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Autobiographical Memory Functions of Single, Recurring, and Extended Events

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Abstract

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Autobiographical memories are thought to serve three basic functions: self definition, social connection and directing future behavior (Bluck, Alea, Habermas & Rubin, 2005; Pillemer, 2003). These basic functions have been examined in single, unique, one point in time events. Yet, current theories of the organization of autobiographical memory recognize the importance of other types of events, such as recurring events (events experienced multiple times) and extended events (single events occurring over periods longer than one day) (e.g., Conway & Pleydell-Pearce, 2000). The possible functions that these types of events serve have not been examined systematically. In the present research we examined relations among the three functions of autobiographical memory for single, recurring and extended events. Narratives and questionnaires collected from 52 undergraduate students were coded on expression of self, social, and directive functions. Single and extended events were found to serve significantly more self and directive functions compared to recurring events, whereas recurring and extended events were found to serve an increased social function compared to single events. Implications of these findings for theories of autobiographical memory are discussed.

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Table of Contents

Introduction	1
Methods	7
Results	10
Discussion	13
References	20
Appendices	23
Tables	26
Figures	33

Autobiographical Memory Functions of Single, Recurring, and Extended Events

As early as 1932 Fredrick Bartlett criticized the strategy of focusing memory research on simple, often meaningless, materials in restricted contexts. Nonetheless, this strategy persisted until Neisser's (1982) work on autobiographical memory and Bruner's (1991) discussions of narrative as a distinct mode of thought. Their work, which called attention to more complex and personally meaningful materials, led to a substantial body of research on the accuracy and structure of autobiographical memory. More recent theorizing has expanded these questions and has focused on the function of autobiographical memory. There is emerging consensus that autobiographical memories serve three basic functions - self definition, social connection and directing future behavior (Pasupathi, Lucas, & Coombs, 2002; Pillemer, 2003; Bluck, Alea, Habermas & Rubin; 2005). In a continued effort to expand the ecological validity of autobiographical memory research, emerging perspectives have begun to integrate structure and function (e.g., Conway & Pleydell-Pearce, 2000; Conway, Singer, & Tagini, 2004; Nelson & Fivush, 2004). However, the functional approach to autobiographical memory is in its infancy and has not been extended beyond questionnaire data to a systematic examination of the expression of self, social and directive functions within personally meaningful event narratives.

Moreover, researchers often have assumed that the majority of personally significant autobiographical memories are discrete, usually unique, often dramatic or traumatic, events or episodes, and research on autobiographical memory has focused on these types of unique one point in time events. However, this assumption is not supported by studies that have examined open-ended autobiographical memory recall which indicates that extended events (e.g., a three

day car trip with your father) and recurring events (e.g., Sunday dinners with family) are common in autobiographical memory (Barsalou, 1988). Moreover, subjects often attach substantial meaning to such events. This suggests that extended and recurring events can also shape self definition, create social connections, and play a directive role in behavior. The purpose of the present study was to assess the multiple functional roles (self, social, directive) of single, recurring, and extended event memories. The second goal is to assess the assumption that single, discrete events are the most self defining autobiographical memory event type.

In terms of the first goal, the functional approach to studying autobiographical memory offers the opportunity to explore not only what we remember, but how we might use our memories in an ecological context to achieve personal goals. Although there is general consensus on the broadly defined functions of autobiographical memory, the precise theoretical or operational definitions of each of these functions has not yet been clarified.

Theoretically, the self function has been defined in a variety of ways ranging from emotion regulation (Pasupathi, 2003), to creating a stable and enduring self-concept (Wilson & Ross, 2003). The social function has been defined as potentially two processes, namely, developing relationships and nurturing them (Bluck et al., 2005). These processes have been viewed primarily as occurring through the sharing of autobiographical memories in social contexts (Fivush, Reese & Haden, 1996). The social function also may be served through the individual representing a concrete sense of a positive shared history with friends/family within the memory itself. The directive function of autobiographical memory involves reflecting on past experience to solve new problems and guide action/behavior. It also has been proposed that the directive function allows us to re-examine our past experiences in order to predict the future (Baddely, 1987).

To date, very little research has empirically examined the functions of autobiographical memory. Bluck et al., (2005) collected data using the “Thinking about Life Experiences Questionnaire” (TALE), a 6 point Likert-type questionnaire collecting ratings of statements designed to assess each function Self: I think back over my life “when I want to understand who I am now”; Social: I talk to others about what happened in my life “when I hope to find out what some other person is like”; Directive: I think back over my life “when I want to learn from my past mistakes”. Bluck et al. (2005) conducted a factor analysis on the TALE data and found that the questionnaire items, designed with three functions in mind, actually grouped around four factors, self, directive, and two social functions. Thus they found general support for the three functions of autobiographical memory, but further categorized the social functions into two aspects: creating social relationships and nurturing social relationships.

The self-defining, social, and directive functions are readily apparent in the events most frequently studied in the autobiographical memory literature, namely, single, unique events. The most salient function served by these memories is often considered to be self definition. McAdams (1995) model of adult personality outlines a strong link between single unique events and the self function of autobiographical memory. McAdams (1995) proposes three levels that comprise adult personality. Specifically, he maintains that autobiographical narratives are constructed and combined to form a stable enduring identity, or self beginning in early adulthood and continuing across the lifespan.

Single events, or self defining memories, also may serve to convey identity to others, create and maintain social bonds, and inform future action. For example, Thorne, McLean, and Lawrence (2004) examined three self defining memories from 168 adolescents. These narratives were coded for type (relationship, mortality, achievement, and leisure), meaning making (either

lesson or insight), and if the memories had ever been shared. In about one quarter of the adolescent narratives direct references to lessons or insights were made. The likelihood of references to meaning did not depend on whether the memories were shared with others or not. This suggests that meaning making was just as likely to occur in private as in public sharing, though the majority of the memories had been shared at least once (88%). Twenty percent of the self defining memories had associated memories of sharing the memory with others. These “telling memories” also contained the same proportion of meaning making as the actual self defining memories collected. This finding suggests that social telling of self defining memories provides additional opportunity to create meaning and suggests that self defining memories can be a collaborative construction, as well as possibly serving a social function in sharing memories with others in everyday conversations (Thorne, et al., 2004).

Though single events have received the majority of empirical attention in autobiographical memory research some studies have examined what other event types make up the contents of our memories. In a 1988 chapter, Lawrence Barsalou discusses data collected with undergraduate students returning to school from summer vacation. Students were asked to describe what they did over the summer in the order that the events come to mind for five minutes. After analyzing the statements made, Barsalou found that undergraduates were producing specific, single event related statements only about twenty percent of the time. Thirty percent of the statements were summaries of recurring events (“I played a lot of softball”), another thirty percent of the statements described general aspects of the events (“the house we rented was beautiful”), and nine percent of the statements referenced an extended event (“I went to San Francisco for two weeks”).

In a second study, Barsalou (1988) again recruited undergraduates in the beginning of the fall

semester. The participants were required to produce information about their summer vacation during three sessions that were each two weeks apart. There were four conditions in the first session. Participants were asked to provide a list of as many of one of the following, people you spent time with, places you went, activities you did, or times when things happened. When the participants returned two weeks later they were given each item from the list they produced as cues and asked to retrieve as many related memories as possible based on the cue. In the final visit participants were asked to categorize each event they recalled as either a specific event or a summarized event (recurring event). About sixty percent of all the cued memories were summarized events.

These results suggest that though single and recurring events account for a significant proportion of autobiographical memories in both cued and free recall conditions, recurring and extended events are also an important part of representations of the personal past.

Another line of research, scripts, also examines recurring events. Though originally described with the development of artificial intelligence in mind, Schank and Abelson's (1977) script concept is as close a parallel in the literature to recurring event memory. Schank and Abelson (1977) describe a script as a cognitive structure (a form of schema) that contains temporal causal information about a recurring class of personally experienced events and guide behavior and expectations, serving a directive function (Abelson, 1981). Scripts like the "restaurant script" contain information to help direct your behavior at any given restaurant. The behaviors and their specified order are derived by automatic generalization processes that occur as a class of events, in this case eating at a restaurant, is repeatedly experienced. Scripted events may indeed come to serve a directive function in a more personal sense (not just how to order food). One might grow up watching Saturday Night Live with their family as a child and then establishing that as a

tradition with roommates at college, or perhaps annual fishing trips with dad become annual fishing trips with son. There is also some suggestion from the developmental literature that recurring events or scripts are an early developing form of event memory that serves primarily a directive function (Nelson, 1988).

We argue that in order to fully examine the functions of autobiographical memory, we must examine multiple types of event representations, including single, recurring and extended events. In the present research we examine the functions of autobiographical memories for different categories of experience, single, recurring and extended events. We chose to do this using both narrative and questionnaire methodology. Narrative methods offer more detailed accounts of personally experienced events and associated personal meaning and allows for an examination of how the functions of autobiographical memory may be spontaneously included when recalling the past. Questionnaire data allow us to more directly probe the specific functions of event memories and to address functional aspects of event memories that may not typically be included in narrative accounts such as how often the memory is shared.

Because of the limited research we hesitate to make strong predictions but several possibilities can be delineated. In terms of the self function, research on self and identity suggest that single events serve a strong self function. Yet it is reasonable to argue that recurring or extended experiences also play an important role in self definition simply because these experiences have occupied a larger proportion of an individual's life. In addition, recurring events may serve a self-defining function because these are events in which the self has engaged multiple times and therefore may lead to a more rehearsed and accessible concept of self. In terms of the directive function, research on cognitive scripts and work on children's memory (Nelson, 1988) suggests that recurring events play an important directive role. Pillemer (2003)

argues for the directive power of the specific episode based on several case studies. Finally there are no clear hypotheses from research on the social functions of autobiographical memory that suggests how people use single, recurring, or extended events to create representations of the importance of social relationships or to facilitate intimacy, bonding, and closeness. However, recurring and extended events may serve these functions well because they represent longer periods of time and often represent ongoing relationships, making them better suited to represent the development of relationships over time.

Method

Participants

Subjects were 52 undergraduate students (26 females) recruited through a subject pool at a mid-size private university. 29 of the participants self-identified as Caucasian, 7 as Asian, 4 as African American, 1 as Indian, and 11 did not provide ethnicity information or described themselves as part of multiple ethnic groups. Participants were compensated with credit toward their introductory psychology courses. The participants ages ranged from 18-23 (mean= 19.3). All participants gave informed consent as approved by the Institutional Review Board.

Procedure

The data were collected in groups of up to 10 participants in a 60 person university lecture hall. As each participant arrived they were given a narrative workbook and instructed to write narratives about six different important personal experiences: two single events, two recurring events, and two extended events. The order of the event type (single, recurring, extended) was counterbalanced yielding six different orders. Following each narrative elicitation, participants were asked to complete questions explicitly regarding the self, social and directive functions of

each memory. The narrative elicitation and the questionnaire tasks are described in turn.

Narrative elicitation. For each narrative, participants were encouraged to provide as much detail as possible. Based on instructions used to elicit single self-defining memories in previous research (McAdams, 1985), the instructions for each event type are provided in Table 1.

Coding

All narratives were transcribed verbatim from the written workbooks into word documents, and each word document was checked for accuracy before coding. Each narrative was coded on three 4-point scales developed for this study, assessing the expression of self, social, and directive functions. The coding scheme is provided in Table 2. The coding schemes used were developed on a subset of the narratives collected, and reliability was assessed on narratives not used for coding development.

The self coding scheme focused on content related specifically to aspects of self esteem, identity, and self understanding contained in the narrative. The social function scheme focused on narrative content that conveys a sense of valuing specific social relationships. The directive function scheme scores narrative content that described changes in behavior as a result of the events contained in the narrative. Each narrative received a score on self, social, and directive function scales.

Reliability was established between two independent coders on a subset of 90 narratives (29%). The intraclass correlation on the narrative measures of self, social, and directive produced alpha's of .87, .89, .54 respectively. Following reliability the remaining narratives were divided between the two coders. Note that the low alpha for the directive function scale was due to a large proportion of zeros in the data. The coder's scores matched on 90% of the narratives for the

directive function and were therefore considered reliable.

Questionnaire data and coding

Immediately following each narrative elicitation, participants completed one questionnaire to assess the self function, and responded to two structured questions to assess the social and directive functions of autobiographical memory. The self function was assessed with the Centrality of Events Scale (Bernsten & Rubin, 2006) a brief 7-item rating scale designed to assess how central an event is to a person's sense of self/identity. Questions included items such as "I feel that this event has become part of my identity" and "This event was a turning point in my life." Participants then were asked to respond to two open-ended questions designed to assess the social and the directive functions of each memory: "Do you ever share or discuss this memory with others?" and "Has this memory ever helped guide your action or influenced your decisions making in your life?" Participants were asked to elaborate in writing on their responses to these questions in the provided space of about 5 lines.

The responses to these two questions were coded on adapted versions of the directive and social function narrative coding schemes (see Table 3). The social function coding scheme in the questionnaire data was adjusted to focus more on how often the memory was shared and used to reconnect with friends/family (an alternate interpretation of the methods used to achieve the social function of autobiographical memory). The directive function coding scheme was changed to better fit the yes/no nature of the questionnaire (details are available from the first author).

Reliability

Reliability was established between two independent coders on a subset of 60 responses (19%). Reliability analysis on the social and directive function coding schemes produced alpha's

of .95, and .92 respectively. Following reliability coding the remaining narratives and questionnaires were divided equally between the two coders and coded independently.

Retention interval

Following the narrative and questionnaire coding we attempted to calculate retention intervals for each event memory. Variance associated with retention interval, or the age of memories, is typically removed prior to analyses in memory research. However, in this study retention intervals could not be defined for recurring and extended event memories. Because recurring events were by definition an accumulation of multiple event memories we were unable to define when the recurring event memory, in its current form, was instantiated. Similarly, our attempts to calculate retention interval for extended event was found too imprecise. Extended events ranged from weeks to years, and some were still ongoing. Because of this it was unclear how to define across participants when an extended event memory was “created.” Because of this retention interval was not considered a reliable factor and analyses did not address retention interval. However, impressionistically, as in most other autobiographical memory research with college students that does not constrain time intervals, the majority of events nominated occurred in high school or college.

Results

Analyses focused on how self, social, and directive functions were expressed in the narratives and in response to the follow-up questions to each type of event, single, recurring and extended. All analyses are based on the mean scores across the two events provided in each category. Preliminary analyses indicated no significant relations between the narrative coding dimensions and length of the narrative or gender of participant, so these variables were not

considered further. We first present a description of the types of events participants narrated by event type, followed by analyses of function.

Description of Events

Participants were asked to freely nominate personally significant memories. To describe the events nominated we formed twelve categories and assigned each narrative from each event type into a category. A summary of that categorization can be found in Table 4. Single events were mostly about achievements, rites of passage, or about an illness, accident or injury. Recurring events were overwhelmingly about times with friends and family, while extended events were mostly about dating and travel.

Narratives

Figure 1 displays the mean score of each event type on each of the three functions. An initial 3x3 (event type: single, recurring, extended x function: self, social, directive) repeated measures ANOVA revealed a significant main effect for function ($F(2, 50) = 100.57, p < .01$) and a significant interaction between event type and function ($F(4, 48) = 12.39, p < .01$). There was also an effect approaching significance for event type ($F(2, 50) = 3.10, p = .053$). Thus, one-way ANOVA's on each function were conducted across event type, followed up by post hoc comparisons at the $p < .05$ level. The ANOVA on the self function revealed a significant main effect ($F(2, 50) = 8.38, p = .001$); simple comparisons indicated that single and extended events expressed significantly more self function compared to recurring events ($F(1, 51) = 10.34, p = .002$; $F(1, 51) = 13.39, p = .001$) but did not differ from each other ($F(1, 51) = .02, p = .89$). For the social function, there was again a significant main effect ($F(2, 50) = 18.61, p < .001$), and simple comparisons indicated that recurring and extended event narratives expressed

significantly more social function than single events ($F(1, 51) = 30.47, p < .001$; $F(1, 51) = 20.21, p < .001$) but did not differ from each other ($F(1, 51) = .64, p = .43$). Finally, a comparison of directive function content across event types produced a significant main effect ($F(2, 50) = 4.05, p < .05$). Simple comparisons revealed that directive function content appeared significantly more in single event narratives compared to recurring events ($F(1, 51) = 5.74, p < .05$) but was not significantly different from extended events ($F(1, 51) = 0.67, p = .42$). As well, recurring event and extended event narratives were not found to contain significantly different levels of directive function related content ($F(1, 51) = 3.33, p = .07$).

We further predicted that each event would serve multiple functions and therefore conducted several ANOVA's to examine differences in self, social, and directive function score within each event type. Figure 2 plots the means of each function by event type. Analyses on the single event narratives revealed that self function was significantly more prevalent than either social or directive functions ($F(1,51) = 45.98, p < 0.01$; $F(1,51) = 62.72, p < 0.01$) and that social and directive functions did not significantly differ within single events ($F(1, 51) = 0.03, p = .87$). Within recurring event narratives we found significantly higher scores for the social function than either self or directive ($F(1, 51) = 4.23, p < .05$; $F(1, 51) = 66.07, p < .001$) and scores for the self function were significantly higher than those for directive ($F(1,51) = 45.16, p < .001$). Finally, we found that extended events served significantly more self function compared to social or directive ($F(1,51) = 4.07, p < .05$; $F(1,51) = 82.38, p < .001$) with the social function score falling between self and social, being significantly more common in the narratives than the directive function ($F(1,51) = 22.94, p < .001$).

In summary, the analyses by function revealed that single and extended events expressed more self function than did recurring events, but extended and recurring events expressed more

social function than single events. Single events and extended events also expressed more directive function than recurring events but did not differ from each other. The within event type analyses suggest that extended events contain high levels of self and social function. While single events contain comparatively high levels of self and directive function and recurring events contain high levels of social function only.

Questionnaires. We ran a series of ANOVA's and simple comparisons comparing each function across event types. For the questionnaire assessment of self function, a significant main effect was found for the Centrality of Events Scale (CES) across event types ($F(1, 51) = 12.00, p < .001$). Follow up simple comparisons found that CES scores were significantly higher for memories of extended events compared to single or recurring events ($F(1, 51) = 4.16, p < .05$; $F(1, 51) = 17.22, p < .001$) but CES scores did not differ between single and recurring events ($F(1, 51) = 1.08, p = .30$). For the social function, a significant main effect was found for the questionnaire measure across event type ($F(2, 50) = 8.49, p = .001$). Simple comparisons revealed that social function scores were significantly higher for extended events compared to recurring events ($F(1, 51) = 4.16, p < .05$) and recurring events were significantly higher than single events ($F(1, 51) = 5.06, p < .05$). Finally, for the directive function, a significant main effect was detected across event type ($F(2, 50) = 6.19, p < .01$). Simple comparisons found that directive function scores for single and extended events did not differ ($F(1, 51) = .08, p = .78$), but both single and extended event directive scores were significantly higher than recurring events ($F(1, 51) = 9.10, p < .01$; $F(1, 51) = 9.38, p < .01$).

Discussion

The overall results from this study suggest that single, recurring, and extended events all serve the basic functions of autobiographical memory, and in some cases several functions

simultaneously (33% based on narrative scale scores). Single event narratives and questionnaire responses were both high on self functions (as expected) and high on directive function which fits with Pillemer's (2003) argument for the directive power of single unique events. However single events were low on social function, both the narrative and questionnaire measures, compared to the other event types. Recurring event narratives served primarily a social function in our sample, but were relatively low on both self and directive function. Extended events were high on all measures of function both in the narrative coding and the questionnaire responses.

The within event type analyses of the narratives showed that single events contain more self/identity related content than social or directive, which fits well with the literature on single events being self-defining. Recurring events contain more content related to the social function compared to self or directive functions, suggesting that recurring events facilitate the development and maintenance of social relationships. Extended event narratives contained more self related content than directive, but the social function did not differ from either of the other functions. These findings are not surprising when the kinds of the events described for each event type are considered. In our sample, single events tended to focus on personal achievements while recurring events were more socially oriented and tended to focus on friends/family. Extended events frequently described travel and dating, which fits well with the findings that they serve a self and a social function as dating is clearly social and the travel events were frequently about broadening personal perspectives on life in the United States. This is not to say that memories about family and friends must serve a social function or that events about travel will always be self defining. We mean merely to say that the kinds of experiences reported seem related to the functions they are most likely to serve.

Further, we found similar patterns in functions across event type using both narrative and

questionnaire measures. The directive function is served equally by both single and extended events and least by recurring events across both questionnaire and narrative ratings. The social function was served least by single events across both measures. However the narrative measure of the social function found that recurring events contained the most overall social content but for the questionnaire measure extended events served the most social function. This difference supports the idea that there are two aspects to the social functions of autobiographical memory that may be differentiated by event type. People share extended event memories more often (questionnaire measure) but they express the most positive regard and a sense of a shared history through recurring event memories (narrative measure). The self function for both questionnaire and narrative measures was highest for extended events. However for the narrative measure the extended and single events contained equally high amounts of self related content but for the questionnaire measure it was the single and recurring that did not differ and were both below the extended event category.

The results for the recurring event category were somewhat unexpected. Because of the relationship between recurring events and scripts we expected them to serve a significant directive function but instead they served the least directive function of all the event type narratives. This may be explained by the generalizability of personal versus cultural scripts. Recurring events may lead to the formation of personal scripts, but this is much different from the scripts described by Schank and Abelson (1977). While Schank and Abelson's (1977) scripts are importantly generalizable across events in a recurring class of experiences personal scripts may be too specific to serve a directive function. However, this finding may be related to the specific population we studied, college students living away from home for the first time. Roughly 50% of the recurring event narratives were about family. Perhaps these personal

scripts/recurring events would begin to serve a directive function later in life when the participants had a context that called for them, mainly families of their own. Recurring event memories from childhood may be reflected on and used to make decisions on what kind of environment to provide for a child as a parent. Many of the recurring events narrated were still going on or had recently ended which may also provide an explanation as to why we found so little directive content. Perhaps greater distance is required before some memories can take on a directive function.

Another somewhat surprising result was the extent to which extended events served all the autobiographical memory functions. One influential model of autobiographical memory, namely, the self memory system (SMS; Conway & Pleydell-Pearce, 2000) places extended events at the top of a representational hierarchy. The single and recurring event categories fall below/within the extended events level of the SMS model. The SMS model suggests that extended event narratives should contain more function related content because they are the sum of numerous single and recurring events and the specific functions of each. Our results fit with this interpretation of the SMS model, in that extended events were never found to be significantly less than any other event type on any function measure (questionnaire or narrative coding).

Our data provide an important first step in examining the functions of multiple types of autobiographical memories. Many questions remain, however. A critical question is whether the functions of autobiographical memories change over the course of development. Adolescence and early adulthood receive enormous amounts of attention as the peak of identity construction and self definition. Do social and directive functions have similar peaks and where might those peaks lie? Nelson (1988) argues that children's memories focus more on recurring events and strict scripts. It may be that recurring events see their own reminiscence bump during childhood

period. Our findings suggest that recurring events serve a unique social function and perhaps childhood corresponds to a peak not just in recall but in creating and expanding social connections. Whereas adolescence can be viewed as a time period of forging an independent self, childhood may be viewed as a time of social dependence, with little in the way of an independent self or identity.

It is also a reasonable possibility that the three basic functions of autobiographical memory described here and the way they are defined are specific to western cultures. Numerous studies have examined autobiographical narratives across cultures and found significant differences in the way the self is referenced and the types of events recalled. Wang & Conway (2004) found that Chinese adults tended to focus more on social interaction and tended to convey more moral lessons (directive function) with their memories than American adults. Whereas American adults tended to focus more on self and emotion. Given findings like these one might expect that the relations between event types and the functions of autobiographical memory described here may differ significantly across culture. Barsalou's (1988) work on the basic contents of autobiographical memory provides us with a good model for examining the contents of autobiographical memory from a cross cultural perspective. With a series of studies similar to Barsalou's (1988) work we could begin to address the issues of what kinds of events people from non-western cultures recall and in what proportions. Whether or not the specific definitions of each function will hold across cultures is uncertain. It has been suggested that non-western cultures tend to define self in terms of social relationships and connections. Thus, one possibility is that the division between self and social functions is blurred. This could change the distinctions made for the functions of autobiographical memory and provides an interesting direction for future research.

A methodological issue of particular importance was illustrated by our results for directive function scores derived from the narrative coding scheme and from the questionnaire measure (“Has this memory ever helped guide your action or influenced your decisions making in your life?”). We found very little directive function when coding the narratives compared to self and social function scores. But the questionnaire results showed that despite the fact that the participants were not including much directive related content in their narratives they did view their memories as serving a directive function when filling out the questionnaire. It seems that if the experimenters don’t ask, the participants don’t tell. This is an important pattern the implications of which should be examined in future research on the functions of autobiographical memory. The directive function and, to an extent, perhaps even the self and social functions, may not be directly woven into an autobiographical narrative unless the instructions explicitly ask for them. Future investigations would benefit from a combination approach of both narrative coding and Likert-type scales designed to assess the self, social, and directive functions (i.e. “thinking of this event makes me feel closer to friends/family” rated from 1-7).

It also is important to note that for both the event types and functions categories the boundaries are not clear cut. Recurring events can be recurring single (coffee every Friday with friends) or recurring extended events (annual summer vacations). The directive function can be met through social sharing of a memory to elicit advice. Despite the potential ambiguity of the event categories described in this study, 51 out of 52 participants provide the requested two narratives for each event category, suggesting that individuals easily understand and provide these different types of memories, supporting the psychological reality of these different event types.

In conclusion, the general results from this study show promise for the functional approach

and to expanding our investigation of autobiographical memory beyond discrete unique single events to other categories of experience. In general, recurring and extended events have been overlooked in the autobiographical memory literature. But we have shown that examining event types other than single events can enrich our understanding of autobiographical memory structure and function. We have shown that recurring and extended events memories serve the same functions, and often times to a greater extent, as single events do. There are still many questions left to address including the ontogenesis of both autobiographical memory for different event types and the functions they serve. As well, cross cultural studies may shed light on the nature of identity and the role of autobiographical memory functions in non-western societies. Though gender was not a significant factor in the present research, future studies should be aware of the potential for gender-related effects. Numerous studies have found gender differences in autobiographical narrative (see Fivush & Buckner, 2003, for a review) and gender may still act as an important factor across event types and functions. The present study is an important first step toward understanding the full scope of memory in natural contexts and demonstrates that single, recurring and extended events are valid categories of experience that each serve the functions of autobiographical memory in unique ways.

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Appendix-A

Single Event

My Bat Mitzvah was an event that was a significant milestone in my life. Although I spent over a year learning the parts of the service, preparing speeches & making arrangements for the celebration after, the actual day was an experience I will never forget. It was such an amazing feeling to be surrounded by family & friends – all of those who mean so much to me - & have them share my passage into adulthood in XXX Judaism. Although the party at night was fun, the service earlier that morning & the very essence of my Bat Mitzvah sticks out the most in my mind. I read from the torah & was called to the torah for the very first time. I felt a connection to all of my ancestors as I was continuing to carry on their traditions. Looking out into the sanctuary of the temple where I had grown up, I distinctly remember feeling overcome with love & appreciation for all of the special people in my life. I saw the faces of the teachers, new friends, life-long friends, cousins, aunts, uncles, and grandparents, my great grandmother, parents, my brother. there was a moment where I connected w/ each one of them & realized how blessed I am to have these people in my life.

This event has had a permanent impact on me. It solidified the importance of being Jewish & the connection I feel w/ the religion. As a result, I have remained active in my synagogue & continue involvement in college. Further, † it was the first time I truly took a step back & appreciated the amazing people who have touched my life & I continue to acknowledge it & make sure that they know how much I appreciate all they do.

Self: 3

Social: 3

Directive: 2

Appendix-B

Recurring Event

My Dad is a workaholic. His work hours are usually about 7AM-10PM with the last few hours being done at home. This means I've never really gotten to spend much time with him. However, every summer ~~we go on~~ my family goes on a 2-week vacation to Martha's Vineyard off of Cape Cod. My Dad and I always drive up together, so we can have a car on the island. Sometimes my Mom and brother join, but sometimes they fly up. Anyways the car-ride is always a time I can catch-up with my Dad, talk to him about life, and really bond. I can remember over the past 10 years or so, the car-rides have gotten more and more interesting as I have become an adult. Every car ride I feel like my Dad's son, and this is the only time I feel that way. From these car rides, I know how much my Dad cares about me, and it has really furthered our relationship. I wouldn't trade in the car ride for the world.

Self: 2

Social: 3

Directive: 0

Extended Event

For 5 summers, I have worked at a camp for children w/ speech delays, most of them have Autism. I look forward to those 3 months each summer, as that is the time when I am truly the happiest. Although I initially began simply to do a community service project w/ one of my friends, ✕ after the first week, I was in love! I fell in love w/ these kids who taught me so much & were struggling to improve their speech & social skills each & everyday. It put my life into perspective, as I realized how many things we take for granted. Even just being able to sit in a chair for a few minutes is a struggle for some of these children, or being able to tell you their name is a milestone. A Even though there were new children each year, I connected w/ each new group & got to watch them grow over the summer & some of them over the years. While many of my friends were tanning in Hawaii or attending prestigious college summer programs, I was at camp, making picture frames & cleaning up spills – but I wouldn't trade my experiences for anything & by the end of the 1st summer, I knew this experience had changed me forever. As a result, I have been back every summer & want to devote my life to working w/ Children w/ Autism. I am studying psychology & hope to volunteer at the Emory autism center & of course, I am returning to camp this summer. Those children have taught me so much, & I know that my life has been permanently changed by each one of them.

Self: 3

Social: 2

Directive: 3

Table 1

Narrative Instructions

<p>Single Event</p>	<p>I would like for you to write about a single significant event in your life. This single event should be a specific happening or significant episode that happened to you in your past set in a particular time and place. It is helpful to think of such an event as constituting a specific moment in your life which stands out to you as important.</p> <p>As you write about the single event you have in mind please describe, in detail, what happened, where you were, who was involved, what you did, and what you were thinking and feeling during event. Also, try to convey what impact this single unique event has had on you and why it is an important event in your life. Try to be specific and provide as much detail as you can.</p>
<p>Recurring Event</p>	<p>I would like for you to write about a significant recurring event in your life. This recurring event should be an event that you experienced multiple times in your life with mainly the same people and setting. This recurring event should stand out to you as an important set of experiences. An annual family trip or a bedtime ritual would qualify as a recurring event. But again, it is important to remember that we would like you to describe a recurring event that is personally significant to you and stands out in your mind as important.</p> <p>As you write about the recurring event you have in mind please describe, in detail, what happened, where the event would take place, who would be involved, what would you do, and what you would think and feel each time you experienced the recurring event. Also, try to convey what impact this recurring event has had on you and why it is important to you. Try to be specific and give as much detail as you can.</p>
<p>Extended Event</p>	<p>I would like for you to write about a significant extended event in your life. This extended event should be an event that you experienced that took place over a substantial period of time in your life. This extended event should stand out to you as an important experience or period in your life. A period in high school, a time working somewhere, or a lengthy relationship would qualify as an extended event. But again, it is important to remember</p>

	<p>that we would like you to describe an extended event that is personally significant to you and stands out in your mind as important.</p> <p>As you write about the extended event you have in mind please describe, in detail, what happened, for how long, who was involved, what you did, what you were thinking and feeling during this extended event. Also, try to convey what impact this extended event has had on you and why it is an important to you. Try to be specific and provide as much detail as you can.</p>
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Table 2

Narrative Coding Schemes of Self, Social, and Directive Function.

<p><i>Self</i></p>	<p><i>0 – No content suggesting the memory functions to define self or enhance self</i></p> <p><i>1 – Any mention of self enhancing or self deprecation due to reflection or remembering the experience, any mention of similarity or difference of self and other, any labeling of self as a member of a group, identification with an individual or group without further elaboration, identification of personal goals, or explicit mention of personal traits.</i></p> <p><i>2 – Any mention of a turning point, milestone, eye opening experience, change in perspective –OR- any elaboration on the content listed in scoring criteria for a “1”</i></p> <p><i>3 – Elaboration on why event/experience was a turning point, milestone, eye opening experience, or an explanation of how an experience led to a change in perspective in relation to self –OR- elaboration of the impact of the event on self or identity –OR- elaboration of change in personal goals or attitude</i></p>
<p><i>Social</i></p>	<p><i>0 – No content suggesting a positive stance or a sense of valuing personal relationships</i></p> <p><i>1 – Any mention that a relationship or tradition is meaningful or valuable without further elaboration –OR- any description of a relationship as helpful –OR- missing an individual or period in a</i></p>

	<p><i>relationship</i></p> <p><i>2 – Minimal elaboration on the meaning or value of a social relationship or tradition –OR- mention of the developmental history of a relationship with a positive or valuing tone (note: do not count event focused elaborations, only code for elaborations on meaning or value of the relationship)</i></p> <p><i>3 – Extensive elaboration of the value of a social relationship – OR- a description of the developmental history of a relationship with intense positive regard</i></p>
<p><i>Directive</i></p>	<p><i>0 – No content suggesting a change in behavior as a result of the experience</i></p> <p><i>1 – Any mention of a change in a specific behavior as a result of the experience –OR- change of behavior tied to a specific location/person/context –OR- behavior changed on a single occasion “so I stopped going to her house” or “as a result I decided to drop calculus”</i></p> <p><i>2 – Change in specific behavior is generalized to a class of events i.e. “I no longer walk the streets alone at night” or “I am now more careful in swimming pools”</i></p> <p><i>3 – Change in behavior is generalized to multiple contexts/relationships OR elaboration on the change of multiple behaviors across contexts</i></p>

Table 3

Questionnaire Coding Scheme of Self, Social, and Directive Functions

<i>Social</i>	<p>0 – No content to suggest that the sharing of this memory serves to maintain relationships, forge new relationships, or reconnect with friends/family</p> <p>1 – Participant states that they share the story only when asked or only when it comes up in conversation i.e. “I only share it when people ask what type of high school did I attend.” -OR- shares the story without conveying a sense that it is shared in a context of reconnecting or enhancing/maintaining closeness</p> <p>2 – Experience is shared “very often” or “all the time” with any amount of people i.e. “Yes, several times per week casually with family + friends.”</p> <p>3 – Participant meets requirement for a 2 but there is elaboration on the context/cause of reminiscing i.e. “Yes, I talk about Bxxx and our friendship with my old, friends, camp friends and family all the time. Anytime we are talking about friends or something reminds me of her I talk about her.” -OR- there is a specific implication that the memory is shared to reconnect or to maintain certain relationships</p>
<i>Directive</i>	<p>0 – No content suggesting a change in behavior as a result of the experience</p> <p>1 – Any reply with “yes” or an implied “yes” gets at least a one</p>

	<p><i>regardless of what follows -OR- Any mention of a change in a specific behavior as a result of the experience -OR- behavior changed on a single occasion "so I stopped going to her house" or "as a result I decided to drop calculus"</i></p> <p><i>2 – Change in specific behavior is generalized to a class of events or people/person i.e. "I no longer walk the streets alone at night" -OR- there is an inference to change -OR- "Currently it keeps me from making certain decisions b/c I don't want to upset or hurt Axxx or feel guilty"</i></p> <p><i>3 – Change in behavior is generalized to multiple contexts/relationships i.e "Yes, he has taught me to never give up/on anything."-OR- elaboration on the change of multiple behaviors across contexts</i></p>
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Table 4

Distribution of Narrated Events by Type

<i>Event Type</i>	<i>Single Events</i>	<i>Recurring Events</i>	<i>Extended Events</i>	<i>Overall</i>
<u>Rights of Passage</u>				
Religious	2	5	0	7
Graduation/School	17	9	9	35
<u>Relationships</u>				
Friends/Family	8	51	12	71
Dating	10	1	20	31
Confrontation	5	3	7	15
<u>Achievement</u>				
Success	22	2	4	28
Failure	4	0	1	5
<u>Leisure</u>				
Nature	1	2	1	4
Travel	3	16	25	44
Sports	2	9	7	18
<u>Miscellaneous</u>				
Work	2	2	15	19
Illness	28	3	3	34

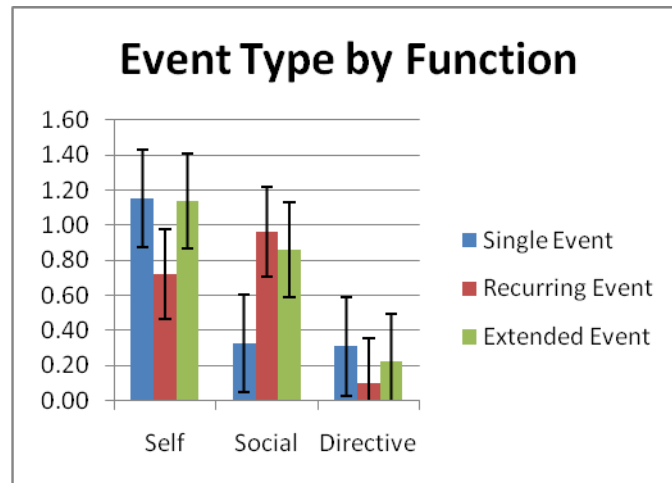


Figure 1. Mean function scores from the narratives across event types, standard errors are represented in the figure by the error bars attached to each bar.

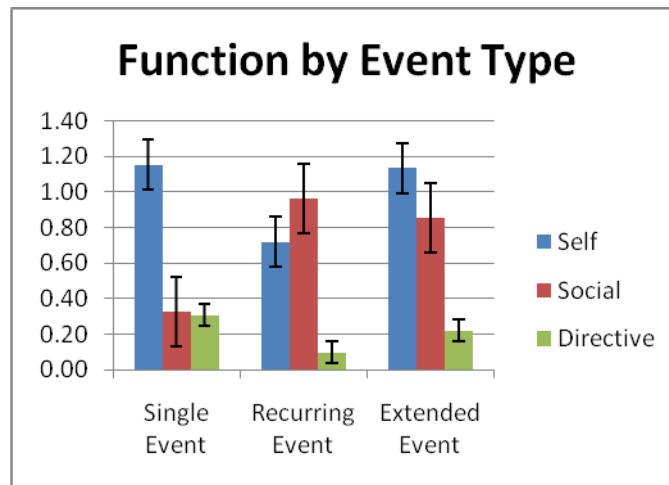


Figure 2. Mean function scores for the narratives by event type, standard errors are represented in the figure by the error bars attached to each bar.

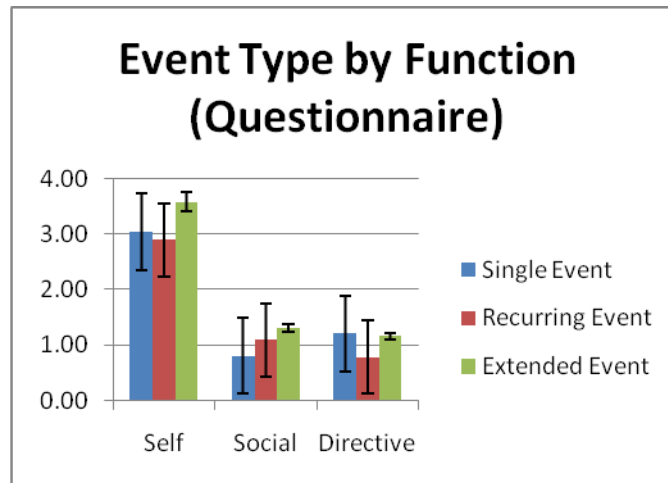


Figure 3. Mean function scores for the questionnaire data across event types, standard errors are represented in the figure by the error bars attached to each bar.