so this was two months before I was moving out of the country. **Neither one of us were looking for a short term thing so it had just been** . . . we had been really good friends and things were, you can tell signs were moving "that way." I was sitting there just bummed the whole rest of the day saying, "I was just having such a fun summer." I knew nothing serious was gonna come . . . So four o'clock we meet and, well, like what do you want to do? And I was like I don't want to have this conversation, so I was like, let's go for a walk. We walked from the University,*it's about twenty minutes to get to there*. We stopped at [xx] *which is the biggest doughnut chain on campus. There's one on every corner*. So we stopped and we buy some ice cappuccinos. **It's May 26th so it's almost a year, three years ago from today so**, we stopped and we go to the Riverfront and we're just walking and we're talking and I mean we're talking about anything but what we need to talk about. I mean we talked about the weather the news and *she's in music theater* so we talked about that. There was carnival that was just setting up so we stopped and we looked at that so we eventually found a park bench and we were overlooking the river and the sunsets coming . . . *Joshua Harris wrote a book called I Kissed Dating Goodbye.* We talked about some of those philosophies and I thought about one of the philosophies is you will never kiss until your wedding day and so we talked about that and then I'm like, "Two months and you're gone, do you really think this is gonna happen?" . . . *I live about five or six blocks away*. We talked about it and she said, let me think about it, reflect on it, and I'll give you a call. I get home I'm just throwing some steaks on the barbeque just for me and my roommate to have dinner. So it's about eight o'clock, we had left at about 7:30. "I need to talk to you now." . . . So we spent four hours discussing . . . why it's something that I knew was meant to be and so we talked about all the reasons and why it could be and so we left that night quasi- engaged knowing that we were going to get married. But we couldn't, she was convinced we couldn't actually tell anyone till I met her mother *who lived 18 hours further north of us* **but was coming down in four days for her graduation**. So it was like, everything was absolutely perfect in timing and it was just one of those nights where it was like very everything ended perfectly but it had been a total disaster up to that point.

Coding legend for Story Asides: *Underlined* = World Knowledge; *Italicized* = Biographical Fact; **Bold** = Life Story Coherence. *Note:* Above example is an actual narrative in raw form with minor abbreviations. It may contain various speech or syntactic errors. Minimal punctuation has been added for clarity.

II. Example of Story Asides in a Participant's Fictional Story

Jim and Theresa, they had decided to go to the Fourth of July celebration across the river. *They were from Alexandria, Virginia*. They, **she had, he had been to that celebration before, but she hadn't**, so he was very happy to show her, I guess and she was very excited. *They had lived across the river, the Potomac River, for a very long time*, but **they had never really gone to the historic sites, so this was kind of a change**. And they packed a picnic lunch with chicken . . . chicken, bread, and peaches, and wine, and then they got there, and there was a lot of, it was a big crowd, and a lot of people, and there were a lot of stands. They stopped in to some of the stands. Some of them had merchandise and others had food stands. There were people playing Frisbee because they were waiting for the concerts to start, and the concerts started and they were awesome. And this was a special celebration because it was the Fourth of July, *which is the Independence of the country*, and also it was special because **they had met on the Fourth of July, so they were celebrating their anniversary**. And they had such fun that they decided to make it a yearly thing, to go and to celebrate the Fourth of July and their fourth year anniversary, I mean their fourth and fifth and all of their anniversaries. They were thinking that **they were starting to have some couple traditions**.

Coding legend for Story Asides: *Underlined* = World Knowledge; *Italicized* = Biographical Fact; **Bold** = Life Story Coherence. *Note:* Above example is an actual participant narrative in raw form with minor abbreviations. It may contain various speech or syntactic errors. Minimal punctuation has been added for clarity.

III. Original Fictional Story

Jim surprised Theresa with an evening in Washington, DC, to attend the Fourth of July Celebration. Although he had gone to the celebration a few times, Theresa had never been before and had always wanted to go. He packed a picnic lunch for the two of them and they drove from their home in Alexandria, Virginia. Although they lived across the Potomac River from Washington for a few years, they had rarely visited the historical sites. Today Jim packed fried chicken, fresh bread, peaches and a bottle of New York wine.

(*Appendix continues*)

They drove up Highway 1, across the bridge. The area around The Mall was very crowded, so they parked about ten blocks north of it. It seemed like more people than ever had come for the festivities today. They browsed among the artisan's displays, souvenir booths, and food stands. There were hordes of people playing Frisbee on the lawn while waiting for the concerts to start. Jim and Theresa were looking forward to the concerts. Afterward, they watched the fireworks over the Washington Monument. On that day, the fireworks seemed to have a special significance. It was a celebration of both the independence of America and their relationship. They had been together for years now. The concerts were beautiful, the fireworks spectacular, and the people were friendly. Jim and Theresa were so impressed that they decided to make it a yearly tradition.

Note. Two fictional stories were used. One is provided here as an exemplar. Both stories are modified versions taken from Dixon et al. (1989).

Received July 3, 2014
Revision received October 2, 2015
Accepted October 5, 2015 ■