

There is more to life stories than memories

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Current theories focus on the role of specific memories in organising the life story. However, temporally extended structures of autobiographical memory, like lifetime periods and mini-narratives (here termed chapters), may also play a central role in the organisation of the life story. Here, 30 elderly participants were asked to tell their life story in a free format. The life stories were divided into components and coded as chapters, specific memories, categoric memories, facts, chapters about other people, and autobiographical reasoning categories, i.e., reflections, evaluations, life lessons, and inferences about personality. The results show that chapters were much more common than specific memories in the life stories, indicating that chapters may play a role in the structuring of life stories. The number of chapters and specific memories in the life stories were unrelated, suggesting that the recounting of chapters versus specific memories does not reflect a preferred recall style.

Keywords: Life story; Lifetime periods; Chapters; Specific memories; Autobiographical memory.

The life story has become an increasingly important concept in several disciplines of psychology. Thus, the life story is conceived as an organisational structure in autobiographical memory (Bluck & Habermas, 2000; Conway, 2005) and as a central part of personality (McAdams, 1996). Also, the construction of a life story is a key developmental task of puberty (Habermas & Bluck, 2000). However, although the life story is such a central concept, no previous studies have investigated the types of components that comprise the life story.

AUTOBIOGRAPHICAL MEMORY AND THE LIFE STORY

Several researchers have suggested that life stories are based on autobiographical memory (Conway, 2005; Habermas & Bluck, 2000; McAdams, 2001).

According to these researchers the individual constructs her/his life story through autobiographical reasoning processes (Singer & Bluck, 2001) that select, shape, interpret, and organise autobiographical memories (McAdams, 2001). Within these theories specific memories are assigned a central structuring role. Specific memories represent “a circumscribed, one-moment-in-time event”, “including what was seen, heard, thought, and felt; they contain many specific details” (Pillemer, 1998, p. 3) and are often operationalised by asking for an event lasting no more than 1 day. Highlighting the centrality of specific memories in life stories, specific memories have been suggested to function “as building blocks of life narratives” (Bluck, 2001, p. 68). This emphasis on specific memories within theories of life stories can also be seen in concrete research strategies. Thus, when researchers study the relationship between aspects of personality and the life story, they relate the

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content of specific memories to different aspects of personality (e.g., McAdams, 1982; Woike, 1995). Important specific memories are often of self-defining and/or transitional events (e.g., Pillemer, 1998; Singer & Salovey, 1993; Thomsen & Berntsen, 2008) and as such may be expected to play an important role in the life story. Still, the focus on specific memories in relation to the life story may also reflect that specific memories are generally the type of autobiographical memory most often studied.

However, autobiographical memory consists of more than specific memories. Several subtypes have been identified and include: lifetime periods, mini-narratives (also termed extended memories, e.g., Williams et al., 2007), categoric memories and facts (Barsalou, 1988; Brewer, 1986; Conway, 2005). In one influential theory it is suggested that autobiographical memory is hierarchically organised with the life story at the top level (Conway, 2005). At the second level are lifetime periods, e.g., “my marriage with x” and at the third level are mini-narratives, e.g., “my two-week holiday in Paris” and categoric memories, e.g., “my bicycle trip to work every morning”. Both mini-narratives and categoric memories have been subsumed under the label general events/memories (e.g., Conway & Pleydell-Pearce, 2000). However, they are distinct in that categoric memories refer to the averaged or summarised memory of similar activities repeated over a number of instances, whereas mini-narratives refer to several activities and/or episodes stretching over a longer period of time, but related to the same higher-level activity (e.g., holiday; Conway & Pleydell-Pearce, 2000). At the fourth level are episodic memories, consisting of brief sensory slices that give specific memories their characteristic subjective sense of reliving. Although rarely mentioned, it follows from this theory that lifetime periods, mini-narratives, and categoric memories are likely to play a central role in the construction of the life story, as these levels of autobiographical memory are intermediate between the life story and specific memories.

DIFFERENT COMPONENTS OF AUTOBIOGRAPHICAL MEMORY AND THE LIFE STORY

Lifetime periods and mini-narratives both represent different activities over extended periods of time. Lifetime periods may be structured by

goals and relate to the overarching themes of work/education and relationships (Barsalou, 1988; Conway, 2005). Goals have also been suggested to play a central role in other memory processes, where specific and categoric memories and mini-narratives relevant to ongoing goals are more likely to be encoded and retrieved (Conway & Pleydell-Pearce, 2000). Lifetime periods are thought to contain information on activities, places, and people typical for the period and to be associated with a certain emotional valence (Conway, 2005; Conway & Pleydell-Pearce, 2000; Conway & Rubin, 1993). Each lifetime period is thought to index a number of mini-narratives, and categoric and specific memories, and thus lifetime periods have a nested structure where more temporally extended structures nest briefer structures, which again nest categoric and specific memories (Barsalou, 1988; Neisser, 1986). Mini-narratives may also be related to the goals of the individual, but span briefer time intervals (Robinson, 1992). Mini-narratives are nested within lifetime periods and thus lifetime periods and mini-narratives do not represent easily distinguished categories. Rather, both represent temporally extended structures that may function as chapters in the life story (Thomsen & Berntsen, 2008) and other extended narratives (Pillemer, Krensky, Kleinman, Goldsmith, & White, 1991). Hence, temporally extended structures will be referred to as *chapters* in the present paper and as such are defined as memory for different activities and episodes stretching over an extended period of time and relating to the same higher-order activity. Because specific memories are often operationalised as lasting less than 24 hours, logically chapters may extend from 24 hours to several years.

There does not seem to be a natural time unit in autobiographical memory that would allow chapters to be defined with reference to a certain objective time period, e.g., a week, a month, or a year. However most chapters, especially in a life story context, are likely to refer to periods lasting from months to years. For example, Thomsen and Berntsen (2008) found that when elderly individuals generated chapters in their life story, the average length of a chapter was approximately 9 years. Thus, although chapters do not reference a given objective time period, chapters at the highest level of the nested hierarchical organisation are likely to span several years, whereas chapters at lower levels of the nested hierarchical organisation may span weeks and months.

Several authors have highlighted the importance of such chapters in autobiographical memory (Conway, 2005; Neisser, 1986), but research is sparse. Three studies confirm that people can identify chapters and perceive them as different from specific memories (Pillemer et al., 1991; Schooler & Herrmann, 1992; Thomsen & Berntsen, 2008). Three studies support the organising role of chapters in relation to the recall of specific memories (Conway & Bekerian, 1987; Thomsen & Berntsen, 2005, 2008). One study suggests that chapters play a role in temporal order judgements of specific memories (Skowronski et al., 2007). In addition, three experiments by Burt, Kemp, and Conway (2003, Study 1–3) suggest that the majority of specific memories are perceived as parts of extended events. Together these studies suggest that chapters are a central and distinct part of autobiographical memory and as such may play a prominent role in the construction of the life story.

Where chapters represent an extended period of time, both categoric memories and facts are characterised by their lack of specific temporal reference. Categoric memories refer to repetitively experienced similar events where the individual has formed a mental representation of the “average” event (Barsalou, 1988). Like specific memories, categoric memories include visual-spatial imagery (Brewer, 1986) although they may be associated with less imagery (Mansell & Lam, 2004). Research on categoric memories has mostly focused on relationships with depression and post-traumatic stress disorder (PTSD); depressed participants and participants with PTSD recall fewer specific memories and more categoric memories compared to healthy controls (e.g., Williams et al., 2007). Autobiographical facts, e.g., “I’m a psychologist”, have been conceived as information regarding the self that has been abstracted from experience and as such represent de-contextualised knowledge about the self in a non-image form, although an autobiographical fact may also be formed on the basis of a single experience (Brewer, 1986). Although facts have been mentioned as a part of autobiographical memory (Brewer, 1986; Conway, 2005), there has been almost no research on this type of autobiographical memory. However, autobiographical facts and categoric memories may be an efficient way to remember and communicate one’s life, and thus may be a common element in the life story.

Autobiographical reasoning is assumed to play an important role in constructing the life story from specific memories (Bluck & Habermas, 2000). Autobiographical reasoning is the process whereby individuals interpret and evaluate their specific memories, drawing lessons and insights from their life experiences (Singer & Bluck, 2001). It has been argued that autobiographical reasoning is based on four types of coherence: chronological, causal, thematic, and cultural (Habermas & Bluck, 2000). Chronological coherence refers to the ability to understand and tell how sequences of events unfold over time. Causal coherence refers to the understanding that some events cause other events and the ability to communicate this understanding in the narrative. Thematic coherence is achieved by combining, selecting, and shaping components to achieve a certain similarity in content. Cultural coherence is displayed by using culturally accepted rules for which facts and events should be included in the life story. Thus, autobiographical reasoning may influence the construction of the life story in a variety of ways. Some effects of autobiographical reasoning may not be expressed in overt statements in the life story, but rather may be evident through the selection, shaping, and combination of autobiographical memory material. However, in some instances autobiographical reasoning may be reflected directly in the life story as reflections, evaluations, life lessons, and inferences about personality.

Although some studies elicit memories by asking for extended life stories (Fromholt & Larsen, 1991; Fromholt, Larsen, & Larsen, 1995; Fromholt et al., 2003), few studies have directly examined the relationship between specific memories and extended narratives. Barsalou (1988) reported a study where students were asked to tell about events from their summer vacation, and found that categoric memories (or summarised events) were more frequent than specific memories. In one study, written biographies were coded for consequential experiences and these consisted of both specific memories and extended events (Mackavey, Malley, & Stewart, 1991). In two studies, Pillemer and colleagues (Pillemer et al., 1991; Pillemer, Wink, DiDonato, & Sanborn, 2003) have coded extended narratives for the presence of specific memories. In one study, they found that specific memories were more prevalent in the first parts of the narrative (Pillemer et al., 1991); in the other study, they found that women included more specific memories in their life

stories (Pillemer et al., 2003). Robinson and Taylor (1998) asked 15 women to tell their life stories and recall their four most vivid memories, and found that only 39% of the memories were part of the life story. Using a similar strategy, Thomsen and Jensen (2008) asked 15 breast cancer patients to tell the extended narrative of their illness and treatment, and to recall five specific memories from the same time interval. They found that 57% of the specific memories were part of the extended narrative and also noted that narratives consisted of elements other than specific memories (see Pillemer et al., 2003, for a similar observation). The above studies focus on the location of specific memories in extended narratives. However, extended narratives consist of knowledge other than specific memories, but no previous studies have systematically investigated the types of components included in life stories.

THE PRESENT STUDY

The purpose of the present study is to investigate which components of autobiographical memory are utilised in the telling of the life story. According to the present focus in research and theories about autobiographical memory and the life story, specific memories may be expected to be a frequent component in life stories. However, following the logic of the hierarchical organisation of autobiographical memory (Conway, 2005) chapters should be a frequent component in the life story. In addition, relationships between life story components were examined in two ways. First, correlations were computed between the number of chapters, specific memories, and other autobiographical components of the life story, e.g., categoric memories, facts, and chapters for other people. Second, analysis explored whether chapters and specific memories were more likely to co-occur with certain other types of life story components, e.g., categoric memories, facts, inferences about personality, life lessons, evaluations, reflections, meta-communication, and chapters for other people. The first approach reflects an individual differences approach, i.e., whether there are individual preferences for certain autobiographical components at the cost of other autobiographical components. The second approach reflects a component-centred approach, i.e., whether a given component is often told in conjunction with a certain other

components, regardless of individual preferences. As such the two approaches may yield different information regarding the relationship between chapters/specific memories and other components of the life story.

To investigate these questions, 30 elderly participants were asked to tell their life story. Each life story was then divided into components and these were scored as chapters, specific memories, categoric memories, facts, and autobiographical reasoning categories, i.e., reflections, evaluations, life lessons, and inferences about personality.

METHOD

Participants

Participants were 30 elderly Danes (12 women) with a mean age of 79.27 ($SD = 3.38$). They were all retired. They were recruited from a pool of elderly participants who had previously participated in various questionnaire studies. Before attending the interview, they completed measures of depression (Beck's Depression Inventory, BDI-II; Beck, Steer, & Brown, 1996) and life satisfaction (Temporal Satisfaction With Life Scale, TSWLS; Pavot, Diener, & Suh, 1998). The average score on the BDI was 7.90 ($SD = 5.47$), with four participants scoring in the mild depressed range and one participant scoring in the moderate range (Beck et al., 1996). The average score on the TSWLS was 63.26 ($SD = 17.84$ with the highest possible score being 90.00), indicating that participants were on average moderately satisfied with their lives and that this elderly sample scored similarly to other adult samples (Pavot et al., 1998). The questionnaire data thus suggest that the majority of participants were in good emotional health. Since depression may influence memory retrieval (e.g., Williams et al., 2007), analyses were run both with and without the five participants scoring within the mild to moderate depression range. Because there were no gender differences in the life story components included in the present study (all $ps > .05$), the data were collapsed for women and men (but see Pillemer et al., 2003, for gender differences in number of specific memories in oral life stories).

Interview

The participants were telephoned and invited to participate in an interview. They were not told the purpose or the theme of the interview. They were interviewed at the Department of Psychology, University of Aarhus, by one of two interviewers who were enrolled as master's students at the department.

The participants were instructed that the interview was about their life story and that they would be asked to tell their life story in approximately 45 minutes. They were informed that the interviewer would not ask any questions, that there was no right or wrong way to tell their life story, and that they should decide how to tell it and what to include. The participants then told their life story and either came to a natural end or if the life story exceeded 45 minutes they were asked to try to finish their life story at the nearest convenient point. The interviews were transcribed verbatim.

Coding

Coding categories included lifetime periods, mini-narratives, specific memories, categoric memories, facts, reflections, evaluations, life lessons, inferences about personality, meta-communication, and chapters for other people. The first five categories were chosen because they reflect types of autobiographical memory that are generally agreed upon in the literature (e.g., Brewer, 1986; Conway, 2005). The categories of reflections, evaluations, life lessons, and inferences about personality were derived in part from the literature on autobiographical reasoning (e.g., Singer & Bluck, 2001) and in part from reading the transcribed life stories and identifying types of autobiographical reasoning reflected in the life stories in a bottom-up manner. The categories of meta-communication and chapters for other people were derived in a purely bottom-up manner by reading through the transcribed life stories and identifying components that could not be fitted within any of the existing categories. Each of these categories is described in detail below. Because lifetime periods and mini-narratives are not absolute categories, but rather long and brief versions of temporally extended structures, and because it turned out to be difficult to distinguish between these two categories when coding the life

story interviews, they were coded as one category labelled "chapters".

Chapters. Components of the life story containing descriptions of parts of the life course, stretching over more 24 hours and up to several years (in the present sample the great majority of chapters stretched over at least several months), like this example: "Then the following year – we got married in 1942 and in 1944 we had our first child, a son, and he is a physician. And then four years later we had one more child, and he's also a physician." Because chapters may be confused with categoric memories, it was emphasised that chapters referred to a time course of activities rather than activities summarised over a number of similar instances. In principle each chapter component may reflect more than one underlying chapter in the individual's life story (e.g., the example may contain reference to several separate chapters: marriage before first child, first child, and second child). Thus the current method may underestimate the frequency of chapters expressed in the individual's life story. Still, individuals may also mention the same chapter several times and have each of these coded as a separate chapter, which would lead to an overestimation of the frequency of chapters. However, it was the impression of the coders that this was rarely the case. The present method differs from asking individuals to identify chapters in their life story (Thomsen & Berntsen, 2008) or having raters identify natural breaks in an extended account (Pillemer et al., 1991), since the present method excludes the possibility of identifying a specific (or categoric) memory as a chapter.

Specific memories. Components of the life story describing events lasting 24 hours or less, although descriptions of causes and consequences may stretch over longer time intervals. This example comes from an elderly woman:

Then during our stay at the school we gave a party for the parents, and I was singing a part in Tuten and Lillemor [a famous Danish acting couple], I had bows on my shoulders and bows on my shoes. I was terribly nervous, not about singing, but anyway. And I suppressed-that's a kind of funny-because I suppressed that nervousness by being tough and haughty, so in a way the acting didn't work as well, when you're not yourself. But I reeled it off and, oh my, it was good enough. It was good. But it's the only time I have acted.

If two (or more) specific memories from a related course of events were told as a sequence in the life story, this was coded as two separate specific memories. Specific memories sometimes contained brief evaluations and reflections that were not coded separately, because they seemed to be an intrinsic part of the specific memory representation. However, this procedure may underestimate the amount of autobiographical reasoning components told in conjunction with specific memories.

Categoric memories. Components of the life story describing repeated routines, i.e., similar activities with no reference to a given day or to a course of events unfolding over time. The following example refers to an elderly man's experiences from World War II: "It often happened, that there were bombings at the airport in Ålborg [Danish city], and we climbed up the hill in the evening so we could watch it. We didn't think about it, we just wanted to see what happened."

Facts. Components of the life story that contained general information without reference to time, e.g., descriptions of a scene, a person, an activity, and background information, such as: "I'm born in Copenhagen [capital in Denmark], so I'm a real Copenhagen. I'm born at Vesterbro [area in Copenhagen], Saxo street, Matthæus street, Danmark street, the good old streets in that area, as it was back then." Because facts may also be presented as a part of for example specific memories or chapters it was decided that facts should only be coded when stretching over more than one line.

Inferences about personality. Components of the life story where the participant makes general statements about personality traits, roles, and interests, as in the following example from an elderly woman who concludes a sequence of events with the following statement: "So I'm probably a bit stubborn."

Life lessons. Components of the life story where the participant makes general statements about life lessons and moral rules, like this elderly man: "Because I always say, if people are cheeky, then never mind them, leave them alone. Then I'll just shift for myself."

Evaluations. Components of the life story where the participants evaluate a part of the life story. Evaluations are not scored if they refer to an object, e.g., "a nice house" or another person,

e.g., "my nasty neighbour". Evaluations were also coded as either positive, such as "That was actually a happy time" or negative, such as "and that wasn't too exciting".

Reflections. Components of the life story where the participants tell about reasons for decisions, choices, and general reflections about life, like this elderly man who tells about a new teacher in school: "I really feel we learned something there." They do not appear as evaluations because they have no clear-cut affective tone.

Meta-communication. Components of the life story where the participants reflect on the story, memory, the interviewer, or the process of telling. Examples include: "now I can't remember" and "maybe I mentioned this".

Chapters for other people. Components of the life story where the participant tells about other people's life course, e.g., the husband/wife or children; like this elderly man who tells about his wife: "But fortunately later in life she started working, at first for a small carpenter master for some years, for a mechanic for some years and then she had ten good years as book-keeper by a firm of solicitors."

Two independent coders were trained by the author using three pilot life story interviews. Each coder then divided 15 life story transcriptions into smaller components and coded these components into the above-mentioned categories. The two coders then switched interviews. In the second bulk, the coder received a transcript of the life story already divided into components by the other coder (but without the other coder's coding for each component) and then coded each component according to the above-mentioned categories. Thus, all life story interviews were independently double coded for the nature of the components.

In order to test whether the total number of components in the life story reflected the individual preferences of the coder, an independent *t*-test was conducted comparing the total number of components in life stories coded by coder 1 and the total number of components in life stories coded by coder 2. An independent *t*-test showed that the two coders were close to differing significantly on the total number of components in the life stories, $t(28) = -1.99$, $p = .06$. However, this may have been due to coder 1 coding life stories that were longer than the life stories coded by coder 2. When controlling for number of

words in the life stories, there was no significant difference between the total number of components for the two coders $F(1) = 0.81, p = .37$.

The two coders agreed on 78% of components with a kappa of 0.73. The percentage of agreement for the different components are as follows: facts (74%), chapters (80%), specific memories (76%), categoric memories (47%, most often confused with facts), inferences about personality (72%), life lessons (57%, most often confused with reflections), positive evaluations (95%), negative evaluations (94%), reflections (55%, most often confused with facts), meta-communication (86%), and chapters for other people (35%, most often confused with chapters). Although some of the categories were more difficult to achieve high agreement on, it should be emphasised that the coding scheme was very complex, containing many conceptually related categories. As can be seen, there were more disagreements on the coding of categoric memories, reflections, and chapters for other people, suggesting that these components may be especially difficult to distinguish from conceptually related components. Disagreements were resolved by discussions between the two coders.

RESULTS

First, the results regarding the frequencies of each of the components are presented. Second, an analysis of (1) correlations between chapters and other autobiographical components and (2) types of components frequently told in conjunction with chapters is presented. Third, an analysis of correlations between (1) specific memories and other autobiographical components and (2) types of components frequently told in conjunction with specific memories is presented. Unless otherwise noted, the pattern of results is similar when excluding the five participants scoring in the mild to moderate depressed range.

On the average, each life story contained 100.67 ($SD = 57.24$) components. However, this varied across participants with a minimum of 12 components and a maximum of 244 components. Number of components naturally varied with number of words in the life story, $\rho(28) = .89, p < .01$. Table 1 shows that chapters were the component used most often and that chapters were used about four times as often as specific memories. All participants except three showed a profile where chapters were the component most

TABLE 1
Frequency of life story components

<i>Life story component</i>	<i>M (SD)</i>	<i>Range</i>
Chapters	33.13 (20.22)	1–92
Specific memories	7.80 (7.43)	0–26
Categoric memories	2.67 (2.97)	0–10
Facts	12.77 (9.17)	0–35
Inferences about personality	2.37 (4.36)	0–21
Life lessons	0.40 (0.81)	0–3
Evaluations, positive	12.87 (7.74)	0–30
Evaluations, negative	4.87 (4.93)	0–20
Reflections	10.27 (7.23)	1–27
Meta-communication	11.63 (8.88)	1–30
Chapters for other people	1.57 (2.25)	0–8
Components that could not be coded	0.37 (0.67)	0–2
Number of different components	8.90 (1.71)	4–12

frequently used in life stories. No participants showed a profile where specific memories were the component most frequently used. This suggests that life stories are mainly constructed by chapters, which may be a sensible strategy because chapters effectively summarise extended periods of time (Barsalou, 1988; Thomsen & Berntsen, 2008), thus contributing to the temporal, causal, and thematic coherence of the life story.

But other components were commonly used in the telling of the life story, with evaluations being the most prominent. About two thirds of evaluations were positive. On the other hand categoric memories were relatively rare compared to other components of autobiographical memory and compared to specific memories. This is in disagreement with Barsalou's (1988) findings and may be because categoric memories, as compared to chapters and specific memories, refer to repetitive experiences that may be too trivial to include in the life story (but not too trivial to include in recounting a summer's experience). Possibly the type of repetitive experiences initially represented by categoric memories are transformed into facts over longer periods of time, thus appearing as facts when people tell their life stories.

Chapters and other components of the life story

In order to explore the relationship between chapters and other autobiographical components

in the life story, the number of chapters for each participant was correlated with the other autobiographical components, e.g., specific memories, categoric memories, facts, and chapters for other people. Because number of chapters in the life story was positively correlated with total number of components in the life story, $\rho(28) = .94$, $p < .001$, the total number of components was controlled for in the analysis. A series of partial correlations controlling for total number of components showed that number of chapters was significantly associated with number of chapters for other people, $r(27) = -.48$, $p < .05$. There were also trends towards associations with number of facts, $r(27) = -.33$, $p = .08$, and number of categoric memories, $r(27) = .36$, $p = .05$. When additionally controlling for number of words in the life story, the results were similar and all correlations became significant ($ps < .05$). When excluding the five participants scoring within the mild to moderate depressed range, the results were in the same direction, but weaker and non-significant, rs from $-.21$ to $.27$, $ps > .10$. Thus individuals including many chapters in the telling of their life story are less likely to include facts, but are more likely to include categoric memories. This suggests that when an individual tells a life story characterised by many chapters this is not followed by an exclusion of specific or categoric memories, indicating that these components may complement each other in the telling of the life story.

The relationship between chapters and other components in the life story was further investigated by exploring whether chapters were more likely to be told in conjunctions with certain other life story components. For each chapter the component just preceding and following it was coded as a conjunction. All other components were coded as non-conjunctions. Chapters that were not told in conjunction with other chapters were coded as non-conjunctions and chapters told in clusters were all coded as conjunctions. The results can be seen in Table 2. The percentages indicate that chapters are less likely to be told in conjunctions with other chapters; rather chapters are very frequently accompanied by especially positive evaluations but also life lessons, reflections, and meta-communication. This would seem to suggest that at least some autobiographical reasoning processes are closely tied to chapters, and not just to specific memories.

TABLE 2

Components told in conjunction with chapters in the life story

<i>Component</i>	<i>Conjunction</i>	<i>Not conjunction</i>
Chapters	28.57%	71.43%
Specific memories	54.27%	45.73%
Categoric memories	47.50%	52.50%
Facts	43.34%	56.66%
Inferences about personality	45.07%	54.93%
Life lessons	75.00%	25.00%
Evaluations, positive	71.50%	28.50%
Evaluations, negative	58.22%	41.78%
Reflections	60.71%	39.29%
Meta-communication	64.47%	35.53%
Chapters for other people	25.53%	74.47%

Specific memories and other life story components

Although specific memories are less frequent than chapters in the telling of the life story, it is of interest to illuminate the context of specific memories in the life story. In order to explore the relationship between specific memories and other autobiographical components in the life story, the number of specific memories was correlated with each of the other autobiographical components, e.g., chapters, categoric memories, facts, and chapters for other people. Because number of specific memories in the life story was positively correlated with total number of components in the life story, $\rho(28) = .74$, $p < .001$, the total number of components was controlled for in the analysis. A series of partial correlations controlling for total number of components showed that number of specific memories was not significantly associated with the number of other autobiographical components (all $ps > .05$). The results were similar when additionally controlling for number of words in the life story. This suggest that when individuals tell a life story including many specific memories, these specific memories do not replace other components of autobiographical memory, like facts, chapters, and categoric memories. This may suggest that the presence of specific memories do not just reflect a preferred level of recall from autobiographical memory, and that specific memories do not compete with other levels of autobiographical memory for inclusion in the life story.

The relationship between specific memories and other components in the life story was further investigated by exploring whether specific memories were more likely to be told in conjunction

TABLE 3
Components told in conjunction with specific memories in the life story

<i>Component</i>	<i>Conjunction</i>	<i>Not conjunction</i>
Chapters	15.39%	84.61%
Specific memories	22.22%	77.78%
Categoric memories	18.75%	81.25%
Facts	12.27%	87.73%
Inferences about personality	9.86%	90.14%
Life lessons	16.67%	83.33%
Evaluations, positive	12.69%	87.31%
Evaluations, negative	12.33%	87.67%
Reflections	8.77%	91.23%
Meta-communication	12.61%	87.39%
Chapters for other people	14.89%	85.11%

with certain other life story components. For each specific memory the component just preceding and following it was coded as a conjunction. All other components were coded as non-conjunctions. Specific memories told in isolation were coded as non-conjunctions and specific memories told in clusters were all coded as conjunctions. The results can be seen in Table 3. Although the differences are small, the percentages indicate that specific memories in the life story are more likely to be told in conjunction with other specific memories, perhaps indicating that specific memories are recalled and told in clusters (Brown & Schopflocher, 1998; Pillemer et al., 1991).

DISCUSSION

The results showed that chapters were by far the most frequent component of life stories, suggesting that chapters are used to structure the life story. In addition, autobiographical reasoning processes in the form of evaluations and reflections were common in the life stories. Positive evaluations were more common than negative evaluations, perhaps reflecting that people generally lead satisfying lives or that positive experiences are assigned a more prominent role in the life story through selection processing emphasising a positive view of one's life (Walker, Skowronski & Thompson, 2003). Individuals including many chapters or many specific memories in their life story were not less likely to include other levels of autobiographical memory, suggesting that different levels of autobiographical memory complement each other in the life story. In addition, analysis showed that chapters were often told in conjunction with autobiographical

reasoning processes, like evaluations and reflections, whereas specific memories were often told in conjunction with other specific memories.

Chapters, specific memories, and the life story

The present results suggest that chapters may be a central component in the life story. Thus chapters may be the building blocks that convey the skeletal structure of the life story. Chapters may be an efficient way to organise the life story because they summarise long periods of time, including many different elements (Barsalou, 1988). Although chapters at the lower levels of the nested hierarchical structure may be relatively brief and thus not be as efficient in organising the life story, using the longer chapters at the higher levels of the nested hierarchical structure would seem well suited to serve the functions of summarising and organising. Using chapters to organise the life story thus contributes to a sense of temporal, causal, and thematic coherence in the life story. In addition, the number of chapters in the life story may be more limited, making the task of constructing the life story easier. On the other hand, using specific memories would leave the individual with a huge number of memories to choose from and organise, which would probably overextend the cognitive capacity of most people. Thus it may be suggested that specific memories are building blocks of chapters, which are then used to form a skeletal structure of the life story. In this way individuals construct chapters from specific memories by selecting, organising, and connecting specific memories that are similar with respect to certain features, e.g., people, places, activity, and goals (Thomsen & Berntsen, 2008; Thomsen & Jensen, 2008). As suggested by the analysis on which components were often told in conjunction with chapters, chapters may also function as a basis for autobiographical reasoning processes, giving rise to reflections about why things happened the way they did and whether that was good or bad. Using chapters as the basis for such reasoning processes may be an advantage, because reflections on causality and evaluations often need to draw on more than one specific memory to increase coherence in the life story as well as promote understanding of long-term consequences. However, it is also possible that the categories of autobiographical reasoning accompanying chapters may reflect

oral narrative strategies and social rules emphasising “wrapping up” individual sections of the life story. Given that the oral life stories in the present study may be assumed to be under the influence of the participants’ internalised life story as well as the social processes in the interview, these two possibilities cannot presently be distinguished.

However, if chapters are a central organising component of life stories, what is the role of specific memories in the life story? There are several possible functions of specific memories in the life story. First, previous studies have shown that specific memories at the beginning and end points of chapters are more likely to be recalled (Pillemer, Goldsmith, Panther & White, 1988; Pillemer, Rhinehart & White, 1986; Thomsen & Berntsen, 2005, 2008). Thus, specific memories in the life story may mark the beginning or the end of a chapter, signalling the beginning or ending of different thematic chunks in the life story (see also Robinson, 1992). This is in line with a previous study, showing that in written narratives of the first term at university, specific memories were clustered around the beginning of the narrative (Pillemer et al., 1991). In this manner, some specific memories may function as landmark events (Shum, 1998) and thus may aid the structuring of chapters and the life story. Second, specific memories, rather than being organisational units, may function as information packages, capturing moments of importance to goal-progress or recurrent concerns in a condensed, emotionally engaging, and vivid way (Conway, 2005; Linton, 1986; Pillemer, 1998; Robinson, 1992; Singer & Salovey, 1993). Third, specific memories in the life story may contribute to the social interaction by increasing intimacy (Pillemer, 1998), teaching other people lessons (Pillemer, 2001; Webster, 1993) and entertaining (McLean, 2005). Specific memories may serve such social functions better than chapters because of their detailed sensory qualities, conveying a sense of immediacy and accuracy (Pillemer, 1998).

Limitations

The in-depth analyses of the life stories conducted in the present study were very time consuming and hence the sample size was relatively small, consisting only of 30 elderly participants. The majority of participants were in good emotional

health, and excluding potentially depressed participants did not change the pattern of results. However, participants were not formally tested for the presence of dementia and thus it cannot be ruled out that some of the participants had early stages of dementia. Still, the general pattern of chapters being more frequent than specific memories held across all participants and thus this result cannot be explained by the presence of depression or dementia in some of the participants in the present sample. The sample was not representative, and younger individuals or individuals from other cultures and generations need to be examined before firm conclusions can be drawn. Thus, the dominance of chapters may not generalise to other groups. However, based on knowledge of the organisation of autobiographical memory (Conway, 2005), it could be predicted that other groups would also tell life stories dominated by chapters, although the length, number, and content of chapters may vary with group.

Another limitation is that the overt telling of the life story may not reflect the underlying organisation of the life story (see Barsalou, 1988, for a similar point). Rather, the telling of the life story and the components identified in the present study may be a reflection of how people tell about themselves to a stranger. Thus, although the telling of the life story is dominated by chapters this may not reflect the internal representation of the life story. The internal representation of the life story may be dominated by specific memories, which people hesitate to convey because social rules for memory sharing emphasise brevity and relevance (Skowronski & Walker, 2004). However, organising the life story with reference to a huge number of specific memories would seem illogical if autobiographical memory already contains a level more suitable for the purpose, i.e., chapters. In addition, previous studies have shown that individuals can readily generate chapters in extended narratives, when this is not a part of an interview session and direct social processes may be less influential (Pillemer et al., 1991; Thomsen & Berntsen, 2008). Thus, although the telling of the life story naturally depends on the social context, the intention of the individual, cultural rules etc., in all circumstances using chapters would be an efficient way to derive the skeletal structure of the life story.

Finally, the coding of the life stories depended in part on the ability of the author to develop

relevant categories but also relied heavily on the two coders' ability to divide the life story into meaningful units and distinguish between components. The parcelling of transcribed life stories into smaller units is a complex process, depending on the target categories as well as the training of coders. Thus, the number and type of components in life stories may vary across studies and the components identified and counted in the present study may not all generalise to other studies and new components may need to be identified. However it should be emphasised that the two coders had a high agreement on the two components central to the present study, i.e., chapters and specific memories (80% and 76% respectively). Testifying to the reliability of the present coding, previous studies also suggest that specific memories can be readily identified in extended narratives (e.g., Pillemer et al., 1991, 2003). In addition, coding memory types based on verbal descriptions is common in other areas, e.g., over-general memory (Williams et al., 2007), and have yielded stable and theoretically interesting findings, suggesting that the method of coding memory type based on verbal descriptions is generally valid and reliable. Thus, although the exact number of chapters, specific memories and other components may vary across studies, it may be considered unlikely that other studies will find a dominance of specific memories at the cost of chapters.

Perspectives

Theories of the organisation of autobiographical memory have emphasised the importance of temporally extended structures (Barsalou, 1988; Conway, 2005; Linton, 1986; Neisser, 1986; Robinson, 1992) or, in the present terminology, chapters. The present study is the first to empirically establish that chapters play a prominent role in the construction and telling of life stories. The results also indicate that chapters and specific memories do not compete for entrance into the life story. This suggests that chapters and specific memories are functionally distinct in regard to life stories, and future studies may benefit from considering the relationship between chapters and specific memories. This could also include further examining whether women and men show a similar pattern of results, as some studies indicate that women are more likely to include specific memories in oral life stories (Pillemer

et al., 2003). Important questions that await further studies are: (1) How are specific memories affected by the inclusion in chapters? (2) How stable are chapters and the inclusion of certain specific memories over time? (3) Do chapters and specific memories have different functions? (4) What processes are involved in constructing chapters based on specific (and categoric) memories? Goals may be a central concept in answering some of these questions, as specific and categoric memories may be encoded in relation to activated goals (Conway & Pleydell-Pearce, 2000). Thus, the pursuit and change of goals may be an important process in how specific and categoric memories are organised into chapters (Barsalou, 1988; Conway & Pleydell-Pearce, 2000; Robinson, 1992).

The past decades have seen a surge of research in the interface between personality and autobiographical memory (see Conway & Pleydell-Pearce, 2000, for an overview). Thus, the content and phenomenology of memories have been related to personality traits and basic motives (e.g., McAdams, 1982; Rubin & Siegler, 2004; Woike, 1995). Chapters may contribute to this interdisciplinary programme in several ways. First, as there are personality differences in the content of specific memories, there may also be such differences in the content of chapters. Individuals with a strong communion motive or scoring high on extraversion and agreeableness may have more and more important chapters concerning interpersonal themes. Second, there may be personality differences in the processes involved in constructing chapters, some individuals may construct chapters based primarily on similarities in activities, whereas other individuals may base the construction of chapters on similarities in emotional tone (Pillemer et al., 1991). Studies addressing these questions would extend the existing research on personality and specific memories by including the organisation of memory, thus creating links to personality theories based on memory structures, e.g., self-schemata (Markus, 1977).

Conclusion

Chapters were a frequent component in the life stories, suggesting that chapters play a prominent role in the organisation of life stories. Chapters were often told in conjunction with autobiographical reasoning processes, suggesting

that chapters may support such processes or that social processes emphasise “wrapping up” sections of the life story. Although chapters have received some theoretical attention (Barsalou, 1988; Conway, 2005; Linton, 1986; Neisser, 1986; Robinson, 1992) and have been named one of the most promising areas of research (Robinson & Swanson, 1990), studies are very sparse. The lack of research in combination with the relevance of chapters to both theories of autobiographical memory and personality would make chapters a fruitful area for future studies.

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